# Enhancing employability of graduates from Higher Education Institutions in Botswana: a case study of Environmental Science.

by

**Violet Nomalanga Essilfie**

**A thesis submitted in partial fulfillment of the requirements for the degree**

**PHILOSOPHIAE DOCTOR (PhD)**

**in**

**Quality Assurance and Assessment**

**Department of Science, Mathematics and Technology Education**

**University of Pretoria**

**Supervisor: Prof Sarah Howie**

**Co-Supervisor Prof Tjeerd. Plomp**

**September 2014**

# ABSTRACT

The main aim of this study was to explore and describe the circumstances on the ground concerning employability of Environmental Science (ES) graduates in Botswana and to provide evidence that would either confirm or refute claims that graduates in Botswana, in general, are not employable. The second aim of this study was to describe whose role it is to enhance the employability of graduates. Furthermore it was also the aim of this study to investigate whether or not employability audits could be used as a quality assurance mechanism to ensure the employability of graduates in Botswana.  These issues were investigated using the contextual framework of employability which explains the quality of higher education in relation to employability of graduates. This research reports on the findings of a case study of the Environmental Science programme offered by the Department of Environmental Science at the University of Botswana which was conducted in June 2012. The study revealed and confirmed gaps among ES graduates in the knowledge, skills and competencies required for the world of work. As a result of these gaps, ES graduates were found not be immediately employable without further on the job training. This created a lot of discontent among employers interviewed. The study concluded that higher education should go beyond providing education for the general development and well-being of individuals and address issues related to employability of graduating students. Conflicts in the possible roles of higher education and industry in enhancing the employability of ES graduates in terms of the changing expectations of the world of work were identified. The study highlighted the possible role of employability audits in enhancing employability not only of ES graduates but all other graduates in Botswana.  Furthermore the study recommended that employability audits should be introduced in the tertiary education system of Botswana as a quality assurance mechanism. It further recommended collaboration and partnership with industry as key to the success of any measures put in place for the enhancement of the employability of graduates in Botswana.

**Key Words: employability, employability audits, fitness for purpose, 21$^{st}$ century skills, competencies, knowledge and quality.**

# ACKNOWLEDGMENTS

I would like to acknowledge the assistance I received from a number of people in the preparation, execution and completion of this research. First and foremost, I would like to thank my supervisors, Professor Sarah Howie and Professor Tjeerd Plomp, for the invaluable guidance and assistance they provided throughout my work. It was a difficult journey, but with their guidance the journey became manageable. My gratitude is extended to the rest of the Department of Science, Mathematics and Technology Education - especially to Ms Cilla Dowse and Ms Rosalie Loots, Professor Howie's Secretary - for the support they gave me. The support sessions we had in the department were very helpful, indeed, and the envy of students from other departments. A special thanks also goes to my husband, Professor Thomas Essilfie, for his support and guidance.

My gratitude is also extended to my employer, the Human Resource Development Council - previously known as the Tertiary Education Council - for giving me the opportunity to undertake this study and the financial support it provided for this PhD programme. Without this support - especially from the Chief Executive Secretary, Dr Patrick Molutsi - it would have been very difficult for me to enter this programme. Many thanks also go to the Department of Environmental Science at the University of Botswana for the commitment and support it gave me to carry out this research. Without the participation and support of its staff members and students during all those long interviews I had with them collecting data, this research would not have been possible. My gratitude is extended also to all the employers and Environmental Science graduates I interviewed. I owe this research to you.

# DEDICATIONS

This thesis is dedicated to my children, namely, Dr Ama Tawiah Essilfie, Mr Papa Ewusie Essilfie, Dr Aba Nyanba Essilfie and Mr Nana Baffo Essilfie. It is because of you that I persevered and finished this journey partly also to inspire you. At that time Nana Baffo and Aba Nyanba were still studying and it was also hard for you.  Now you have all graduated and I thank God for making all these achievements possible.

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

# LIST OF BOXES

# LIST OF ABBREVIATIONS

| | |
|---|---|
| ARIQAN | African Quality Assurance Network |
| AQMP | Academic Quality Management Policy |
| BAC | Botswana Accountancy College |
| BIUST | Botswana International University of Science and Technology |
| BOTA | Botswana Training Authority |
| CEA | Centre for Evaluation and Assessment |
| CEDA | Citizens' Entrepreneurship Development Agency |
| CSO | Central Statistics Office |
| DEA | Department of Environmental Affairs |
| Debswana | De-Beers-Botswana |
| DTRP | Department of Town and Regional Planning |
| EIA | Environmental Impact Assessment |
| ES | Environmental Science |
| EU | European Union |
| GDP | Gross Domestic Product |
| GES | Graduate Employability Strategy |
| GIS | Geographical Information Systems |
| HE | Higher Education |
| HEI | Higher Education Institutions |
| HEFCW | Higher Education Funding Council of Wales |
| HEQC | Higher Education Quality Council |
| HOD | Head of Department |
| HRDC | Human Resource Development Council |
| KSC | Knowledge Skills and Competencies |
| LFS | Labour Force Survey |
| MOESD | Ministry of Education and Skills Development |
| MOU | Memorandum of Understanding |
| NDP | National Development Plan |
| OECD | Organisation for Economic Co-operation and Development |
| QA | Quality Assurance |
| QAA | Quality Assurance Agency |
| SAQA | South African Qualifications Authority |
| TEC | Tertiary Education Council |
| UB | University of Botswana |
| UNDP | United Nations Development Programme |
| UNESCO | United Nations Education Scientific Organisation |
| VC | Vice Chancellor |

WEEP                 Work Experience and Employability Plan

# CHAPTER 1

# INTRODUCTION AND OVERVIEW

## 1.1    INTRODUCTION

The aim of this study is three-fold: to explore and describe the local environment concerning the employability of Environmental Science (ES) graduates in Botswana and to provide evidence that will either confirm or refute the claims made by employers that graduates in Botswana, in general, are not employable. Secondly, it is the aim of this study to describe whose role it is therefore to enhance the employability of graduates. Furthermore it is also the aim of this study to investigate whether or not employability audits could be used as a quality assurance mechanism to ensure the employability of graduates in Botswana. The roles of graduates in the work place are changing, which affects their careers and their work-related attitudes (Rothwell & Arnold, 2007), partly because of the massification of higher education (HE) institutions resulting in an increasing number of students; the growing unemployment rates of graduates; changes in technology; and the growing complexity and demands of customers. Therefore, the need for graduates who are employable and who are "fit for purpose" cannot be underestimated.

Higher education, or tertiary education, is perceived by many as the engine that drives the economy through the provision of knowledge and skills used to develop income-generating activities (Cosser, 2009; Westnes, *et al.*, 2009; AfriQan, 2009; Quintini 2011; Elizabeth & Clarke, 2009; World Bank Group, 2010). It is argued that good quality and efficient tertiary education, or higher education, is measured through its ability to transform the knowledge economy and its associated skills into goods and services for a better investment climate (World Bank Group, 2010). Every country needs knowledge and skills for socio-economic development and higher education is seen as the main source of such skills (Cosser, 2009). The role of higher education, therefore, is perceived mainly as that of producing human resource capacity that can drive economic development. Through research, internship programmes that incorporate a partnership with industry, the internationalisation of the curriculum and student mobility, higher education is able to produce graduates who are more employable (EU, 2006; Rothwell & Arnold, 2007; Techler, 2007; Bird, 2008; Nunez & Livanos, 2009; Elizabeth & Clarke, 2009). According to Elizabeth and Clarke (2009) and the World Bank Group (2010), employable graduates are those graduates who possess critical subject-specific knowledge, skills and transferable knowledge, skills and attitudes needed by 21st century industries and organisations. Cassidy (2006) maintains that transferable skills include oral communication skills; high level learning skills; problem solving skills; decision making skills; and affective skills and attributes, such as responsibility, a positive attitude, interpersonal skills and the ability to work both as a member of a team and independently. One would like to assume that these are the very skills and attributes needed in the economic context of Botswana. This study will attempt to elucidate that.

It is argued that in the EU (European Union) employability is considered to also encompass lifelong learning skills because there is constantly a new focus and technology in industry and graduates must have the propensity to learn and want to learn more continually as they cannot initially learn all there is to learn for their future work (Aamodt & Havnes, 2008; EU, 2006; Quintini, 2011). It is expected that once these graduates enter the world of work they will use their high level learning skills to continue to learn and adapt to the demands and exigencies of their work. There is a general understanding, therefore, that higher education should provide students with the foundation for lifelong learning because learning does not begin and end at higher education institutions (HEI). Questions are now being asked as to what the desired learning outcomes of higher education are (Quintini, 2011) and whether the role of higher education is to prepare graduates for the world of work and training (Mason & Crammer, 2009; Boden & Nedeva 2010; Morley, 2001; Knight, 2001). While such questions are being asked, the demand for programmes that are relevant to society and the labour market and the growing number of unemployed graduates seem closely connected (Cosser, 2009; Aamodt *et al.*, 2010).

Botswana faces similar challenges with graduate employability and unemployment (NDPD, 2009; TE Policy, 2008). However, as early as 1995 Teichler and Kehm argued that where economies and labour markets are smaller, HEIs focus on entrepreneurial skills and positive attitude for self-employment instead of producing people who are ready to take up jobs. Today, Botswana may be experiencing the same situation because although the population is fairly small - about 2million - the country has a high rate of unemployment, mainly because of a small economy and an equally small labour market (NDP10, 2009). According to the 2005/06 Labour Force Survey (LFS), 17.5% of the economically active population was unemployed and 5.5% of this figure was made up of graduates with degrees. In response to this economic crisis in 2009 the Ministry of Education - under the Department of Curriculum Development and Evaluation - embarked on a nationwide crusade to empower both learners and teachers in basic education with entrepreneurial skills and a positive attitude towards self-employment. The curriculum was reviewed across the board in primary and secondary schools in order to integrate entrepreneurial skills in all subject areas. The aim of this initiative was not just to equip young people with entrepreneurial skills, but it was also an attempt to change their attitudes towards self-employment. While that initiative was based on the figures of graduate unemployment, it does not seem that higher education institutions in Botswana - particularly the University of Botswana (UB) - took advantage of the same initiative.

However, when the Tertiary Education Council (TEC) - a regulatory body that oversees and coordinates higher education - was established in 2005, one of the first steps taken was to conduct a country-wide consultation and needs assessment. The aim of this activity was to determine the tertiary education landscape in order to pave the way and set the direction for the development of the Tertiary Education Policy (TE Policy). From this country-wide consultation it was eminently clear that some of the major issues of the tertiary education system in Botswana concerned graduate employability, unemployment and the quality of higher education. The findings from the consultations culminated in the development of the TE Policy of 2008 where the main aim was to improve the quality of higher education and move

Botswana forward as a Knowledge Society (TE Policy, 2008) with the intention of improving both the quality and employability of graduates. Thus, in Botswana all tertiary institution are coordinated by the Education Council - currently known as the Human Resource Development Council (HRDC). The TEC was responsible for the promotion and coordination of tertiary education, determining and maintaining the quality of standards in tertiary institutions. The latter function has now been taken over by the newly established Botswana Qualification Authority (BQA). The TEC put in place internal and external quality assurance guidelines for institutions. The emphasis, however, was on strengthening internal quality assurance mechanisms. The external quality assurance mechanism put in place was the accreditation of programmes which only took place in private tertiary institutions. There was also the registration of all tertiary institutions. While programme accreditation was happening in private institutions, institutional audits were supposed to be conducted in public institutions. That did not happen until 2013 because of a lack of capacity within the TEC, in particular the Department of Quality Assurance and Regulation. Currently, only two public institutions have been audited and this lack of auditing may also have contributed to the quality of graduates that the public is concerned about.

The word "quality" needs to be unpacked because it is a diverse, complex concept that is prone to being defined differently by various stakeholders - depending on their needs, experiences and expectations (Tam, 2001; Westerheijden, 2005; Hoyle, 2012). Some people use the word "quality" to mean free from defect, customer satisfaction or conformity to requirements (Hoyle, 2012). Thus, it is maintained that establishing a definition of "quality' that means the same thing to everyone may be difficult. In this study "quality" is defined as "fitness for purpose", a definition borrowed from Hoyle (2012) who defines quality from the perspective of those who sell and purchase goods. In this instance he argues that a good quality product would be perceived as a product that possesses the right features and characteristics that meet the needs and expectations of the customer. One needs to note that in such a case "quality' cannot be measured in absolute terms because of the difficulty of meeting the needs of each and every customer and, hence, the discourse revolves around meeting requirements within an acceptable range (Hoyle, 2012; Westerheijden, 2005). Higher education, in particular, is a service that produces graduates for various purposes. It would be extremely difficult - if not impossible - to meet the expectations and needs of customers in full. As mentioned earlier, changes in technology as well as the growing complexity and demands of customers make that very difficult. Hoyle maintains that the responsibility of making sure that the perceived and stated customer requirements are within acceptable range remains with the supplier.

Does the responsibility of producing graduates who meet the perceived and stated customer requirements within an acceptable range remain with higher education? Whose responsibility is it to make sure graduates are fit for purpose? The latter question has resulted in many debates among employers, academics and governments (Harvey, 2001, 2005; Morley, 2001; Kis, 2005; Griesel & Parker, 2009; Pauw *et al.*, 2008; Cosser, 2010; Quintini, 2011). It is one of the main questions that this study seeks to answer. It is a major issue, especially among academics, because it is alleged that problems related to the quality of higher education emerged as a result of the breakdown in trust

between governments and politicians (Westerheijden, 2005). It is further alleged that as higher education gained importance because of its role in the economy, the issue of the quality of higher education started creeping into the political limelight as the costs for the provision of higher education kept rising and the need to widen its access to produce a well-educated workforce became eminent. The need for governments to account for the large budgets that higher education enjoyed became apparent and led to academics feeling the loss of institutional autonomy (Harvey *et al.,* 2002; Westerheijden, 2005). This mistrust, and the need for accountability, gave rise to quality assurance systems as a means of improving quality in order to regain the trust of customers (Kis, 2005; Harvey, 2005).

A common understanding, therefore, of quality issues and outcomes and how quality should be measured is critical (Kis, 2005; Harvey, 2005). Higher education has diverse stakeholders, such as employers, teaching and non-teaching staff, government, quality assurance agencies, the private sector, civil society and students who comprise the key and most important stakeholder. Each one of these stakeholders may have their own views on what quality means - depending on their expectations and demands (Tam, 2001; Kis, 2005). A good example of this is the on-going conflict between government's expectations and what higher education believes should be the outcomes of education. Governments are a major and influential stakeholder because public institutions are usually funded by them and, therefore, they make demands and have expectations that they expect to be met.

## 1.2     CONTEXT OF THE STUDY

This section presents the context for the study in terms of the country, in general, and the higher education landscape, in particular. **Sub-Section 1.2.1** discusses the country and the employment situation in the country while **sub-Section 1.2.2** is about the higher education landscape and **sub-Section 1.2.3** touches on Environmental Science as the programme of study in focus.

### 1.2.1     Botswana: Country and Employment  Situation

Botswana is a small country in terms of its population. The country has about 2 million people who are largely rural-based with 70% depending on agriculture for their livelihood (NDP10, 2009). According to the 2005/06 Labour Force Survey (LFS), there were exactly 787 962 economically active people living in Botswana - a figure which included the employed and unemployed. Of this number,   539 150 were employed (see Table 1.1, below). In this table the leading employer by sector can be seen to be the private sector representing about 43.1%, followed by subsistence farming with 24.0%. The third largest employer in the economy was local and central government, employing 20.7% of the economically active population. Of this economically active population about 248 812 (17.5%) were unemployed; 114042 were actively seeking employment; and 134 770 were regarded as discouraged job seekers because they had been looking for jobs for a very long time without success. Sixty-nine per cent of the

unemployed were between the ages of 15 and 34, and among the unemployed 5.5% were degree holders. Currently, according to the CSO (2011), the unemployed figure has risen to 17.8%.

**Table 1.1: Currently employed by sector and gender**

| Sector | Total | Central Government | Local Government | Parastatal | NGO | Private Households | Private | Subsistence |
|--------|-------|--------------------|------------------|------------|-----|--------------------|---------|-------------|
| **Total** | 539 150 | 76,037 | 35 503 | 19 740 | 3 377 | 42 453 | 232 555 | 129 486 |
| **Female** | 257 388 | 38,060 | 19 845 | 7 159 | 1 586 | 18 579 | 116 095 | 56 072 |
| **Male** | 281 762 | 37,976 | 15 657 | 12 589 | 1 791 | 23 874 | 116 460 | 73 413 |

**(Source: Central Statistics Office (CSO) Labour Force Survey - 2005/06)**

Although Botswana is politically stable as a result of its multi-party democratic principles, the economy is supported largely by the mining industry which contributed about 82% to the Gross Domestic Product (GDP) in 2008 (NDP 10, 2009). However, with the economic recession, the sale of diamonds fell resulting in the closure of a number of the major mines during the last quarter of the NDP 9 - from 2004 to 2009 (NDP10, 2009). The mining sector is highly capital-intensive and, as such, it does not employ a large number of people. In 2005 its employees only accounted for 3.1% of the working population (Siphambe, 2007) and in 2008 only 15 900 people were employed in the sector (NDP 10, 2009). The manufacturing industry also constitutes a very small sector in terms of employment and GDP. Between 2005 and 2006 the manufacturing sector contributed about 3.4% to the GDP (Siphambe, 2007). Most of the manufacturing industry ranges from small to medium size enterprises, employing between 9 and 99 people. These businesses are largely involved in the manufacturing of meat and meat products, textiles, beverages, agro-products and metal and metal products.

The service industry is growing, particularly hotels and hospitality - as a result of tourism. This sector contributed about 5% to the GDP in 2008-9, employing about 23 000 people (NDP10, 2009). The largest employer in Botswana is the private sector which employed 232,555 people, while the public sector is the third largest employer which employed approximately 118 500 people (NDP10, 2009). According to Ama (2008), until 1995 the government used to guarantee employment for graduates - irrespective of their quality in terms of employability skills. However, in the wake of the massification of private tertiary institutions and the large numbers of graduating students, government can no longer guarantee employment, a position which has contributed to an increase in the unemployment rate which was estimated to be 17.6% in 2005/6 (NDP10, 2009) - a substantial rise considering the small population.

### 1.2.2    Higher Education in Botswana

This sub-section gives a brief overview of the higher education landscape in Botswana.  It touches on developments in higher education and some of the challenges that it faces in Botswana. Botswana has two public universities: the University of Botswana (UB) which currently has an enrolment of over 10 000 students and is situated in the capital city, Gaborone, and the International University of Science and Technology (BIUST) which is located in a small town called Palapye in the central region of the country. This is a recently established university which started with its first intake of students in 2013. It is still under construction and, at present, operates from rented facilities in Oodi, just outside Gaborone. There are colleges offering mainly education and health-related diploma programmes that also produce graduates.

Table 1.2, below, reflects the number of vacancies by industry and occupation available in the country according to CSO (2008). This table clearly shows that there were very few vacancies to absorb all the graduates as they were not only for new entrants to the market, but also for professionals moving from one job to another. Graduates would have fitted into the professional category where there were only 960 vacancies in all the industries at the time. This table also explains why government could no longer guarantee employment for graduates and it accounts for the growing unemployment rate of graduates.

**Table 1.2: Estimated number of vacancies by industry and occupations, September 2008**

| Industry | Legislators/ Managers/Admin | Professionals | Technicians | Clerks | Service Workers | Skilled Agric. Workers | Craft Workers | Plant & Machine Operators | Elementary Occupations | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Agriculture | - | 1 | - | - | - | 1 | - | - | - | 2 |
| Mining and Quarrying | 8 | 14 | 15 | 10 | 10 | - | 11 | 10 | 5 | 83 |
| Manufacturing | 79 | 1 | 40 | 4 | 40 | 40 | 147 | 76 | 152 | 577 |
| Electricity & Water | 3 | 33 | 23 | 7 | | - | 16 | 10 | 3 | 94 |
| Construction | 65 | 140 | 209 | 137 | 70 | - | 611 | 125 | 68 | 1,425 |
| Wholesale & Retail | 21 | 86 | 51 | 78 | 52 | - | 129 | - | 23 | 440 |
| Hotels & Restaurants | 5 | 1 | 1 | 61 | 4 | - | 30 | - | 59 | 160 |
| Transport & Communication. | 71 | 1 | 53 | - | 44 | - | 86 | 86 | - | 341 |
| Finance & Business Services | 11 | 67 | 17 | 9 | - | - | - | 9 | 8 | 119 |
| Real Estate & Business Activities | 68 | 167 | 114 | 67 | 17 | - | - | - | 9 | 441 |
| Central Government | 59 | 184 | 351 | 85 | 38 | 1 | 15 | 32 | 84 | 849 |
| Local Government | 32 | 214 | 147 | 29 | 22 | - | 16 | 26 | 32 | 518 |
| Education | 4 | 27 | 25 | 14 | 13 | - | 1 | 2 | 17 | 103 |
| Health | - | 10 | 37 | 12 | 24 | - | - | 12 | 46 | 139 |
| Other Community | 18 | 15 | 7 | 23 | 20 | - | - | - | 15 | 97 |
| **Total** | **444** | **960** | **1,089** | **533** | **353** | **42** | **1,061** | **387** | **520** | **5,389** |

**(Source: CSO, 2008)**

With globalisation and the emergence of a knowledge society in the midst of an unstable period for the diamond industry, the government of Botswana has introduced major reforms and changes in policy that affect its human resource capital development. These initiatives are backed by Vision 2016, the government's major policy document that stipulates, and points to, a knowledge-based society which is innovative and productive in solving the problems of non-renewable resources and in driving the economy. The Government of Botswana decided it would be prudent to develop its human resource base as the driver of the economy. To back this initiative government started sponsoring students to private tertiary institutions. The idea was to expand access to, and participation in, tertiary education from 5.8% in 1996 to 16% by 2016 (TE Policy, 2005). To date, it looks as if the TEC has already exceeded the estimated participation rate as the current rate is 20% (TEC, 2012). This trend was well captured in the President's 2003 State of the Nation address:

> *Sustaining a competitive environment for attracting both domestic and international investment will neither be easy nor cheap. ...They require state-of-the art information and communication infrastructure comparable to the best in the world; a highly literate and technologically innovative workforce that has easy access to global trends and opportunities. ...This should be supported by the development of our human capital to meet the challenge of the information and knowledge age* (TEC Consultation paper, 2005, p. 8).

The higher education sector had to rise to the challenge, and in 2005 the Tertiary Education Policy was developed to steer and guide the sector by the Tertiary Education Council (TEC). One of the urgent actions the TEC had to undertake was to kick-start the development of the Human Resource Strategy that would not only focus on increasing access to tertiary institutions, but also attempt to match labour demands with labour supply. As the economy expanded manpower plans did not feed into the education sector (Siphambe (2007) and, hence, the development of the Human Resource Development Strategy. It is important to note that an increase in the rate of participation in tertiary education should be accompanied by economic development to avoid rising numbers of unemployed graduates. The focus should not only be on human resource development but also on economic development.

### 1.2.3   Environmental Science

This sub-section gives a short description of the programme, Environmental Science (ES), which is offered at the University of Botswana and BIUST. The study focuses on one programme of study in order to have a deeper understanding of issues of employability of graduates.  Furthermore ES was chosen because it is a multi-disciplinary programme that graduates people who could be employed in different areas of Environmental Science. This could pose a problem in preparing graduates that are fit for purpose, a challenge which was also identified by Hennemann and Liefner (2010) in their study of Geography students.  ES - offered at BIUST - focuses on the engineering aspects of Environmental Science. UB, which is the focus of this study and the case study, offers ES within the Faculty of Science and, more specifically, in the Department of Environmental Science. It is a four year degree programme structured in terms of techniques used in environmental management such as Geographical Information Systems (GIS) and human and physical sciences. It draws students from all faculties, including social sciences, humanities, physical sciences and business. It is only the students from the Faculty of Science who are allowed to take ES as a single major the rest either take ES as a minor or major in combination with another programme from their respective faculties. Environmental Science as mentioned earlier is a multi-disciplinary subject concerned with facilitating an understanding and management of complex interaction between physical environmental processes and the bio-physical and human environment (UB, 2005). According to the Department of Environmental Science, the rational for offering this programme is based on the country's keen interest in the environment and its sustainability. As a result of its interaction with stakeholders, the Department of Environmental Science contends that practitioners in the field of the environment require prospective graduates who are knowledgeable in contemporary environment issues and who are equipped with techniques and methods of environmental assessment, monitoring and management.

This means that because of the multi-disciplinary nature of the programme graduates from this programme can work in different companies and organisations dealing with environmental issues. The department has identified career opportunities for ES graduates which depend on the courses being offered and the availability of the resources for offering those courses. Over 300 students graduate from the Environmental Science programme each year. The career areas identified are only for single major students who take ES as a single major and the Department of Environmental Science graduates about 40 such students every year. The remainder of the students who come from various faculties - listed above – are not exposed to those career options, which means that it is not clear what jobs they can apply for.  Five career areas for single major students have been identified as follows:

- Geo-spatial Information Systems for Environmental Sciences, such as Geographical Information Systems (GIS), remote Sensing and Cartography.

- Management of natural resources where graduates can enter areas, such as Range Management and Wildlife Management.

- Environmental and social impact of development where graduates can enter areas, such as Environmental Impact Assessment and Integrated Environmental Management.

- Environmental Hazard and Disaster Management.

- Management of rural and urban environments.

The department is of the view that its graduates - whether they are from the humanities, social sciences or engineering - can be employed in the public service, in non-governmental organisations and in the private sector. It is said that students from the Faculties of Education and Humanities mostly follow a teaching career line while those from the Faculty of Science go into government and the private sector and, mostly, follow the career areas listed above.

## 1.3    PROBLEM STATEMENT AND RATIONALE FOR THE STUDY

The employability of graduates and the quality of higher education (HE) in terms of "fitness for purpose" of graduating individuals has attracted a great deal of debate from funders of higher education and the general public in many countries, including the United Kingdom (Harvey, 2001; Bowers-Brown & Harvey, 2004; Yorke, 2004, 2006), South Africa (Cosser, 2009; Griesel & Parker, 2009), Australia (O'Leary, 1995; Whelan, 2010) and Norway (Aamodt & Hovdhaugen, 2010). An increasing volume and a wealth of knowledge makes it impossible for a graduating student to learn but a small fraction of what is available in any one field (Aamodt & Havnes, 2008). As a result, there is an increase in specialisation during the short period of a student's attendance at a higher institution before graduation and versatility is no longer a virtue of graduates (Binkley *et. al.*, 2010). In addition, the training required to master increasing technological advances has increased exponentially and, therefore, the most critical questions are centred on the roles of higher education institutions and those of industry (Harvey, 2001,

2005; Billet, 2009), including those on how the responsibility of enhancing the employability of students and graduates could be split between the two sectors.

This study seeks to first establish if graduates in Botswana are employable in terms of their knowledge, skills and competencies and secondly who should be responsible for ensuring the employability in this case of Environmental Science (ES) graduates in Botswana and what roles HE, industry and individual students and graduates should play in ensuring that graduates are maximally prepared for work and meet perceived and stated customer requirements. In their study, Rothwell and Arnold (2007) argue that in the current labour market which no longer offers long term employment, it is the individual's perceptions about their employability and how they can maintain and enhance their attractiveness in the labour market that matters the most. This study intends to further investigate the role that quality assurance (QA) - in the form of employability audits - could play in assisting both HEIs and industry in empowering graduates with employability skills. It is important to carry out this study because it addresses core issues in the TE Policy (2008), which are at the heart of Botswana's economy (NDP10, 2009), Vision 2016 and the National Human Resource Development Strategy (NHRDS) (2009-2022). All four policy documents are related and interconnected. Vision 2016 is a nationwide strategy and vision for Botswana that drives all national development plans. One of the main pillars of Vision 2016 which is encapsulated in the TE Policy and which, in turn, gave rise to the NHRDS states that Batswana would like to be endowed with "An Educated and Informed Nation". This vision is in line with the TE Policy of a strategy towards a knowledge society. It is also the vision encapsulated in the NDP10 (2009) of providing an adequate supply of qualified, productive and competitive people needed to drive the economy. Similarly, the NHRDS which is a macro-level initiative provides a key strategic link with the pillars of Vision 2016, NDP10 and the TE Policy. It highlights the importance of human resource capacity as the driving force in achieving economic development and the strategy for achieving the dream (NHRDS, 2009).

Two main challenges presented in the TE Policy document which this study seeks to investigate are the issues of quality and the relevance of programmes and that of employability of graduates. From the consultative workshops that were conducted across the country in 2006 - a year after the inception of the TEC - major concerns were expressed about the unemployment of new graduates. Furthermore, from the employers' perspective the major issue was that of the immediate utility of the graduates they employed and the need to provide further on-the-job training to make them more employable (TE Policy, 2008) - which is the main issue of this research. The question that this study seeks to address, therefore, is whether or not the quality and relevance of programmes explains the employability of graduates. Does quality and the relevance of programmes also explain why new graduates are unemployed or is it a bigger issue concerning the state of the current external labour market (Rothwell and Arnold, 2007), or both? Table 1.3, below, indicates that both private and parastatal employment grew at a slower rate than that of government employment over the first five years of the NDP9 - from 2004-2009 (NDP10, 2009). It is also said that some of the growth in the private and parastatal sectors was a result of shifting

some government functions to the newly established parastatal organisations, leaving even fewer jobs created within that sector.

**Table1.3: Formal sector employment 2003-2008 (Thousands, March each year)**

| March survey | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Trend growth rate | 2008 Sept | Six-month increase |
|---|---|---|---|---|---|---|---|---|---|
| Private [a] | 173.2 | 177.0 | 177.4 | 183.2 | 187.6 | 190.1 | +1.9% | 193.2 | +1.6% |
| Government [b] | 108.8 | 113.7 | 121.4 | 111.7 | 114.4 | 118.5 | +2.8% | 122.6 | +3.5% |
| Total | 282.0 | 290.7 | 298.7 | 294.9 | 302.0 | 308.6 | +2.3% | 315.8 | +2.3% |

(Source: NDP10, 2009)

[a] Includes parastatal employment

[b] Includes local government

According to recent formal sector employment statistics released by the Central Statistics Organisation (CSO) in 2011, overall employment rose by 2.3% from 387,877 in March 2011 to 387,426 in June of the same year. No record was given of graduate employment. Government also no longer guarantees jobs for graduates since 1995 (Ama, 2008) and as it is a major employer it may partly explain why graduate unemployment has increased. If jobs are not created to match the number of graduates produced, the unemployment rate of graduates will continue to rise (see Figure 1.1). The figure shows that the highest numbers of unemployed people are those between the ages of 20 and 34 - the category which includes graduates. One may also note that in the age range 50-60 there is virtually no unemployment as the number of economically active people evens out with the employment rate.
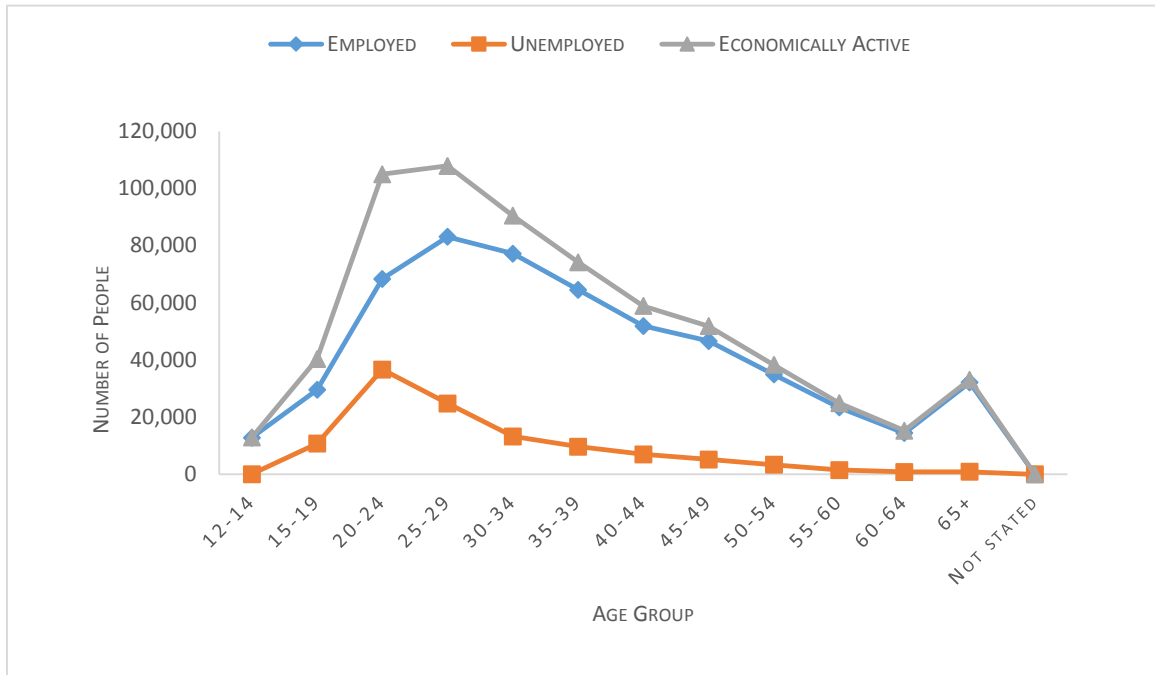
**Source: (CSO Labour Force Survey Report 2005/6)**

**Figure 1.1: Number of Employed, Unemployed and Economically Active People by Age**

It is interesting to note that while the NDP10 (2009) reports that programmes were developed that addressed socio-economic needs through consultation with relevant stakeholders and that progress was made on refocusing academic programmes on business and the ICT responding to society's needs (NDPD10, 2009), graduates were still without jobs

From the TE Policy it is not clear as to precisely why employers say graduates are not employable and what they mean by that. Which critical skills and what knowledge do graduates lack and whose responsibility is it to ensure that graduating students are ready for the world of work? What role should industry play and how far should HE go in meeting the perceived and stated demands of the customer as the supplier? The TE Policy document does not answer these questions because no thorough research was done on the relevant issues. On the whole, it is very clear in the policy that the tertiary education system in Botswana and in the rest of the world has a key role to play in meeting the needs of an increasingly market-driven, diversified and globalised knowledge-economy. The TE Policy (2008) goes on to suggest that the only way the sector can meet the needs of the economy is by offering a curriculum that produces graduates who are knowledgeable and have critical skills and competencies that make them employable. The TE Policy proposes that the education sector can only produce a valuable national human resource capacity by

- Establishing a relationship between the tertiary education supply of graduates, the current stock of tertiary level graduates in the workforce and demand in terms of wants/needs and expectations of employers and stakeholders.

- Creating a realistic match between supply and demand in both qualitative and quantitative terms to avoid the unemployment of graduates and graduates not fit for purpose.
- Enhancing the delivery of customer focused and relevant tertiary education.
- Entrenching a culture of lifelong learning within tertiary education that addresses the needs of the learner, the labour market and society in general.

If the outcomes of higher education do not meet the perceived and stated needs of the customers, then the problem should be investigated and addressed. As described by Pauw *et al.* (2008) and Saheli-Esfahani (2010), this situation perpetuates the paradox whereby countries invest large amounts of money in educating and training a human resource base whose contribution to their economic growth is limited either by a high graduate unemployment rate or by graduates who are unemployable. They further maintain that it is not uncommon that new jobs may be available for which the graduating students are not suitable. Perhaps, one may add that graduates with or without jobs may be available but that they may not have the relevant skills. From what has been gleaned from the TE Policy (2008) that may well be the situation in Botswana as well.

In South Africa a pilot study was conducted on graduate attributes and skills. The study focused on the issue of the mismatch between the skills graduates possess and what employers expect from prospective employees (Griesel & Parker, 2009). The results of this study pointed to a number of gaps between the expectations of employers and higher education outcomes. Another small study was conducted in Botswana but the researchers focused only on the views of graduates from the Faculty of Social Science to determine whether they were suitably prepared for the world of work or not (Ama, 2008). Although the results were not specific as to which areas were focused on, they indicate that about 75% of the graduates felt that their jobs were appropriate to the level of their education and the programmes studied. Furthermore, it was reported that 70% of these graduates were in employment - an indication that their level of education matched their employment which was indicative of the quality and versatility of their HE programmes. One may argue that it does not follow that the programmes were of good quality as about 75% of these graduates were employed by government. Government used to be the main employer of graduates and, irrespective of their capabilities, guaranteed their employment even before they had completed their courses - just as in the MENA countries (Salehi-Isfahali, 2010; Ama, 2008). More importantly, the study did not measure the employability of graduates in terms of their work related skills but merely stated that graduates felt their jobs were appropriate for the level of their education, which was not sufficient.

Given the prevailing skills shortage in the economy and the increasing number of graduates entering the labour market as a result of the massification of tertiary institutions, either the labour market is unable to absorb the new graduate entrants or graduates are not suitably qualified for the jobs that are available (Pauw, *et al.,* 2008; Salehi-Isfahani, 2010 ). It is further argued by Pauw *et al.* that since the labour market is always in need of highly skilled manpower, it is more likely that the greater problem is that graduates are not suitably qualified. Furthermore, although students may want to study a certain field because they are attracted to it, they should not forget that one of the purposes of higher education

is to prepare them for a rewarding career (HEFCW, 2011). Therefore, it seems that higher education and the students themselves need to communicate with the labour market and employers as much as possible to avoid large numbers of graduate un-employability and graduate unemployment. Moreover, a study conducted by (HEFCW, 2011) shows that the majority of students enrolled in (HE) either to help them acquire good jobs or to help them enter worthwhile careers.

In conclusion, investigating the effect that large numbers of HE graduates may have on the traditional labour market sector, content of occupations and work tasks (Teichler & Kehm, 1995) in the wake of the massification of universities could help answer the question whether graduates are unemployed or under-employed because of a lack of jobs or because of their fitness for purpose. In Botswana no thorough research has been conducted by the TEC to explain the problem on which the TE Policy was based. Hence, the need for this research to focus on a specific field – namely, Environmental Science (ES) - to explore the knowledge, competencies and skills of graduating students in order to identity the gaps and a mismatch, if any, between the skills and knowledge graduates possess and the expectations of employers in terms of jobs *vs* knowledge, skills and competencies. It is assumed that the investigation will deepen the understanding of the real issues concerning graduate employability in order to better inform the TEC and offer appropriate advice to government. The research is to be conducted in Botswana in the Department of Environmental Science at the University of Botswana. The purpose of the study is, therefore, to explore the circumstances on the ground concerning the employability of ES graduates, the possible roles of higher education, employability audits and industry in preparing graduates for the world of work. Furthermore, the conclusions from this investigation may allow the researcher to recommend possible ways of balancing the changing roles of higher education and industry in providing students and graduates of Environmental Science with employability skills in a climate of changing workplace expectations. Although the results may not be generalised, they could still be applied to other programmes of study in any underdeveloped country.

## 1.4    RESEARCH QUESTION AND OBJECTIVES

This section sets out the research objectives that guide the kinds of questions that the study focuses on in order to answer the main research question. The main research question for this study is: **How do industry, higher education and employability audits contribute to ensuring that Environmental Science students and graduates are employable?** Institutional Audits are meant to be conducted internally by the University of Botswana while external audits are supposed to be carried out by the TEC/HRDC as a Regulator but that is not happening. The process of external institutional audits only began in 2013. If implemented this system might provide one way that higher education institutions could ensure that graduates have the necessary knowledge, the critical skills and competencies needed in the workplace. It could also be a way in which industry could play a role in ensuring that students are employable - even before they get to the workplace. The intention of this study is to describe and analyse the current situation on the ground pertaining to the employability of ES students and graduates in general without prescribing a solution.

To be able to operationalise the main research question a number of objectives for the research were developed to explain the purpose of the study and what the focus will be. These objectives guided the development of the specific research sub-questions. In Chapter 2, based on the review of the literature, these objectives are transformed into specific research sub-questions and the findings on these questions will be reported in Chapters 4-6. The objectives are as follows:

1. **To evaluate the employability of ES students and graduates in terms of their knowledge, skills and set of competencies within the changing roles and expectations of the labour market**

The intention is to identify and evaluate the employability skills of students when they enter university and when they graduate to gauge the impact of higher education. Students come from basic education and it is necessary to establish whether any contribution is made by basic education to enhance the employability of students. The quality of students that basic education graduates has an impact on the knowledge and skills they possess on entering higher education and this cannot be underestimated or ignored. ES graduates' and students' knowledge, skills and set of competencies will be evaluated against what employers require or wider job requirements in order to establish whether there is any mismatch with "fitness for purpose". The effects of massification of tertiary institutions and the numbers of ES graduates from elsewhere will be assessed to determine their impact if any on the employability of ES graduates locally. The focus will be on the knowledge and 21$^{st}$ Century skills needed in the modern work place. In this study these skills include - but are not limited to - oral and written communication; high level learning skills; problem-solving skills; decision-making skills; and affective skills and attributes, such as responsibility, a positive attitude, interpersonal skills and the ability to work both as a member of a team and independently. Students in the Department of Environmental Science (ES) at the University of Botswana (UB) and ES graduates in the field will participate to achieve this objective. The collected data will help to explain whether the programme of study is relevant for the needs of the country and for the economy.

2. **To explore the possible roles of higher education and employers in preparing students and graduates for their transition to the workplace**

Graduates and students have to be prepared for the workplace. The available literature reflects contradictory views on whether employers, HE or both should play a role in preparing graduates and students for their transition to the world of work. The relative responsibility of, and balance in, the roles of either party is not clear. The investigation will include the angle of 'higher education' through the perspective of the academics and administrators, and the perspective of the students and graduates. It is important to establish the role of the individual as the role of the students and graduates themselves is not clearly addressed in the literature. This objective will, therefore, attempt to answer the main research question concerning how to apportion the relative responsibility of preparing students and making graduates employable. It will attempt to answer the on-going debate as to what employers want and what higher education institutions can do in conjunction with employers to enhance the knowledge and employability of students and graduates.

**3.    To explore the possible role of employability audits in enhancing the employability of students and graduates**

One way of enhancing the employability of students is for higher education institutions and quality assurance bodies in Botswana to conduct employability audits to determine whether the activities and processes of institutions and departments are aligned with their objectives of enhancing the employability of graduates. This study, therefore, intends exploring the possible ways these audits could play a role as they currently are not in practice. Students in ES at UB, academics, ES graduates in the field and employers of these graduates will participate to assess the possible role that the audits could play in aligning the objectives of the department with its activities regarding the enhancing of the employability of students.

## 1.5     METHODOLOGY

The primary design of this study is the case study approach, which enables the use of multiple data collection methods. A sequential mixed methods (Mertens, 2005) design is used whereby the collection of questionnaire data informs the collection of interview data. Questionnaires were collected from 130 first and 119 fourth year Environmental Science students. These were followed by interviews of eight academics and administrators at the University of Botswana, six employers and six ES graduates in the field. Document analysis was used to collect secondary data. A number of documents were reviewed and analysed to elicit meaning, gain understanding and verify what was said in the interviews. Curriculum documents and Policies have been studied. The questionnaire data was analysed using SPSS and the interview data was analysed using thematic content analysis with the help of Atlas.ti. A detailed description of this section is presented in more detail in Chapter 3.

## 1.6     DEFINITION OF TERMS

The following sub-section provides definitions of terms - as used in this study:

**Competence –** Competence is used as an overall term to mean capability or ability. It is closely related to skills in the sense that for people to become competent in the tasks they perform, they need to have the necessary skills. Kouwenhoven (2009), defines competence as simply the ability to perform a task to a required standard. He argues from this definition that the concept, itself, may be associated with the world of work. Likewise, Field and Drysdale (1991) define competence as the ability to perform work roles or jobs to the required standard or desired level. In this study competence is defined as the ability to apply skills and knowledge learnt in a work-related environment (Hatfield (2007) and Hennemann and Liefner (2010) which also embodies ones attitudes and values which may be partly influenced by their environment.

**Customer -** A customer could be an internal customer who is the next user of the product which could be the student himself/herself; an intermediate customer that is the next department or another industry/organisation; and an external customer who is the end user of the product.

**Economically active people** – These are people who during a specified period of time were either employed or unemployed (CSO, 2008).

**Employability** – In this study employability is defined as "a set of achievements - skills, understanding and attributes – that make graduates more likely to gain employment and be successful in their chosen occupations – which benefits them, the workforce, the community and the economy" (York, 2004, p. 410).

**Employer** - In this thesis "employer" is used in general terms to mean an industry, such as manufacturing, or it may be an organisation or government department that employs graduates.

**Higher Education Institution (HEI) –** HEI refers to a tertiary institution which could be either a university or a college.

**Higher Education (HE) -** HE is used to mean tertiary education.

**Employability Audits –** These are the types of audits that focus on monitoring and identifying the extent to which institutions engage in activities that enhance the employability of students and graduates at programme and central levels (Harvey, 2005). Employability audits are both internal and external. In the former the institutions, themselves, identify the activities that the students have engaged in that enhance their employability, such as internships which could take many forms including job-shadowing and sandwich programmes during holidays or lengths of time determined by the institution and the industry. Institutions monitor these activities and write reports on how their students perform. The students may be tracked on completion of their studies by means of tracer studies to see how they are performing in their various workplaces. External quality assurance agencies, using an external employability audit, may also monitor the extent to which institutions engage in activities that enhance students' employability skills and knowledge during audits.

**"Fitness for Purpose" –** This is the definition adopted in this study for "quality". It is a concept related to employability which is also associated with "quality". The term is explained in more detail in Chapter 2.

**In vivo code -** This is a term used in Atlas. ti. for coding of qualitative data. It is used to mean when coding is done automatically by the soft- ware using the actual words said by the research participant.

**Massification** – Massification is the ever growing number of tertiary institutions as demand for higher education increases. The HEFCW (2011) report states that the number of students has been increasing consistently for decades. The report goes on to say that the demand for higher education is likely to increase as the number of enrolments in basic education continues to rise. Higher education for many

students is a gateway to better and fulfilling careers. The increasing demand for highly skilled graduates in the labour market will result in an increase in students enrolling for higher learning (Pauw, 2008; Salehi-Isahani, 2010 & HEFCW, 2011). The HEFCW (2011) report asserts that in the UK the education system is such that there is no target concerning the right number of institutions that should develop, but that they should grow in response to the demand from students and employers which, in turn, should reflect the needs of the economy. However, checks and balances are established through the QAA to ensure that the supply of skills meets demand. It is further argued that there is a growing need to control these numbers in the wake of rising graduate unemployment rates.

**Skill –** It is very difficult to differentiate skill from competence - as seen in the above example - and their definitions may be confusing. There is very little difference between the two since one is embedded in the other. For the purposes of this study, skill will be defined according to Hatfield (2007:240) who defines skill as "an observable component of competence." It is capability that is normally required through training and is embedded in competence which is related to the level of performance associated with a specific task usually perceived in a work place. According to Hatfield (2007), skill is a pre-requisite of competence.

**Stakeholders** – These are persons and groups of people who are, or might be, affected by higher education.

**21st Century Skills –** Twenty-first century skills are a set of broad skills deemed necessary for students and graduates to possess in order to be successful in the workplace and in life (Binkley *et. al.,* 2010). They are new skills needed in a knowledge and information society for life-long learning which may vary slightly from country to country as *per* the dictates of the industry, curriculum and socio-economic demands of the country. The EU, for example, established a similar set of skills which they refer to as key competencies for lifelong learning (Journal of the European Union, 2006). In this study they are referred to as 21st century skills and they form part of what is referred to in this research as employability skills. Binkley *et al.* (2010) suggest ten key skills and group them into four broad categories, namely:

1. **Ways of Thinking:** Creativity and innovation; critical thinking, problem-solving, decision-making; and learning-to-learn, meta-cognition.

2. **Ways of Working:** Communication and collaboration (teamwork).

3. **Tools for Working:** Information literacy and ICT literacy

4. **Living in the World:** Citizenship (local and global); life and career; and personal and social responsibility, including cultural awareness and competence.

Some people may call these generic or core skills. Embedded within these skills are elements of knowledge and competencies. In order to be able to create, one must possess the discipline knowledge necessary to innovate and create new ideas within the specified field. The ability to apply the right skills in the right context implies competence. In other words, skill is a pre-requisite of competence. Some of

these skills can be acquired in the classroom and others can only be learned on the job through activities, such as internships and attachments. According to Fisch, McLeod and Brenman (2009), students and graduates are being prepared for jobs that do not yet exist who will use technology that doesn't yet exist to solve non-existent problems or unknown problems. Yet, by the time they reach 38 these graduates will have had between 10 and 14 jobs. This means that institutions must be pro-active and think ahead in preparing graduates who can fit into the world of work and who are able to adapt within the labour market system. It is, therefore, thought that by including 21$^{st}$ century skills in the curriculum (Gibbons-Wood & Lange, 2000; Binkley *et. al.*, 2010 and Plomp, 2011) students will be suitably prepared for the workplace and for life.

**Tertiary Institution** – A tertiary institution is a post-secondary training institution, including a university TE ACT, (1999).

The first chapter has provided an introduction to the study with an overview which outlines a statement of the problem, the rational for the study and the background to the nature of the problem. It has described the context of the study and established the background of the study by putting the study into perspective. The research question and the objectives were stated and a brief description of the methodology used was given. The structure of the study was outlined and terms were defined. The next chapter, Chapter 2, will be a review of the relevant literature which reflects what has been done globally within the context of the subject of the study and reveals gaps that this study will attempt to fill.

## 1.7    STRUCTURE OF THE THESIS

This section sets out how the thesis is structured. **Chapter 1** is an introduction and overview which outlines the statement of the problem, the rational for the study and the background to the nature of the problem. It sets the tone and purpose of the study and the objectives of the study are outlined. This chapter also presents the context of the study and establishes the background of the study by putting the study into perspective. **Chapter 2** contains a review of the relevant literature which reflects what has been done globally within the context of the subject of the study and reveals gaps that this study will attempt to fill. **Chapter 3** discusses the design and methods that were used in this research. The case study design is described and argued and a description of the sample, instruments and analysis of the data are presented.   Ethical considerations which guide the study are also discussed and it establishes a conceptual framework in addressing the concept and framework within which this study is described and argued. **Chapters 4-6** outline the findings of the research which are written up as *per* each research sub-question, i.e., a separate chapter is devoted to each research sub-question. **Chapter 7,** the final chapter, consolidates the findings and discusses them in relation to the main research question and the problem statement. Reflections on design and methods, the conceptual framework are also presented. This chapter includes the main conclusions and recommendations based on this research.

# CHAPTER 2

# REVIEW OF LITERATURE

## 2.1    INTRODUCTION

This chapter discusses the quality of higher education in terms of the employability of graduates as perceived by many scholars around the world. The discussion focuses on a review of the relevant literature, which deals with research conducted around the world on the quality of higher education - based on a conceptual framework of "employability" which is sometimes referred to as "fitness for purpose" of graduates. The chapter is structured as follows: Section 2.2 looks at the concept of 'employability' or 'fitness for purpose' - as perceived by various scholars and researchers. Section 2.3 is a general review of the literature of the subject and is divided into two parts: 2.3.1 discusses the general literature on the research conducted worldwide that supports the contribution of higher education to employability, while 2.3.2 examines the views of authors who disagree with the idea of higher education contributing to employability, i.e., the views of scholars who do not think it is the role of higher education to prepare students for the world of work. This discussion includes what is happening within the Botswana context. Section 2.4 deals with Quality Assurance and how it impacts on the quality of higher education and the employability of graduates. The final section, Section 2.5, is presents the conceptual framework which is the context within which this study is premised, including the concept that guides the discussion. Specific research questions are also discussed and explained.

## 2.2       DEFINING GRADUATE EMPLOYABILITY

Higher education is a stepping stone and the doorway to employment as well as the engine that drives the economy (Leckey & McGuigan, 1997; Harvey, 2001, 2005; Aamodt & Havens, 2003, 2008; Yorke & Knight 2007, 2004; Andrews & Higson, 2008; Boden & Nevada, 2010; World Bank, 2011). Therefore, the best strategies for preparing graduating students at various levels of their formal education career for the job market have been debated for some time (Torrence, 1974; Washer, 2007). Some of this debate has been directed at paradigms in education, particularly with regard to whether student-based learning or teaching–based learning should be the predominant paradigm in preparing students for the job market (MacManus, 2001; Nygaard *et al*., 2008). An article in *Newsweek (*Bronson & Man, 10 July, 2010:44-50) raises a concern with the quality of education found in various countries. It points out, for example, that creativity is declining in a number of countries, including the United States. It asserts that modern information technologies - especially Television and the Internet - are more inclined to inform and "teach" people how to have "knowledge" rather than to teach them to be creative. On the other hand, advances in technology (as opposed to the use of the technology), requires creative minds. Alternatives to the current situation have not been clearly addressed. In Europe, industry declared graduating students from tertiary institutions in Norway, Germany and the UK to be unsuitable for the

job market (Lore, 2006; EU, 2006; CHRERI, 2008; Hennemann and Liefner, 2010) and it seems that this dissatisfaction has been echoed in Botswana.

The unsuitability of graduates for the job market has been explained by various authors across the world by means of the concept of 'employability' or 'fitness for purpose'. Several authors have tried to define the concept of employability but there is, currently, little clarity because of its complexity (Boden & Nevada, 2010). Connotations attached to the concept have evolved over decades - resulting in a variety of meanings dependant on the state of the economy at the time (Forrie & Sels, 2003). They argue that between 1950 and 1960 employability was perceived as full employment because the world economy was good and there were many jobs. Those who were out of work were simply construed to have attitude problems. It is further argued that in the 1970s when the economy changed, issues concerning employability shifted focus from attitude to the acquisition of new knowledge and skills which made individuals competitive and more employable.

Forrie and Sels further maintain that by the 1980s employability focused on how best companies could utilise their manpower in times of competition in the labour market. As the market changed, re-training and mobility within companies was used to re-engage employees to meet the demands of the labour market. It is suggested that by the 1990s employability reverted to the employer as a labour market instrument. The focus was again on individuals acquiring knowledge and skills which, in this study, are termed 21st century skills (EU, 2006) that enabled individuals to be responsive citizens and to acquire jobs as the workplace environment changed. However, a review of the literature from the 1970s to the present reveals that the meaning of employability has shifted basically from ability to acquire a job to ability to get a graduate job - not any job. Here a graduate job means a job that requires a qualification at graduate level. The emphasis, though, is still on the employment of graduates. This shift in the meaning of employability it seems rendered the concept difficult to attain by higher education institutions (HEIs) because of unpredictable changing labour market demands. Table 2.1, below, summarises the definitions of employability and what "ability" means to diverse authors at various times.

**Table 2.1: Definitions of the concept of employability**

| Author | Definition of Employability | Period |
|---|---|---|
| Thijssen (2000) | Obtaining employment and focuses on the chance or probability of getting a job | 2000 |
| Harvey and Bowers-Brown (2003) | Ability to get a job | 2003 |
| Yorke (2004) | Ability to get a job and not employment | 2004 |
| Cox and King (2006) | Ability to get a graduate job, not any job and skills are defined in terms of attributes | 2006 |
| Hatfield (2007) | Ability to get a graduate job. Skills focus on attributes | 2007 |
| Aamodt and Havnes (2008) | Ability to get a job based on qualifications | 2008 |
| Mason et al.(2010) | Ability to get a job but focuses on attributes needed without further training on the job | 2009 |
| Hennemann and Liefner (2010) | Ability to get a job based on competencies | 2010 |

Only a few authors were selected for the above table just to show different definitions. Perhaps, the shift in the meaning and emphasis of employability from ability to acquire a job to acquiring a graduate job with an emphasis on employment was necessitated or perpetuated by the dire situation of graduate unemployment. The world over the focus seems to be on young people and graduates who are unemployed (Nunez & Livanos, 2006; Teiclhler, 2000; UNDP, 2010). In his keynote address on youth at the Global Colloquium of University Presidents at Columbia University in April 2012 the United Nations Director-General, Banki Moon, said that there were about 74 million unemployed young people worldwide. He warned of the consequences of the lack of jobs which could lead to social unrest - as seen in the Middle East and North African (MENA) countries (UNESCO, 2012). The employment situation seems so bad that governments and politicians are asking themselves what the purpose is of investing money in education if young people cannot get jobs (Naderi, 2006; Pauw *et al.*, 2008).

A similar quandary and paradox is reported by Saheli-Esfahani (2010) in the Middle East and North African (MENA) countries where high investment in schooling has resulted in low productivity in education in terms of employability of graduates and high rates of youth unemployment. He argues that the abundance of oil income has resulted in a high demand for skilled labour and a correspondingly high demand for diplomas, but low productivity because of youth unemployment. He maintains that youth unemployment in MENA countries is about 4 to 5 times that of adult unemployment, despite their being the most educated segment of the population. In the same report, published by UNDP (2010), it is reported that in Egypt youth unemployment constitutes two thirds of the unemployed population while in Iran it is about 70 per cent.

**Box 1,** below**,** describes the situation in Iran while **Box 2** illustrates the situation in Egypt. The views illustrated in the boxes are confirmed by Naderi (2006) and Finaye *et al.* (2008). The latter argue that in Nigeria for every 100 graduates, 22 are unemployed.

---

**Box 1: Youth Unemployment in Iran**
In 2010 Iranian youth, aged 15-29, are 35 per cent of the total population, which is the highest in any country. They have achieved an impressive increase in education, especially women, but face inhospitable labour markets. University educated young men and women have higher unemployment rates than those with less education. Although the government has slowly liberalized the formal labour markets, the youth still face huge challenges in finding a job after graduation. The rates are about 5 *per* cent for workers 30 years and older but several times as high for younger workers. In fact, the 4 per cent rise in overall unemployment during 1996-2006 was entirely from younger ages.
During this period, the economy grew at a respectable 5 per cent per year and the government relaxed the labour laws somewhat to allow for short term contracts in the public and private sector, which the youth took advantage of but was insufficient to absorb the nearly one million new entrants that out-numbered 6 to 1 the retiring cohort of workers. The good news is that the so-called "youth bulge" is about to move through, and the rate of entry into the job market will decline by 10 per cent per year for the next ten years.

---

**(Source: Saheli-Esfahani, 2010)**

Box 2. Mismatch of Skills in Egypt

Compared to the other two large countries of the region, Iran and Turkey, Egypt is poorer and less developed but it has the highest ratio of the tertiary educated — 29 per cent compared to 11 per cent in Iran and Turkey. This undue emphasis has its origin in the incentives for education set by the policies of the1960s when the government promised all high school graduates jobs in the public sector. Over time, as the public sector has out its ability to absorb educated workers, the promise weakened changed to a job guarantee for college graduates and later to long queues for all.

The 600,000 graduates of Egyptian high schools and universities who look for their first job each year face a deteriorating labor market condition. Assaad and Barsoun (2009) present evidence showing that the public sector as the most important destination for new labor market entrants has been replaced by *informal* private wage employment, rather than formal private sector jobs. While the structure of labor demand has changed, the education system continues to supply the market with over a million of high school and college graduates each year looking for formal employment. The formal private sector has been growing since 1990, possibly aided by economic reforms since then. Hopefully, someday these reforms will lead to the emergence of a vigorous private sector capable of competing in the global markets and create enough formal jobs to reinvigorate interest in the Egyptian society about investment in human capital at par with the interest in formal schooling that the expansion of public employment did decades ago. To do so, it must do more than create jobs for educated workers. It must also be able to reduce the mismatch of skills by influencing the supply side, that is, the type of graduates that the education system produces. The labor market reforms of 2003 have increased the discretion of private employers in rewarding productive skills instead of formal credentials. Gradually, such reforms will shift the incentives of families, students, and teachers toward investing in productive skills and away from production of diplomas.

**(Source: Salehi-Isfahani, UNDP, 2010**)

In the literature several reasons are put forward that could explain unemployment of graduates and that this may be the result of factors, such as:

- **Types of qualifications and fields of study chosen** by students which may result in a qualification mismatch. This mismatch occurs when graduates end up in jobs for which they are either over- or under-qualified because of the lack of jobs in their specialised areas or oversubscription in that particular field (Quintini, 2011). Furthermore, it is suggested that this may create an impression that higher education has not performed its role well when that may not be the case. Pauw *et al.* (2008) and Cosser (2010) argue that students in South Africa, for example, seem to choose what they want to study - irrespective of what is happening in the labour market. Therefore, one may conclude that fields of study should be aligned with labour prospects in those areas to reduce unemployment.

- **Skills mismatch** occurs when skills held by a worker or graduate do not match the ones required by the job. In his report Sahel-Isfahani writes that in the MENA countries the labour system, which was dominated, predominantly, by the public sector - as it is the case in Botswana - emphasised the employment of graduates based on diplomas at the expense of productive skills. The private sector - one of the main employers - later reversed the emphasis resulting in a number of graduates being laid off work because of their low productivity, resulting from their un-employability (Salehi-Isfahani, 2010).

- **Labour market paradox** is where the expectation is that with the demand for highly skilled graduates in the labour market, graduates will obtain employment. From what is happening in

the MENA countries, the opposite seems to be the case (Pauw, *et al.,* 2008; Cosser, 2009). There is also the issue of the sheer economics of supply and demand where the supply of labour may be more than the demand which results in disillusioned graduates who find themselves without a job. Egypt is one of those countries where labour laws were relaxed to allow companies to hire and then lay-off workers if they were not productive (Salehi-Isfahani, 2010).

It is, perhaps, because of some of the points discussed above that Yorke (2004) and Harvey and Bowers-Brown (2003) maintain that it is difficult to guarantee employment because of a number of external variables, such as the ones mentioned above and, hence, the focus on the ability to get a job and not employment. Therefore, they define employability in terms of graduates' achievements and their potential to acquire 'graduate jobs'. Yorke (2004) further suggests that employability is not a phenomenon for new graduates or young people only - it is a concept that affects everyone. He defines employability as "a set of achievements - skills, understanding and attributes – that make graduates more likely to gain employment and be successful in their chosen occupations – which benefits them, the workforce, the community and the economy" (York, 2004, p. 410).

Yorke's definition of employability is adopted in this study because it focuses on the ability to get a job based on the knowledge, skills and competencies that graduates have. It does not focus on employment, but rather on the ability to perform at an expected level and standard. Harvey and Bowers-Brown (2003) expand the concept of employability by arguing that it is also about developing a range of attributes and abilities and not just 'job-getting' skills. They go further by arguing that employability should not be seen as training or developing 'core skills' for employment, but as the holistic development of an individual. They conclude by saying that the relationship between employability and higher education, therefore, is like that of a marriage - one cannot thrive without the other and there must be agreement between the two.

Thijssen (2000), on the other hand, feels that employability for an individual should mean a good job in the sense of what type of job it is and that the job should match technical ability with the qualification that one may have obtained from the programme of study - what is sometimes referred to as 'fitness for purpose'. He looked at employability in terms of employment and came up with the notion that employability is a chance of obtaining work and he distinguishes between three types of work:

1. Work in the sense of employment from the point of view of society and government. Employability here is used as an indicator of a chance of full employment.
2. Work from the point of view of the employer. Here it is an indicator of the possibility of matching labour supply and demand.
3. Work in the sense of a good job from the point of view of an individual according to his/her chosen field of study. Employability here is used as an indicator of the chance of a job or career.

Thijssen (2000) further argues that if jobs are scarce, then graduates may be willing to accept any job - irrespective of whether or not it matches their qualifications to avoid unemployment. This scenario, typically, leads to a qualification mismatch which may, consequently, lead to a skills mismatch. It is important to understand occupations suitable for each field of study. If that is wrongly interpreted, then the result may be over-qualification or under-qualification and may result in the incorrect implication that higher education has not performed its role well (Quintini 2011). The same report argues that workers who may feel that they are either over-skilled or under-skilled may be because they are in jobs that are not challenging in terms of responsibility or that they may be less demanding, in general. Those who are under-skilled may be in more demanding jobs - especially in terms of computing skills.

Watts (2006) alludes to the fact that looking at employability in terms of immediate employment is problematic and restrictive. He states that the focus should be on the possession of personal attributes which help graduates into 'graduate jobs'. Like Yorke (2004), Harvey and Bowers-Brown (2003) also argue in terms of a graduate job and not any job. The idea is that graduates should possess certain attributes that will make them easily employable and work–ready, but does not necessarily mean that graduates would not need further training on the job - what is sometimes called 'hitting the ground running.' However, Watts (2006) is of the opinion that employability should not be time bound, where graduates are expected to get into employment, say six months after graduation. The focus should be on whether they are employable or not. Likewise, Cox and King (2006) suggest that employability does not, necessarily, mean that graduates can do the job immediately and that they will not need further training in the future. According to the latter, employability embodies two aspects: transferable skills which graduates will need for the rest of their working lives and subject skills which are specific to a particular job.

Mason and Cramer (2009) define employability in terms 'work–readiness', i.e., the possession of skills, knowledge, attitudes and commercial understanding that will enable graduates to hit the ground running. They argue that when recruiting graduates in engineering and science-related disciplines, the employer will often seek work experience and evidence of commercial understanding which is ranked first in the recruitment criteria because employers look for graduates who will not take long to master their jobs. They maintain that the move is now towards an understanding of the world of work which goes beyond the acquisition of generic or transferable skills. This includes general knowledge about the ways in which industry or organisations work, their objectives and how people in these organisations do their work – hence, the importance of internships and attachments or work placements. These give students opportunities to apply their learning; to develop skills needed in the workplace; and to enter the professional job market, while work placements are also an opportunity for employers to benefit from students' knowledge and skills and to test whether or not they could employ them on a full time basis.

Furthermore, Mason *et al.* (2009) make a distinction between 'fitness for purpose' and employability. They argue that 'fitness for purpose' is defined in terms of graduates securing employment in jobs that are related to their area of study where they are able to make use of skills and knowledge developed in the course of their studies. Like the Quintini (2011), they suggest that a mismatch could occur when an individual graduate fails to secure employment within their qualification or when there is an under-utilisation of graduate level skills learnt during the course of study, in which case higher education institutions cannot be blamed for not preparing graduates well for the world of work. The authors also make reference to some of the challenges graduates may face, such as a lack of information about jobs and female students taking up part-time jobs because they have to care for their children.

Aamodt and Havnes (2008), on the other hand, define employability in terms of the qualifications that graduates have. They argue that higher education provides students with qualifications that will be used to employ them. They further suggest that for students higher education is a source of a qualification for a specific job and a springboard to their future success in life. Therefore, for graduates obtaining a job depends on their qualifications and how they meet the demands of the labour market, i.e., the qualification requirements, the availability of jobs in their respective areas and recruitment policies used. They contend that employability goes beyond just getting a job, it also includes growing in the job, progression and the ability of moving to other types of jobs that are more satisfying for the individual.

Hennemann and Liefner (2010) and Hatfield (2007) define employability in terms of the competencies that graduates have. They see competency as the ability to apply both skills and knowledge in different work–based environments. According to these authors, a professional is a person who is able to use both knowledge and skills in changing work environments and tasks. They further suggest that competency can be learned and taught during university education through, for example, the 'skills bank' approach which forms part of skills-based learning (Hatfield 2007). Hennemann and Liefner add that employability is a multi-faceted concept which has a number of elements, such as individual factors including job seeking skills, adaptability and mobility and personal circumstances, such as household, work culture and access to resources. It is also influenced by external factors, such as human resource issues, recruitment methods, labour market demands and macro-economic situations - all of which cannot be taught. All these factors influence the employability of an individual.

Forrier and Sels (2003) suggest the importance of individual and personal factors and how they affect employability by distinguishing the following aspects:

- **Movement capital**. They stress the importance of an ability to move within the labour market system. They argue that employability is not a once in a life time chance of getting a job and staying in that job forever. It is about the ability to move either within the same job by changing positions; moving to another location; or moving to a completely new job. Therefore, they define employability as "the individual characteristics and competencies that influence the chances of mobility in the labour market" (Forrier and Sels, 2003, p. 110).

They further maintain that the individual's skills and knowledge are not enough on their own if the individual does not have the ability to find information about new positions. They stress one's 'social capital' as critical in identifying opportunities. Furthermore, it is argued that this aspect of employability is rarely considered when doing research. They are of the opinion that career expectations or preferences are important as factors that influence a decision to move. This dimension is particularly important with respect to students of Environmental Science as their ability to find jobs and their willingness to move to any location where they can find jobs is of interest in this study.

- **Ease of movement**. This is related to movement capital in the sense that it looks at individuals' perceptions concerning their ability to move within an internal and external labour market. It concentrates more on the attitude of individuals and their perceptions about what is available and what they think about the opportunities out there. The issue of attitude is important, particularly with young graduates, and that was be pursued in this study**.**

- **Willingness to move.** The willingness of individuals to accept what they may perceive as opportunities either within the organisation or with a new employer is critical. This is termed 'knowing why', i.e., individuals knowing why they should move and why they should stay where they are. There may be constraints, such as family, that deter individuals from taking up opportunities elsewhere or even in the same organisation. A young mother may be limited as to where she can go. An individual may simply prefer the current geographical location. This could apply particularly to young graduates. It would be important to explore this point with students and graduates of Environmental Science.

- **Activities maintaining or enhancing one's movement capital.** These are activities, such as training, task enrichment or task enlargement in the work place which enhance one's skills to remain employable. This study is particularly interested in examining training opportunities that employers offer to new graduates for them to be 'fit for purpose'.

- **Opportunities and willingness to maintain and enhance one's movement capital.** This aspect is similar to the one above, except that here the authors have added the willingness of the individuals to take up these activities. They argue that in some research the emphasis on training is put on the individual while in others the emphasis is on the employer. This research focuses on both the individual and the employer and it goes further to examine the role played by higher education in enhancing graduates' employability skills.

- **Context**. This constitutes external factors, such as the labour market, which could impede or enhance mobility and includes the availability of jobs and Human Resource (HR) recruitment processes and policies. It is argued that companies may discriminate against certain groups of people by ruling out or grouping them according to individual or group characteristics, such as gender or race. Companies may have a preference for graduates, for example, from certain HEIs. These factors are outside the individual's competencies or technical expertise. It is of great interest for this study to examine the recruitment processes

used by industry to employ graduates and what factors impede or enhance the recruitment of graduates of Environmental Science within the labour market.

- **Transition**. Transition is also related to the position of the labour market. The authors attempt to show how transition is related to all the aspects listed above. They argue that some applicants would consider transiting between one job and another as an indication of employability, irrespective of the type of job, while others consider the type and quality of the job to be important. The types of job that graduates of Environmental Science obtain are important as they would be a good indicator of their employability.

- **Shock events.** These are events that are, normally, beyond the control of individuals which prevent them from accepting opportunities elsewhere or within the labour market. Forrier and Sels (2003) give examples, such as a partner who moves to a different region or country; losing a job because of a merger; or simply because of work-related disputes resulting in one leaving his/her job. While they argue that little research on employability takes this into account, this study examines such factors in determining the employability of graduates.

- **Labour market position**. The authors see the current labour market situation as the external labour market. Employability is also about the availability of jobs and what employers want and consider right for their organisation. Therefore, the current labour market and its dynamics provide an indication of an individual's current opportunities to secure a job. This study focuses on a specific group of people, i.e., graduates and students of Environmental Science and their employability within the current labour market situation.

Figure 2.1, below, illustrates the factors explained above. As a result of the different dimensions and definitions of employability, Forrie and Sels (2003) decided to focus on the processes that lead to employability. As such, they argue that employability is not static but is constantly changing, depending on a number of complex variables which have been mapped out in their model. The model illustrates factors affecting an individual's chance of getting a job within the internal and external labour market.
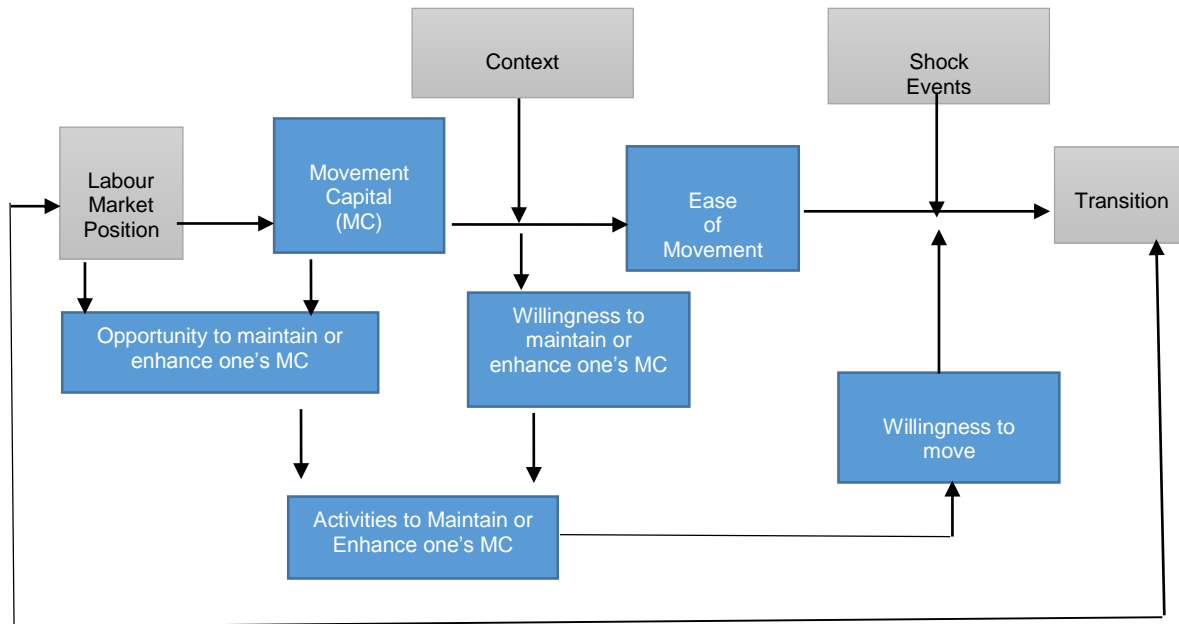
(Source: Forrier & Sels, 2003, p. 108)
**Figure 2.1: The Employability Process Model**

Having considered all these external factors that influence the employability of graduates, Hennemann & Liefner (2010) and Hatfield (2007) suggest that competency can be integrated in curriculum design and taught while employability, on the other hand, cannot be taught. Therefore, their argument is for the development of the right skills and knowledge needed for entering the job market as it is critical and should be the focus of higher education (HE). Kouwenhoven (2009) defines competence as the ability to perform a task to a required standard. In this study competence is defined as the ability to apply skills and knowledge learnt in a work-related environment Hatfield (2007) and Hennemann and Liefner (2010) which also embodies ones attitudes and values which may be partly influenced by their environment. As the gap between vocational and academic education narrows (Stern & Wagner, 1999; Hager & Hyland, 2003), the gap between "classical" discipline knowledge and the know-how needed for a new job is also narrowing (Kouwenhoven, 2009). As a result, institutions of higher learning are moving closer to industry to work together - so that they may know what is required from graduates and how they can measure their quality.

Competence is one way of measuring the quality of graduates and their fitness for purpose. This concept, therefore, goes beyond the mastery of a skill and comprises the ability to perform tasks to the required standard, using the skills learned. It is further argued that competence is a holistic term which includes cognitive, psychomotor, personal attributes and affective skills (Kouwenhoven, 2009). In his framework Kouwenhoven (2009) explains that performing a given task involves intentional actions by an individual, using activities that are consciously planned, monitored and regulated and by using certain attributes, such as knowledge, skills and attitudes, and the professional characteristics of the individual (see Figure 2.2, below). He further contends that performing at a required standard does not only require the right knowledge, skills and attitude, it also requires the right frame of mind, i.e.,

emotional and physical factors that directly influence the performance of the individual. If, for example, the work environment is not conducive, the supervisors shout at their subordinates or the employees are worried about a sick member of family, this may impact negatively on their level of performance. An employee might panic or worry and, as a result, may not be in the right frame of mind to adequately conceptualise the tasks. These are some of the personal factors or attitudes that could influence individuals' performance at work - irrespective of the skills and knowledge they may possess.
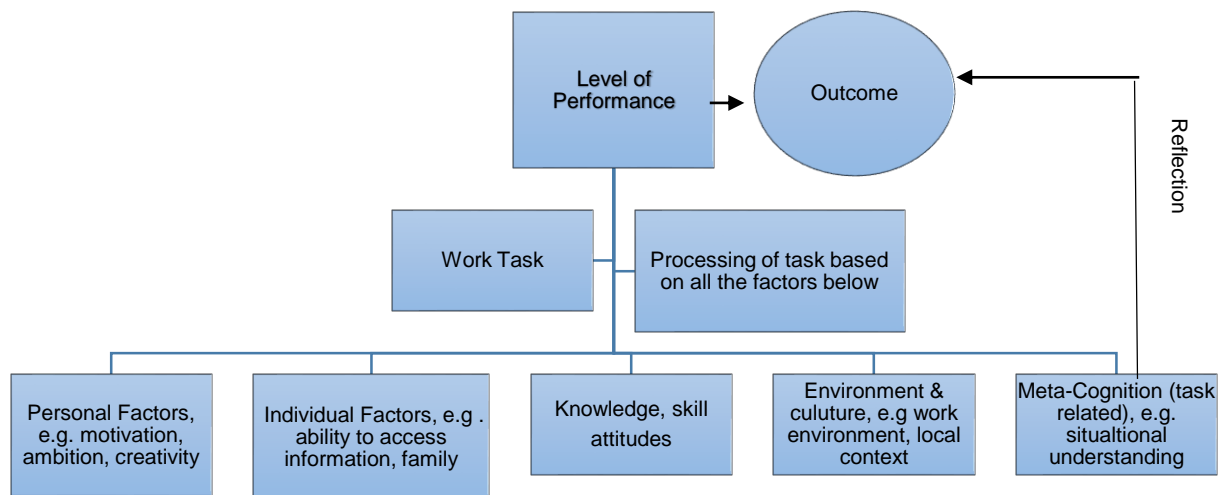


(Source: Adapted from Kouwenhoven, 2009)

**Figure 2.2: A Model of the Cognitive Aspects of Task Performance**

The environment within which employees operate may also affect the way they perform. The culture of the actual workplace, work ethics and the local context are other factors that may influence the way the individual understands and perceives the given task and the ultimate performance which is, in part, determined by the supervisor. As such, "performance" in its true sense - according to Kouwenhoven (2009) - is determined by "intentional actions", which are activities that are consciously planned, monitored, regulated and which are based on certain attributes, including knowledge, skill and attitudes and the personal characteristics of the individual. In the model other factors, such as individual, cultural and local context, have also been added.

Kouwenhoven (2009) goes further to observe a distinction between 'core competencies' and other competencies which he argues can either be domain-related or generic. He defines core competencies as those competencies that are appropriate and which are needed to successfully complete a key occupational task at a superior level. He further argues that core competencies can either be domain specific to a particular field or generic, meaning that they are transferable from one field to another. The latter are cross-cutting and can be applied to all fields of study. They are, therefore, basic and are

needed in life – hence, the term 'life skills'. Among others, these may include: problem solving, IT skills, working with others, communication and numeracy - which in the UK, he contends, are called "core skills", yet they are actually generic competencies. These are part of the 21st Century Skills. For graduates to be competent professionals and employable they need to possess both generic and domain-related competencies. A lack of generic competencies will render graduates less competent - as has recently been seen to be the case within the German education "dual system" (Gibbons-wood & Lange, 2000). Like Hennemann and Liefner (2010), they argue that both types of competencies can be developed while studying.

However, according to Gibbons-Wood & Lange (2000), the development of generic competencies or core skills is the responsibility of the employer, a contention which was supported by Siemens in Germany. They argue further that Siemens believed that a lack of core competencies or "core skills" among employees or graduates was an indication of weak in-house training on the part of the employer. Core competencies can be acquired by means of life-long learning where employers understand that it takes time and some coaching and mentoring for graduates to learn these skills. Employers need to be patient and willing to train their newly employed graduates because core competencies relate to work tasks and related procedures that can be learnt, mostly, in the work place and not in the classroom. They maintain that some core competencies cannot be taught, but should be encouraged and built within the individual. Hence, there is the notion about "intentional actions", personal and individual attitudes which are called cooperative self-development in the German "dual system" of vocational education. This is a system whereby an individual trainee knows that he learns with others and from others through self-managed activities which fosters core skills, such as organization and communication. However, from the experience of Germany and Sweden it is clear that companies, alone, cannot foster the acquisition of core competencies. Gibbons-Wood and Lange feel that these have to be embedded within the education system. Companies cannot be expected to operate like educational institutions nor do they have the resources to do it. Perhaps, only big companies, like Volvo and Siemens in Sweden and Germany, may be able to afford such initiatives.  Small and medium size companies would be at a disadvantage, unless government provides some incentives.

Finally, Hatfield draws a distinction between skills and competencies which are components or sub-sets of employability. She defines skill as "performance at a defined level and to an agreed standard" (Hatfield, 2007, p. 239). She further argues that skill is "an observable component of competence" (2007, p. 240). In addition, she differentiates between competence and competency. She suggests that the latter is the ability to perform a specific task at work or what she calls "specific capability", while competence is an overall term to mean capability or ability. In this study competence and competency mean the same thing. The definition of competence that is used in this study is the one which was defined by Hatfield (2007) and Hennemann and Liefner (2010) whereby competence is the ability to apply skills and knowledge learnt in a work-related environment.

**2.3    REVIEW OF LITERATURE CONCERNING VIEWS ON THE ROLE OF HIGHER EDUCATION IN GRADUATE EMPLOYABILITY**

Some authors argue that higher education has a role to play in ensuring the employability of graduates, while others argue that it is not the role of higher education to impart employability skills to students. This section discusses ideas expressed by various authors around the world concerning how they perceive the relationship between higher education and employability of graduates. Section 2.3.1 discusses the view that higher education should impart employability skills - which in this study are part of 21st century skills. Although the authors cited in this section are, generally, in support of the relevance of higher education for graduate employability, there is always an underlying element of complexity in any discussion of the positive role of HE in enhancing employability.  Section 2.3.2 focuses on those views that disagree that higher education should be seen as the key for ensuring that graduates have employability skills.

**2.3.1    Views on the Contribution of Higher Education towards Employability of Graduates**

The quality of higher education has been of great concern throughout the world because of its impact on the quality of graduates - as espoused in the previous section. Higher education is seen by many as providing a highly skilled human resource or human capital that drives the economy for sustainable growth (AfriQan, 2009; World Bank, 2011; Schomburg & Teichler, 2006). Furthermore, higher education is expected to contribute to economic growth and to the socio-economic betterment of individuals and, by so doing, reduce social inequalities. According to Schomburg and Teichler and Forrier and Sels (2003), issues concerning the relationship between higher education and employment emerged in the 1990s and resulted in major policy debates and a focus for research in Europe and the rest of the world. These concerns came about as a result of growing mismatches between the increasing demands for qualified labour and the rapidly growing numbers of higher education graduates. It is argued that during the 1980s the relationship between higher education and employment was not a major concern for debate, but in the 1990s the concerns returned to centre stage with many more issues raised. These included

> *'the increasing speed of turnover of knowledge required in jobs, the dramatic structural changes of the labour force in the wake of the introduction of new technologies and new managerial concepts, the globalisation and Europeanisation of the economy and society, the rapid "massification" of higher education since about the mid-eighties in many industrialised societies, increasing unemployment etc.' (Teichler and Schomburg, 2006, p. 3).*

The above mentioned issues brought about a need for the re-structuring of higher education. The relationship between higher education and development became more evident and it realigned its goals of producing graduates that were fit for purpose.

While that may have been the case, around the 1980s in the Netherlands debates were focused on whether training should improve relevant qualifications or develop graduates' capabilities to adapt to the changing demands of the labour market (Allen and Vande Velden, 2001). It was argued that because of pressure from the labour market, the focus should be on providing technical instrumental qualifications. By the 1990s the emphasis switched to competencies which were regarded as "learnable and teachable" to help graduates perform basic tasks and adjust to changing labour market demands. Furthermore, Allen and Van de Velden suggested that the link between education and the labour market should be flexible because it was perceived by many that "a direct translation of demands from the labour market into educational curricula was undesirable and in fact not realisable" (Allen & Van de Velden, 2001, p. 50). They further maintained that the demise of higher education institutions (HEIs) as autonomous entities or regimes - as they call them – occurred during this period. They were now seen as

> "providers of human capital for the knowledge economy, whereby the main emphasis was placed on competencies related to team work, problem solving, creativity and analytical abilities. These competencies were seen as characteristics of competent and broadly employable graduates" (Allen & Van de Velden, 2001, p. 50).

The relationship between HEI and the world of work was emphasised and programmes in HEI had to be designed in such a way that they provided graduates with these competencies in terms of the knowledge they gained and how they could apply it to practical work situations. This is still the case today and, hence, the difficulty of underpinning what HE should do to better prepare graduates for the world of work.

The results of the graduate survey in 12 European Union (EU) countries and Japan - as analysed by Schomburg and Teichler (2006) - revealed that the transition from higher education to the world of work was much smoother and more positive than was envisaged – perhaps, because the economy was good at that time. According to this study, most graduates spend roughly six months on average looking for a job and about 84% gain employment within four years of their graduation. This implies a positive relationship between the supply and demand for jobs. However, employability was measured in terms of employment rates and not the effectiveness of graduates in their jobs. The results also reveal that most graduates felt that HE prepared them well for work but not to the extent that they did not require further training on the job. According to the survey, many graduates do not see close links between their areas of study and employment. It is argued that despite planning and policy interventions by governments to balance the quantitative supply and demand of highly qualified personnel, the mismatch is believed to be widespread. The mismatch was seen in terms of supply meeting demand not the quality of graduates or their 'fitness for purpose' as may be perceived by employers.

Allen and Van de Velden (2001) analysed the same data, but focused on the Netherlands. The main aim of their research analysis was to establish the relationship between educational mismatches and skills mismatches and how these affected wages, job satisfaction and the desire to move to better paying jobs. A model was designed to analyse the relationships, using a logistic regression analysis. Educational mismatches were obtained by comparing the acquired levels of education and field of study

with the level and field of education required for the job. Skills mismatches were obtained from the statements made by workers in response to the question relating to their job satisfaction, such as "I would perform better in my current job if I possessed additional knowledge and skills" (Allen and Van de Velden, 2001, p. 449). The results were analysed based on what they call the "assignment theory" which, according to the researchers, assumes that educational and skills mismatches are closely related. This means that educational mismatches for a job would imply skills mismatches which, in turn, affect productivity and job satisfaction.

Their findings, though, reveal that educational mismatches are not closely related to skills mismatches nor are they a condition for the skills mismatch. It was argued that a skills mismatch on its own does have a strong effect on job satisfaction which might result in an individual looking for a new job. This finding can, therefore, be interpreted to mean that higher education, in general, does not provide skills for specific jobs and that these would have to be obtained through further on-the-job training. They recommended that further research be done on the validity of using skills mismatch as an indicator of employability. If employability is about the knowledge and skills graduates have to make them more employable, then not having the right skills for a particular job - no matter what the cause may be - would affect graduates' employability.

Nunez and Livanos (2009) conducted a similar study, based on micro data from the 2005 European Unions' Labour Force Survey (EU-LFS). Interestingly, their research revealed that higher education decreases the chances of unemployment and implied that employability of graduates was positive at a time when research, generally, came to the opposite conclusions. Nunez and Livanos further argue that programmes, such as education, engineering, services and tourism, appeared effective in avoiding short term unemployment while the sciences and computer and health-related programmes prevented long term unemployment. Their finding could, possibly, be attributed to the skills that these programmes offered and, perhaps, the need for such skills in the labour market at the time. In these reports, employability is addressed both in terms of the ability to get a job and employment rates in any job - not only in graduate jobs.

Aamodt and Havnes (2008), on the other hand, argue that in the EU employability includes elements of lifelong learning because an individual cannot learn all there is to learn for use in the future. It is suggested that higher education provides graduates with qualifications that can be used for employment and as a springboard to future successes in life. Their study was conducted in Norway and was based on a panel survey conducted in 2006 which followed a student cohort from the time of enrolment until graduation and three years into their working life. They identified factors affecting job mastery amongst graduates and established a relationship with the programmes pursued in higher education. The study also looked at the impact of on-the-job training. A job mastery index was calculated using the sum of the responses obtained from the questions asked. One of the questions asked, for example, was: "How satisfied are you with the quality of your job performance?" (Aamodt & Havnes, 2008, p. 239). The responses were given on a five-point Likert scale with the highest figure implying the more positive response. The results indicated that employability measured in terms of job mastery was an effect of

on-the-job training, not of higher education and how much support - in terms of training - the graduates received in the workplace (Aamodt & Havnes). It was argued that as graduates' job performance is only to a certain degree shaped during their formal education, it has to be further developed through on-the-job training.

It is worth mentioning at this point that Aamodt and Havnes (2008) suggest that labour market influences may also affect the employability status of an individual and that it is not all about qualifications and competencies. They argue that if at one point there is a high demand for people in a certain field then more graduates, including those who lack employability skills, may obtain jobs, but if job prospects change then the employability skills of individuals will be critical. Therefore, employability goes beyond the point of being employed and having positive attributes and competencies presumed relevant to employment, but also includes labour market issues. It is further argued that in many of the EU countries (as in Botswana) governments used to be the main employer in the labour market, employing many graduates. However, with the recent massification of tertiary institutions public service can no longer serve that purpose, leaving many more graduates unemployed.

This caveat is demonstrated in a study conducted in Botswana by Ama (2008) to investigate whether or not graduates thought their jobs were aligned with the level of education and the programmes they had studied. The graduates who constituted a stratified sample of 550 were from the Faculty of Social Science who graduated either in 1998 or in 2003. The results show that 72.5% of the graduates felt that their jobs were appropriate to the level of their education and the programmes studied and 75% of these were employed by government. Ama (2008) argues that since over 70% of the graduates were in employment that matched their level of education, this is indicative of the quality and versatility of programmes. One may, however, argue that it does not follow that the programmes were of a good quality but, rather, that it may be a question of the availability of jobs - especially as most were in the public service. More importantly, the study did not involve the employers; it focused only on the graduates. The employers' views on the employability of graduates was not captured. A similar scenario is reflected in the work of Salefi-Asfahami (2010) who argues that in the MENA countries the majority of graduates are employed by government - irrespective of the skills they have. He argues that the rise in oil income has resulted in an increase in well-paid government jobs which are rationed and are based on university degrees and not productivity. A situation like that cannot be an indication of the employability of graduates as it turns out that the skills mismatch resulting from promoting the acquisition of degrees at the expense of productive skills has been reversed by the private sector that virtually refuses to employ graduates who cannot perform at work (Salefi-Asfahami).

With the massification of universities, governments in many countries put pressure on universities to produce graduates who are fit for purpose and who could enter various sectors of the economy (Aamodt and Havnes, 2008; Salefi-Asfahami, 2010; Nunez and Livanos, 2009). In Norway universities had to incorporate employability into the general undergraduate degree programmes as the risk was that with the reform of the universities in 2003, if employability skills were not incorporated, students would go to

other institutions which offered better opportunities for the world of work (Aamodt and Havnes). This observation was also made by Maharasoa and Driekie (2001) in their case study of three South African universities, conducted in 2000, involving a historically white English university, a historically white Afrikaans university and a historically black university. The aim of the study was to establish the expectations of university students concerning higher education and employability and whether institutions, themselves, shared the views of their students. It is reported that about 59% of graduates between 1991 and 1995 tried to find jobs immediately on completion of their studies. Those who were successful in securing jobs, immediately, were graduates of the more professionally oriented programmes, such as Medicine and Engineering, as opposed to arts-related programmes, like Law, and others like Natural Sciences. That may, perhaps, be because professional programmes are more practical and skills-oriented, making them more closely linked to labour market needs than others. It may also be a reflection of the demand within the labour market at the time. The results show that graduates from the historically white universities had a 65% success rate in securing jobs immediately as opposed to 28% of graduates from historically black universities. The results also reveal a concern in the levelling of the playing field in terms of employability of graduates which contributes to the complexity of the concept and what HEIs can do to enhance the employability of their graduates. If employers prefer graduates from certain institutions, this makes it difficult for institutions to justify infusing employability skills into their curriculum for the purposes of enhancing employability of their graduates. However, if they do not go with the flow, they stand the chance of perishing.

Maharasoa and Driekie (2001) argue that universities that do not contribute to graduate employability are wasting government resources and students' time and energy. This view was confirmed by the students they interviewed in the sense that employability was one of the main factors influencing their choice of programme to study. As a result, it was argued that universities and vocational institutions ended up introducing the same type of education to enhance employability skills, causing some uncertainty among academics in HE. This view is supported by the HEFCE (2011) report which suggests that graduates are more likely to be more employable with the necessary employability skills if institutions work closely with employers, especially during programme reviews. It is further argued that the best universities in the world are building fortifying links with businesses, both to maximise innovation and promote growth and to ensure that graduates exit their institutions well-equipped to excel in the world of work. The report also suggests that these links are buttressed through knowledge exchange programmes, attachments, technology and research and curricula development. It recommends that more work to be done by institutions of higher learning in the areas of how businesses can be engaged in research directed at teaching to promote better teaching and learning, employer sponsorship, innovation and enterprise.

The recommendation refers to two models of co-operation: Model One (Local), reflected in Figure 2.3, suggests a group of employers or individual employers coming together to work with a local HEI and a chosen sector industry to establish a set standard of course content to meet professional or accredited

standards. Sector skills councils or committees could provide guidance and help institutions and employers come together to establish such linkages.

> ### Hewlett-Packard
>
> An example was given of Hewlett-Packard that formed a partnership with the University of West England (UWE) - a local institute. The partnership created a new programme, a BSc (Hons) in Enterprise Computing. Students from this programme are expected to take special HP Expert One examinations and go for attachments within the industry to gain both work experience and an industry recognised qualification and degree.

**Figure 2.3:  Model of Co-operation - Local** (Source: HEFCE, 2011)

Model 2 (National**)** in Figure 2.4 suggests that a group of industries should establish linkages with a number of institutions in various countries to establish specific programmes targeting those industries.

> ### Skillset Media Academies
>
> A number of higher education institutions, individually and together, have been awarded the title: 'Skillset Media Academies'. These institutions were recognized by the audio-visual sector, in collaboration with Skillset SSC, as offering provision that is industry relevant. In addition, Skillset and representatives of the video games industry have developed an accreditation scheme at course-level, where ten games programming and games art courses at seven universities (De Montfort, Sheffield Hallam, Teesside, Abertay Dundee, Glamorgan, Hull and West of Scotland) are currently recognised as strictly complying with industry standards for content. Graduates from these ten Skillset-accredited courses or programmes are almost three-times more likely to have gained employment in the video games industry six months after graduation than those from non-accredited courses.

**Figure 2.4: Model of Cooperation – National** (Source: HEFCE, 2011)

The HEFCE report suggests that this is a powerful way for institutions to prepare new programmes which target new careers and advertise them to prospective students. They provide both soft skills and knowledge that will enable graduates to transit comfortably into the world of work.

The approaches presented above directly address the concerns put forward by O'Leary (1995) who critiques the absorption rate of the labour market, using the results of a survey conducted by Business/Higher Education Round Table in 1992. In her paper she alludes to the fact that employers in Australia were looking for generic skills among graduates which, she argues, were valued more than the professional skills. She continues by saying that the ability to communicate both orally and in writing and a lack of ability to apply knowledge to the world of work seem to be major drawbacks among graduates. In her conclusion, she strongly recommends that universities should make an effort to include the acquisition of generic skills in their teaching otherwise graduates would be in danger of losing their competitive edge in the labour market. Her views may seem old-fashioned in terms of time frame, but these are still the issues that countries, like Botswana, are dealing with and, hence, the need for this study. The two models given above which were proposed and presented to Parliament in the United Kingdom (UK) by the Secretary of State for Business Innovation and Skills in June 2011 directly address the issues which were raised by O'Leary more than a decade ago. Indeed, it seems that this is the future direction that institutions of higher learning should take for them to survive and contribute to lowering graduate unemployment. Employability skills are not confined only to specific programmes, they are cross-cutting.

There is no doubt, though, that from the above discussion a number of scholars support the concept of employability and how it is intertwined with higher learning as a way of ensuring a smooth transition of graduates from higher education to the world of work. More importantly, the arguments made support the fact that HE has a role to play in providing such skills for students and, hence, employability in terms of the ability to obtain a job and progress within the job is used by many academics, quality assurance bodies and governments as a performance indicator for higher education and for determining the quality of graduates.

### 2.3.2 Views in Disagreement of Higher Education Being the Essential Contributor to Graduate Employability

Just as there is a great deal of literature supporting the role of higher education and its links with employability and the labour market - as evidenced in the above section - there is an equally large amount of literature disagreeing with the debate and contradicting the contention that higher education should provide employability skills (Boden & Nedeva, 2010; Yorke, 2006; Morley, 2001; Little, 2001; Holmes, 2001; Mason & Crammer, 2009). Some authors question the very purpose of education. The basic debate and arguments raised are whether it is the role of higher education to produce graduates as commodities to be consumed by the labour market or to provide education for the general development and well-being of individuals (Billet, 2009). Such arguments suggest that it is the role of employers to train graduates and to provide employability skills.

Boden and Nedeva (2010), for example, argue from the point of view of the massification of tertiary institutions in recent years which has resulted in large numbers of unemployed graduates - a concern of governments globally. They maintain that this disconcerting situation in the UK, for example, has resulted in a new relationship between universities and the state which, largely, funds and regulates them. It is suggested that the fear of unemployed graduates has prompted not only the UK government but many other governments to alter the role of universities to that of being centres of production of an appropriately trained workforce that meets employers' needs in an attempt to constrain unemployment (Boden and Nedeva). In their view, the new meaning of employability is what constitutes the definition of employability from HEIs to the state. It is argued that in the UK the state has increasingly gained control of the universities through quality control measures, such as audits, budgets, performance indicators and special initiatives. Furthermore, government has stepped in and determined what constitutes employability, identified employability skills and even attempted to measure university performance by measuring employability. It was reported that government declared that enhancing employability skills was the responsibility of higher education. Billet (2009) calls this shifting to "higher vocational education" where institutions introduce workplace concepts in the classroom. In addition, because of the concept of employability, educating students has "now become a mass, global corporatized business exhibiting almost the same characteristics of making cars" (Billet, p. 40). HEIs are expected to produce graduates with all these attributes and skills but it seems that many employers are still not happy, resulting in what is now termed a mismatch. This perceived 'mismatch' is one which governments are attempting to address. As a result, universities' performance in terms of the employability of graduates has been linked to quality assurance.

According to Mason and Crammer (2009) and Morley (2001), the level of understanding of labour market performance by employers may be very limited. They further suggest that any future work done by HE institutions to try to improve the employability skills of graduates needs to be informed by comprehensive surveys of employers to ensure that they know exactly what gaps occur in the employability skills of newly recruited graduates "and the extent to which they (employers) in fact take responsibility for providing training to plug such gaps in skills" (Mason and Crammer, p. 23).  This argument is important in that it is alleged that those institutions that retained control of their curriculum are very old universities that have their own financial resources, like the University of Oxford. Furthermore, it is argued that even though the curriculum of such institutions has not changed much to suit the employability agenda, their graduates are still highly employable. This casts doubt on the validity of the employability agenda.

Likewise, Yorke (2006) warns of interpreting employability incorrectly and the danger of aiming for things that cannot be achieved by higher education institutions. He sets out what employability is and what it is not in the following points:

- **Employability is not about employment.** He argues the danger of measuring employability by the number of graduates in employment - not graduate jobs, but any job - as an indicator of

employability. He is of the opinion that this is difficult because employment depends on a range of other things, such as environment, economy, society from which one comes, ones acquaintances and even the type of programme for which graduates enrol. That means that graduates should know which professions they could enter that may ensure their obtaining jobs faster than their competitors. He suggests that graduates should understand the labour market to which they aspire as different programmes would capture or incorporate employability differently depending on what is perceived to be needed in a specific field. He gives the example of Social Work and contends that it may emphasise negotiation and advocacy skills because those are critical in that field. History, on the other hand, does not demand those skills. The situation is complex because some graduates take jobs that are totally unrelated to their areas of study. Yorke (2006) maintains that some experience that graduates need for work can be obtained through internships, attachments or part-time work. The latter, he argues, cannot be included in the curricula. It would be up to the student to seek that experience themselves.

- **A curricular process.** It is suggested that it would be wrong to assume that experience either within HE or in the workplace would be sufficient to produce those characteristics required for employability. Yorke (2006) upholds the fact that having work experience does not, in itself, guarantee the attributes needed to enhance employability. The same thinking can be applied to the curriculum. He argues that the curriculum, itself, which contains attributes to enhance employability, does not guarantee employability and employment.

- **Employability as achievement**.  Employability should be seen as a potential, but the graduate must demonstrate the qualities of employability relevant to, or needed for, a specific job. Having a set of generic skills and certain competencies may not be sufficient for a specific job. It is suggested these will be of value, but not necessarily all that is needed.

- **Employer**. An additional point that could be made is that employability is also, mostly, about the employer and what he/she wants. The employer is, ultimately, the measure of employability because it is he/she who has to be satisfied. Consequently, HEIs may not know, precisely, what is needed but need to prepare graduates with a wide set of skills or core competencies and hope that they match some of the standards and expectations of the employers. Different employers may require different skills, making it difficult for HEIs to prepare graduates for the world of work. It should be noted that graduates are not just prepared for paid jobs and, therefore, what graduates perceive as employability is also a crucial issue.  Yorke (2006) contends that what graduates think about the extent to which they may be dissatisfied with their employability has not been well researched. Therefore, research should be done to find out whether they consider themselves to be well-prepared for the world of work or not. How confident they are about their employability status is critical if they are to demonstrate it - particularly those who go into self-employment.  This research directly address the views of graduates on their employability.

According to Yorke (2006), bridging the gap between what HEIs produce and what the industry needs may be accomplished, but the collaboration between the employer and HE may not achieve much

because the real issue is that of the transition from learning to working. He argues that the best that can be done to help students is to give them a jump-start in the form of knowledge, understanding, skills and attributes that they can use to fend for themselves in the rough waves of the labour market. He goes further by saying that

> *"the situation is a bit like the rocket-powered aircraft being lifted by a conventional one up into the stratosphere so that it can maximise its performance at altitude without a prohibitive expenditure of fuel to get there" (Yorke, 2006, p.13).*

Ultimately, it is argued that there will always be a gap and employers must be prepared to train employees to the level that is satisfactory to them. Yorke (2006) is of the opinion that much work-related learning will take place at work and that employers will always complain and be dissatisfied and, therefore higher education cannot do it all.

The research conducted by Mason *et al.* (2009) shows a positive relationship between the structured work experience students were involved in and their securing graduate jobs within 6 months of graduation. However, there was a lack of positive correlation between the teaching, learning and assessment of employability skills with graduates securing employment. This must be viewed against the backdrop of resource departments completing this exercise. They, like others, argue that the level of understanding of labour market performance of both HEI and employers may be limited and not have much impact on it. They argued that looking at graduates' employability 6 months after graduation may be too early to determine the effects of initiatives made by departments. Furthermore, it is suggested that the effect of teaching and learning may be felt later in the graduate's life at work, rather than soon after graduating. At the same time they believe that the effect of instilling communication and oral presentation may not have that much effect on the employability of graduates in the long run when they are required to learn specific job-related skills. The latter may become more important than the former, a statement that directly contradicts what was earlier suggested by O'Leary when she contends that the lack of an ability to communicate both orally and in writing among graduates in Australia seemed to be a major drawback for these graduates. She maintained that employers were looking for these generic skills. On the other hand, Mason *et al.* feel that it is on-the-job skills that are more important and that employers require. " The strongly positive effects of student work experience on labour market outcomes serve as a reminder that many relevant employability skills are probably best learned in workplaces rather than in classroom settings" (Mason *et al., p.*:23).

It is from this background that Mason *et al.* (2009) suggest that any future work done by HEIs to try to improve the employability skills of graduates must be informed by comprehensive surveys of employers to make sure they know exactly what gaps they perceive in the employability skills of newly recruited graduates "and the extent to which they (employers) in fact take responsibility for providing training to plug such gaps in skills" (Mason *et al.*, p. 23). They further argue that there may be very little gained by universities trying to develop skills that are, actually, best developed in the workplace after the graduates have started work. It should be noted that securing employment and having employability

skills are two different issues; securing a graduate job in itself is not a guarantee that graduates are employable nor does it mean they have work-related skills that match the expectations of their employers. More importantly, graduates and employers were not interviewed in this study to provide concrete evidence of the employability of graduates.

The preceding observations make a sound argument for more research to be done on issues of employability and what employers really want. When one assess the arguments made by Morley (2001) and Little (2001), it becomes even clearer that such research is essential. Although they did not conduct research, Little analysed the results of a study that was conducted across 11 European countries in 1995 and although that study was conducted more than two decades ago, some of the arguments made are critical and of interest to this study. They both argue that the concept of employability is too complex to be used as a performance indicator for the quality of HE and, certainly, not the right measure for gauging the quality of graduates. Morley contends that issues of employability are peculiar to each country and even within the same country the issues are not well understood and, at best, employability should be used as a means of prompting other quality issues rather than using it as an absolute measure. She continues by saying that even terminologies now used by the academy are being engulfed in metaphors borrowed from industry. "Boundaries between the academy, government and industry have loosened and been reformulated" (Morley, p. 131). She claims that businesses now play a powerful role in determining the purpose of higher education and that politics also plays a role in micro practices within institutions - even determining performance indicators for HE. Interestingly, Little asserts that when students, themselves, choose a specific university at which to study, they do not think about the employability rates of graduates from that university. This is in contrast to what Maharosa *et al.* (2001) conclude in their study conducted in South Africa. Little argues that employability rates of institutions cannot be an indicator of the quality of graduates when many other issues are involved in securing a job. This study was conducted over a decade ago and, perhaps, circumstances have changed.

Little (2001) concludes that self-rating skills, such as problem-solving, tolerance and learning abilities, say very little about quality. She argues that employers may not behave like rational consumers when employing graduates. The claim is that there are other variables, such as ethnicity, gender and the type of institution the graduate comes from, that may impact on the employability of graduates – an argument that other authors have made before. Furthermore, it is suggested that unlike in other European countries, in the UK, in particular, the socio-economic background of graduates is a major issue. It is argued that graduates from disadvantaged groups or ethnic minorities do not enter the job market as fast as the rest of the population. Like others, Little is of the opinion that employability is multi-dimensional and, therefore, one should separate employment from preparing graduates for the world of work.

In support of the above arguments Green *et al.* (2008) recommend that the focus should rather be on preparing graduates for self-employment - even though he cautions that higher education may have a

lesser role to play in influencing young people to be self-employed as opposed to influencing their socialisation habits. A survey was conducted in the UK in 2003 of 4334 graduates from 1999 through the use of a questionnaire which was initially sent to a sample of 38 institutions that the graduates came from. These were posted by the institution to the respondents. The findings of this survey reveal that students in the fields of medicine and education were less likely to become self-employed. The results also show that business-related subjects did not have an influence on graduates becoming self-employed. Green *et al.* claim that the acquisition of entrepreneurial skills, teamwork and leadership skills only initially play an important role in influencing graduates to take up self-employment, but in the long run there is no such evidence. This indicates that what students are exposed to while at university may not, necessarily, have an influence on what they become later in life. It also shows that skills acquired at school are not always used or are the reasons for the decisions graduates make later in life. This brings us back to the issue of employment and what role HE can play in ensuring that graduates are more employable.

Holmes (2001), however, has a very different perception. He argues that employers do not want skills, *per se,* in graduates but, rather, graduates who are 'self-starters', have confidence and enthusiasm – which has nothing to do with skills. He calls these characteristics and, therefore, according to Holmes getting into a graduate job is not about matching skills required with skills possessed. It is argued that the way graduates behave and perform in a work situation depends on the conditions or kind of environment they are operating in and their individual attributes which has nothing to do with employability skills that have been learnt. One may say that according to Holmes employability is not about skills learned but, rather, about attitudes and the manner in which graduates behave or act in the workplace. Hence, he argues it is critical that what the employer expects from the graduate is understood and the interpretation of the performance given by the graduate must also be understood by both parties. For HEIs to start thinking of improving the curriculum to enhance the employability of graduates, they must understand exactly what goes on in the workplace. Holmes argues that there is a possibility of misunderstanding between the graduate and the manager about what is expected and what constitutes a competent performance - which has nothing to do with skills. He maintains that this misunderstanding may be the basis for employers criticising graduates of lacking certain key skills when, in fact, that may not be the case.

It is, perhaps, why Morley (2001) concludes her argument by expressing the view that the concept of employability is a socially decontextualised concept that has, unfortunately, become a performance indicator in the quality framework in higher education. Her fear - like many others - is that education and academic values are being replaced by instruction and training and "intellectuals are being transformed into technicians, compelled to deliver skills trans-contextually" (Morley, 2001, p. 137). The arguments put forward seem to imply that the concept of employability is misused and misguided. The whole issue of skills, it is believed, has been stretched beyond its boundaries - particularly where HE is now expected to meet the needs of the employer and the business world. The role of HE is also questioned as to whether it now exists solely to meet the needs of modern capitalism and graduates are nothing but

workers. There is no doubt that universities are supposed to serve the community in addition to providing knowledge. However, arguments put forward are that universities no longer serve the community, but rather the interests of business. These authors maintain that universities are forced to respond directly to the needs of industry or employers in terms of curriculum design and the delivery of programmes. It is further suggested that HEIs have never been seen as, or tied down to being, suppliers of graduates or modes of production through pedagogy and curriculum. According to these authors, HEIs have had considerable autonomy in determining what goes on in institutions - based on the professional judgement and academic standards of the various institutions. They contend that this was the case because employers were expected to train graduates and mould them into the kinds of employees they wanted. Graduates also expected to get jobs and to be trained on-the-job. They assert that the reason governments have come into the picture and control programmes offered by HEIs is because of the unemployment of graduates and the assertions made by employers that they were not getting the type of workers they needed. HEIs were, then, blamed for this market dysfunction. Governments, mainly as funders of higher education, then took the responsibility to correct the situation and what they considered to be an anomaly.

The TE policy (2008), in Botswana in pursuit of enhancing graduate employability and reducing graduate unemployment - aspires to increasing the participation rates in tertiary education, while at the same time, the labour market, itself, may not be ready to absorb all the graduates. This situation may have led to the current graduate unemployment situation and the alleged lack of 'fitness for purpose' of graduates in Botswana. It is, therefore, necessary to find out if this alleged lack of fitness for purpose is a result of a lack of employability skills among graduates, a perceived mismatch or a congested labour market. Whatever the case, can one blame the employability of graduates on the quality of HE in Botswana? Morley (2001) argues that employers also need to be educated as to what employability means so that the same employability attributes may have similar economic and professional values for different social groups. Only then, perhaps, can the employability agenda be meaningful.

## 2.4 QUALITY ASSURANCE AND ITS ROLE IN ENHANCING THE EMPLOYABILITY OF GRADUATE

Quality assurance (QA) is a part of the debate on employability and the quality of higher education. It plays a major role in monitoring quality in higher education where the employability of graduates could be one of the key performance areas. Materu (2007) defines QA as "a planned systematic review of an institution or programmes to determine whether or not acceptable standards of education, scholarship and infrastructure are being met, maintained and enhanced" (Materu, , p. 3). There are two forms of quality assurance systems, internal and external. The former involves internal quality management processes that HEIs undertake to ensure that quality is embedded in all their processes, including teaching and learning. The latter involves a process whereby an external team reviews the internal processes and infrastructure of an institution to determine whether it meets acceptable standards. The external QA process could be in the form of institutional audits or programme accreditation. In some

countries, like the United Kingdom (UK), such reviews include students in their external QA team of reviewers (HEFCE, 2011). The Quality Assurance Agency (QAA) in the UK also encourages HEIs to include students in preparing action plans that address recommendations from institutional reviews. These actions are meant to involve students in issues that directly affect them so that their voice is heard to ensure that their needs are also met.

According to Westerheijden (2005) and Gynnild (2007), QA is a concept that has been around for decades - particularly in the developed world. The United Kingdom, for example, as well as France and the Netherlands were some of the pioneering countries in the establishment of quality assurance agencies at the end of the 20th century (Westerheijden). In Africa QA is a fairly recent phenomenon in the context of higher education, with existing QA agencies only just over 10 years old (Materu, 2007). It is reported that the massification of tertiary institutions and the importance attached to higher education in driving the economies of countries were the main reasons for establishing QA agencies. It is argued that with the emergence of a new range of competencies, many institutions in sub-Saharan countries struggled to meet those demands through curriculum reform and by adapting teaching and learning methods. The World Bank (2008) report also claims that the massification of tertiary institutions in the past two decades has resulted in a surge in student numbers which is not commensurate with the expansion of resources, both physical and financial. As a result, the quality of education and the relevance of programmes has suffered. It is further reported that the general lack of attention to quality assurance and labour market feedback has resulted in disconnect between the supply and demand of higher education skills and what employers need.  As a result, many governments - including the Botswana government - decided it was crucial to establish QA agencies to address the missing link. Instead, many QA agencies were established for the purpose of regulating the unregulated expansion of the sector rather than the enhancement of quality which was initially the main concern of many countries (Materu).

Similarly, Harvey and Newton (2004) concede that the rationale of QA is often stated as improvement when, in fact, it focuses on compliance and accountability. Their argument is that although improvement should be the focus, accountability is also needed because of budgetary constraints, the cost of massification and the need to account for public funding. Hence, the growing pressure from governments to make sure that HEIs are more responsive to value for money concerns and to more relevance of programmes to meet countries' needs. As such, quality assurance systems are meant to encourage an improvement within HEIs for the enhancement of quality of graduates and fitness for purpose.  According to Harvey and Newton, many QA agencies have not achieved their goals because of a lack of clarity and purpose. It is further argued that where there is clarity and purpose the system can work in the same way as the Swedish quality assurance audits which built the aspect of improvement by identifying improvement projects and evaluating their effectiveness into their system. This system is contrasted with that of the UK where, according Harvey and Newton, when the Higher Education Quality Council (HEQC) was established, improvement was not the main aim but rather compliance and accountability.

Thus, if the system is meant to assist institutions to improve their quality, then the purpose and focus must be made clear at the outset while at the same time respecting the autonomy of institutions and the importance of academic freedom. In their paper Harvey and Newton (2004) debate what aspect of HE is meant to be improved - if any - and how the improvement is measured. They argue that improvement could be for academic or research quality, but how that improvement is measured is debatable. On reflection, Harvey and Newton and Horsburgh (1999) note that, in the main, the external QA system injects improvement at the organisational level of institutions and that it is more difficult for external quality assurance systems to effect improvement in teaching and learning aspects of the institution. It is, therefore, the aim of this study to focus on what role HE and QA mechanisms within HE play in encouraging improvement within institutions that enhances the employability of graduates which is at the level of teaching and learning. Even though Harvey and Newton claim that, at best, the improvement function of quality assurance mechanisms encourage institutions to reflect on their practices, that - in itself - is a good thing because it will, ultimately, infiltrate the teaching and learning environment. The argument is that there needs to be a focus and that if the focus it is to enhance student learning experience, then the QA methods employed should achieve precisely that.

The recommendation of Harvey and Newton (2004) is to start with the purpose, the focus and the data that would be required for the exercise and then come up with an approach and methodology that would be needed to inject improvement (see Figure 2.5, below). They maintain that quality monitoring has been characterised by predetermining the methods and ignoring the epistemological aspect of the methodology - thereby defeating the purpose of the quality assurance exercise.
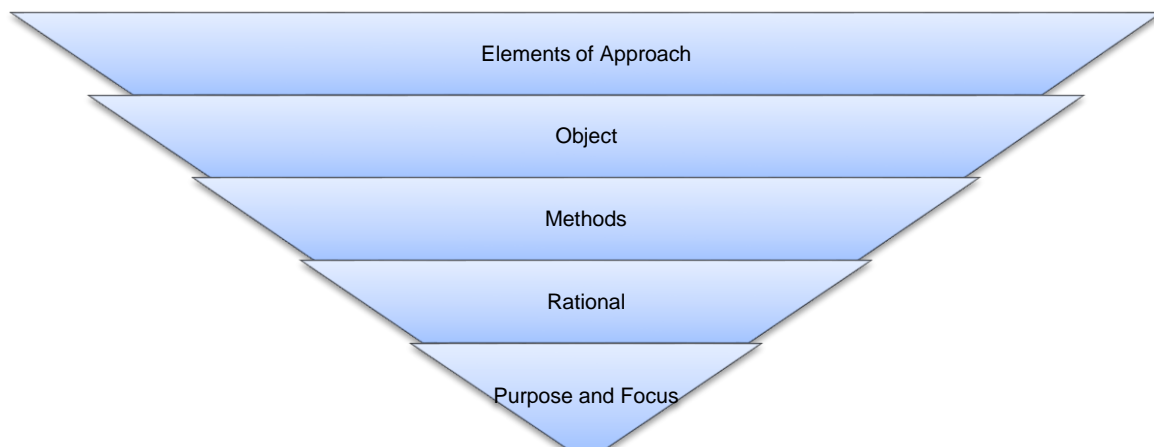


(Adapted from Harvey and Newton (2004).

**Figure 2.5: Methodology for a QA System**

Harvey and Newton are of the opinion that once the focus for quality monitoring has been determined, such as students' learning experiences and learning infrastructure, then the rational of the QA could be established which should be improvement which replaces compliance and verification elements of conventional external quality evaluation or monitoring processes. Once that has been established, the

QA methods would follow depending on the rational of the QA. The object should always be the learner and the approach of conducting the monitoring should be based on a self-regulated quality monitoring approach. In this way, the whole QA process is focused on the purpose and the intended results and not on compliance, by adopting the right methodologies. It is further argued that once this system is in place, the rationale of which is to improve, then accountability is a given and there would be no need to focus on accountability.

All these efforts should, ultimately, translate into an enhanced student experience which should also provide graduates with the necessary skills for work. If there is no link with employment, the experience might add very little value for, and impact on, the graduate. According to Harvey and Newton, the external touch (external QA) should be seen as a critical friend or consultant and not as a moderator or inspector. It is further argued that the focus of such evaluation should be on internal processes which result in quality management that is bottom-up driven with innovation around improvement in teaching and learning. Westerheijden (2005) observes that the quality of education is a precondition of quality improvement for any QA system and it should receive greater attention. In this case the external quality assurance body becomes a mere catalyst and facilitator and collects data focused on best-practice that can be shared with other institutions for benchmarking purposes. Students and parents can also obtain information that can be used when making decisions about their institution of choice. In the end it should be evident that as a quality assurance body, decisions that are made and policy statements suggested are based on research with evidence and not on consultative meetings.

The QA aspect of this study concentrates on employability audits which focus on monitoring and identifying the extent to which institutions engage in activities - including the quality of these activities - that enhance the employability of students and graduates at programme and central levels (Harvey 2005). This is in line with the view described by Woodhouse (2002) who suggests that a quality audit should be a three part process where one checks

- the suitability of the planned process in relation to the stated objectives.
- the conformity of the activities with the plans.
- the effectiveness of the activities in achieving the stated objectives (Woodhouse, 2002, p. 1).

The Higher Education Funding Council of Wales (HEFCW) pioneered the idea of an employability audit approach by requesting work experience and employability plans from each institution (Harvey 2005). Institutions would, then, follow-up these plans on their own. This study will not conduct employability audits, but views on how such audits could work will be sought from all the stakeholders involved, including students, academics and employers. After the study has been completed, employability audits may be conducted on a trial basis using the findings of the research. Harvey and Newton (2004) argue that they have not come across a quality monitoring system that is evidence-based to illustrate what works and why it works. They argue the need for a quality monitoring system that leads to quality

enhancement and quality improvement with evidence to illustrate this and, hence, the purpose of this study.

Harvey developed a model (see Figure 2.6, below) that addresses the links involved in the employability audits described above. The model attempts to explain how institutions could link up with different players to assist students acquire the skills needed in the work place, including engaging in what he calls "employability development opportunities" (Harvey, 2005, p. 23). The outcome should be a graduate that is employable and fit for purpose.
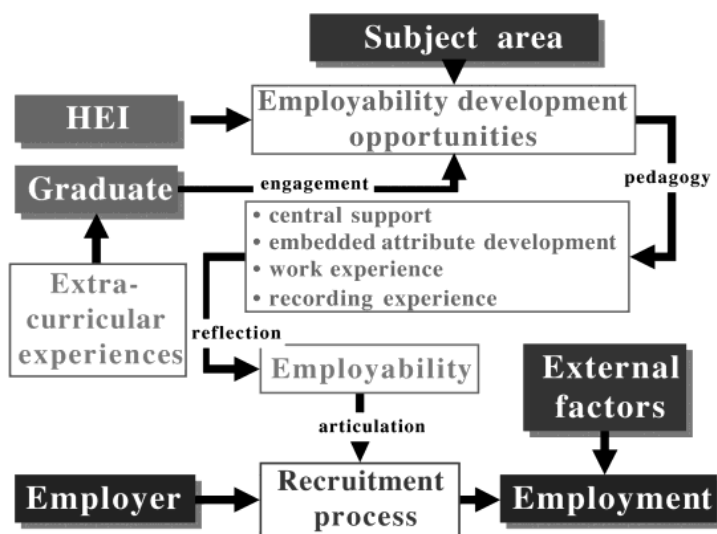


(Source: Harvey, 2005)

**Figure 2.6: Model of Graduate Employability Development**

Although Harvey (2005) is convinced that the relationship between HEIs, students and employers is a complex one, it seems that it is a relationship that ought to happen despite what some academics may think - as seen in previous debates. He further contends that young graduates who leave university with little knowledge or work experience find it difficult to adjust to the world of work which is a cost that a graduate employer is no longer willing to bear and one that graduates, themselves, might not be willing to shoulder. Furthermore, governments and QA agencies ought to be included in the loop. Governments all over the world fund education and sponsor a large number of students and HEIs must be accountable because governments are no longer willing to spend money without seeing results in terms of graduate employment. QA agencies are partners whose interests must also be met.  In this model students should engage with employability development opportunities in their subject areas, which are afforded them by the institution and which would be included in the curriculum.  These could be outside the normal curriculum in what Harvey calls extra-curricular services, such as work placement or activities offered by central or career services. He goes further to say that all the pedagogical processes taking

place within any subject area are affected or mediated upon by external factors, such as the labour market and recruitment processes. These, he argues, must be taken into consideration if HEIs are to produce graduates who are employable and the extenuating circumstances cannot be ignored. It is suggested that recruitment processes that are applied may not be the best for catching employable graduates who deserve the jobs and that graduates must be prepared for such eventualities. It is further thought that institutions, therefore, need to undertake an audit of the types of opportunities available to students and their outcomes in terms of their effectiveness as far as job opportunities and performance at work are concerned. This, of course, can be done through tracer studies.

A similar model was developed by Hennemann and Liefner (2010) (see Figure 2.7, below) which makes similar arguments to those above. Their model connects higher education learning processes with employability which is one of the objectives of this study. It is argued that this framework is premised on the insufficient preparation of students for jobs in many fields, including Geography.
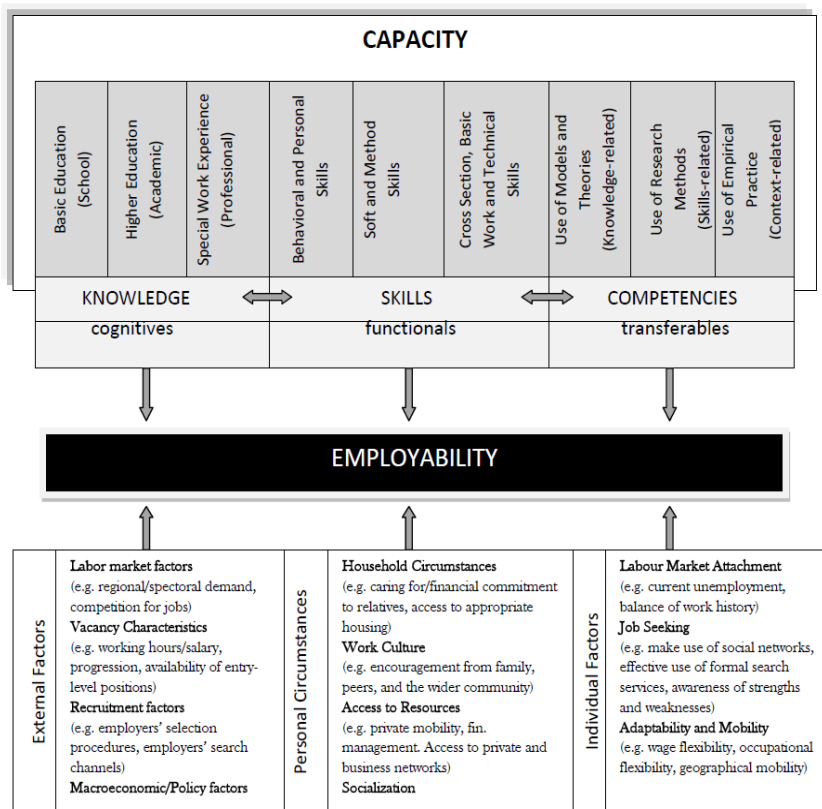


(Source: Hennemann & Liefner, 2010, p. 219)

**Figure 2.7: Comprehensive Framework of Employability-influencing Factors for University**

Even though the framework is specific to Geography, it is meant to be general and applicable to any field of study. Thus, the framework focuses on knowledge, skills and competencies (KSC) because the discipline-related factors responsible for the mismatch between graduates and available jobs may be

entrenched in the systemic structure of the curriculum and the types of students enrolled (Hennemann & Leifner). These authors contend that many unsuitable elements of the curriculum are carried forward and taught year after year - irrespective of changes taking place in the job market. The curriculum is not reviewed or adjusted appropriately in terms of such changes. It is further argued by other authors, such as Pauw *et al.* (2008) and Cosser (2010) that students continue to choose fields of study they like - irrespective of what is happening in the labour market - and this results in graduate unemployment. Hennemann and Liefner claim that graduates in Geography are particularly vulnerable. They maintain that there seems to be a lack of clarity in competencies that Geography graduates have acquired for themselves and for their prospective employers and, hence, the need to address what the universities can do, in general, to particularly strengthen the position of Geography graduates in the labour market. Therefore, the focus is on the acquisition of knowledge in the cognitive domain in relation to higher education learning processes, basic education and special work experience which graduates might have obtained while at university. The effect which basic education has on higher education cannot be ignored. It is argued that this framework is also meant to guide curriculum changes at higher education level that would lead to enhancing employability of graduates, not only in Geography but in any field of study. Thus, the framework covers most aspects affecting graduate employability, including the ones put forward by Forrier and Sels (2003). However, this framework does not cover the QA aspects that are critical in ensuring that graduates are well-prepared for the transition into the world of work.

This study is important because there is a need to collect empirical data that focuses on the enhancement of the quality of graduates and their employability. Any recommendations that come from this study will be based on the evidence collected. The research will examine quality audits - in this case employability audits - which could be used to monitor the quality of teaching and learning in a specific field of study. In Botswana, the current TE Act of 1999 makes no provision for quality monitoring of programmes within public institutions, except through institutional audits. Thus, a problem of resistance may arise within these institutions as they have never before been monitored in terms of quality. Notwithstanding that, this research could provide an opportunity to start anew and work with institutions in developing a system that would work for them in supporting their mandate. Therefore, it is not the intention of this study to establish a top-down approach of monitoring quality which may bring about simplistic causal chains - as seen by Reynolds and Saunders (1987) - nor is it the intention to come up with a process that is 'imbued with politics" - according to Harvey and Newton (2004). It is a genuine attempt by the TEC to focus on what really matters and to bring about change within HEIs that will enhance the employability of graduates by engaging with all stakeholders, including academics, students and employers. This enhancement-led approach, as suggested by Yorke (1994), is characterised by the following:

- A robust and effective internal review and audit mechanism;
- An institutional focus on self-evaluation; and
- An appropriate level of external peer appraisal (Harvey & Newton, 2004).

The QA system that is used in Botswana is enhancement-led and it is what is called a developmental approach. The QAA defines enhancement-led as "taking deliberate steps to bring about continuous improvement in the effectiveness of the learning experience of students" (QAA, 2009, p. 3). This approach draws on the concept of QA as a moving target - as espoused by Westerheijden (2005). He clearly states that the quality of higher education is very difficult to realise because things always change. The demands of the labour market change as well as the technology. Institutions then have to start all over again and realign the curriculum and focus to meet new challenges and demands. Institutions are, therefore, encouraged to continuously work on their quality improvements and changes that will benefit their students. The focus is on improvement not compliance.

## 2.5        CONCEPTUAL FRAMEWORK AND SPECIFIC RESEARCH QUESTIONS

This section presents a conceptual framework for the study which is presented and discussed and leads to the formulation of the research sub-questions. Thus, in sub-Section 2.5.1 the conceptual framework is presented and in sub-Section 2.5.2 the framework is discussed which leads to the specific research questions in sub-Section 2.5.3.

### 2.5.1    General Overview of the Conceptual Framework.

The ideas and arguments presented in this study are guided and informed by the concept/theory of 'employability' and its link to higher education (see Figure 2.8, below). Thus, 'employability' in this study links higher education with the world of work. The conceptual framework that has been developed is an adaptation of the three models discussed in the previous section, but it includes aspects of QA which were not discussed in the other two models
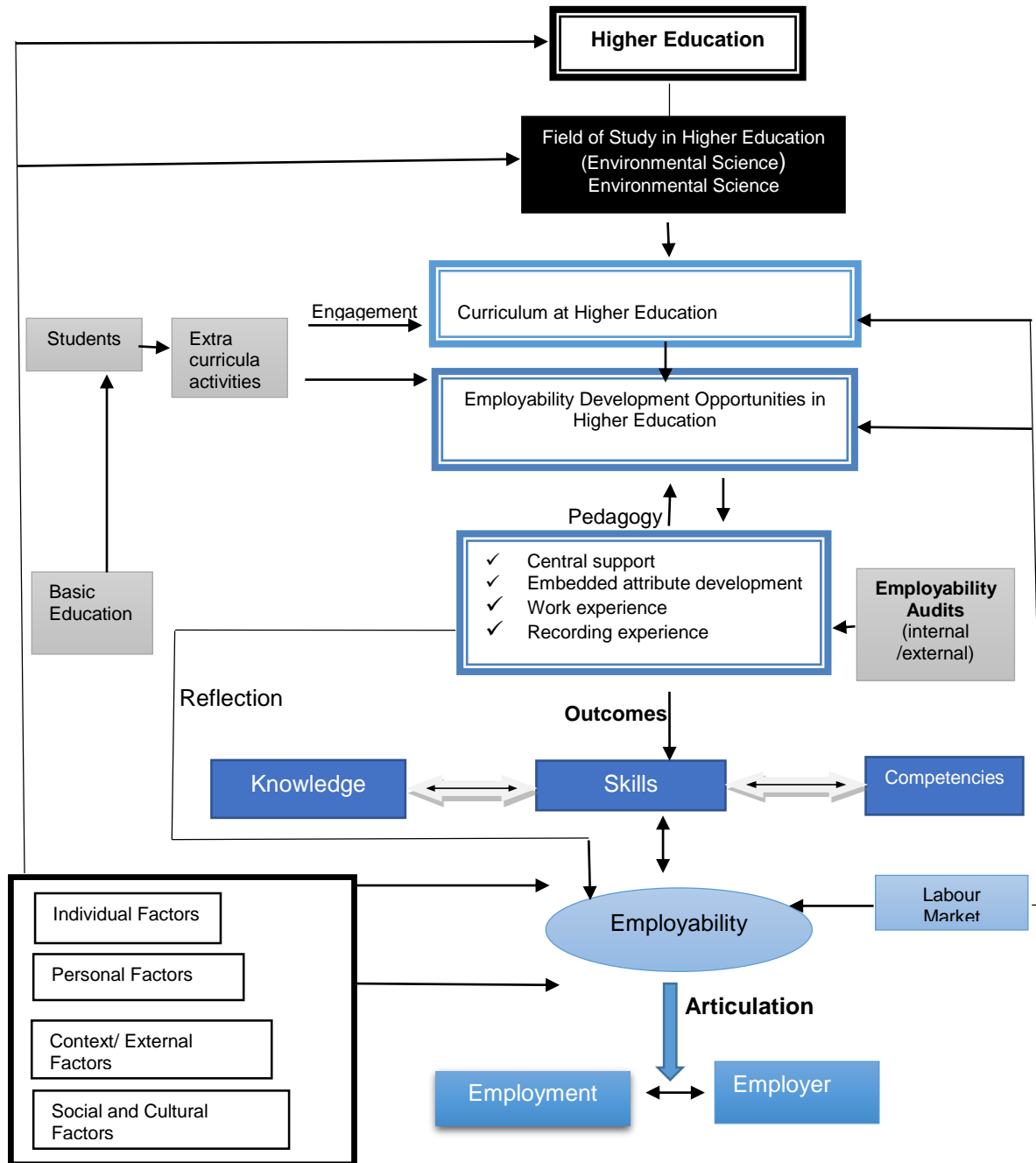
(Source: Adapted and modified from Hennemann and Liefner (2010) and Harvey, (2005)

**Figure 2.8: Conceptual Framework of Employability in ES and its Links with Quality in Higher Education**

Kis (2005), like other researchers quoted, argues that both internal and external quality assurance is essential for the improvement and enhancement of the employability of graduates in HE. She further argues that external quality assurance - in this case employability audits - would ensure the integrity of HE and play a catalyst role for internal improvement, targeted in this case, at enhancing the employability skills of graduates. In explaining the framework developed for this study which is based

on the research question, the definition of employability - as used in this study - needs to be addressed. The definition applied in this study is:

> *"a set of achievements - skills, understanding and attributes – that make graduates more likely to gain employment and be successful in their chosen occupations – which benefits them, the workforce, the community and the economy" (York, 2004, p. 410).*

The same definition is accepted by OECD (1993); Teichler and Kehm (1995); Yorke (1999, 2006); UNESCO (2000); Forrier and Sels (2003); Harvey and Bowers- Brown (2003); McQuaid and Lindsay (2005); and Cox and King (2006). The concept was defined in detail in section 2.2, detailing what it is and what it is not. However, the issue of who is responsible for providing the training leading to employability is still a contentious one and the main question for this research. Some academics in higher education believe that HEIs need to accept responsibility, move forward and link up with industry to enhance the employability of graduates while others argue that it is, rather, the role of industry to provide employability skills with on-the-job training. It was reported earlier that today employers do not want to bear the cost of graduates who find it difficult to adjust to the workplace because of very little knowledge, skills, competencies and a lack of knowledge about the world of work. In the case of ES students, the issue of employability is even more critical because ES graduates are employed in a variety of positions and in a wide range of careers and they do not comfortably fit within traditional disciplinary boundaries (Rooney *et al.*, 2006). Therefore, enhancing their employability for a wide range of careers would be a difficult task for HEIs.

## 2.5.2    Discussion of the Conceptual Framework

The conceptual framework in this study suggests that students should be prepared at university to facilitate their transition into the world of work.  Hence, the framework suggests that knowledge, skills, competencies which are discipline related, understanding and attributes required for the world of work must be learned while at university. This assumption led to the research sub-question that determines the level of knowledge, skills and competencies that ES graduates and students have which, in turn, led to the inclusion of the objective concerning employability audits to facilitate the preparation of graduating students for their smooth transition into the world of work. Employability audits will help HEIs make sure that their activities and processes, which lead to the enhancement of employability of graduates, are clear. Academics also need to re-assure themselves that they are on the right track and audits can help do just that. Such audits are developmental in nature. There is no intention of scoring or grading institutions in categories. These audits are meant to simply assist academics and administrators to consider the content and design of the curriculum to ensure that their goals of enhancing the employability of graduates are met (Hughes, 2004). This is a continuous process of improvement and Hughes argues that students need to be assisted because they do not understand how important it is to manage their interests and activities so that they contribute to their employability. He further argues that they are not aware that taking part in team sports and any other extra curricula activities will attract the interest of prospective employers. Thus, helping them to understand the

importance of extra curricula activities will go a long way in assisting students look for opportunities that will enhance their employability.

Through employability audits HEIs would have to engage with employers through various employability development opportunities to provide work-based skills. Some of the skills - which include 21st century skills, such as communication and problem-solving skills - could be included in the pedagogy of curriculum delivery. The teaching methods and other pedagogical processes used in this case would be critical in enhancing the employability of graduates. Encouraging project work and presentations to instil self-confidence and communication skills would offer some of the key competencies and skills needed in the world of work.  According to Hughes (2004), such activities could be achieved by

- developing strategic plans that would clarify how employability could be achieved for different disciplines.
- identifying how far HEIs have progressed and what still needs to be done.
- recognising what is already being done to enhance employability and strengthening those activities.

Therefore, employability audits would involve assessing input and processes that enhance the employability of students. An audit of this kind would require Work Experience and Employability Plans (WEEPs) (HEFCW, 2011) and finding out how these are executed in HEIs. Institutions would encourage and assist students to undertake work experience either through attachments or through internships and they could also provide career service support to students and graduates. All these activities would involve HEIs working with industry and organisations to provide workplace experience for students while they were at university that would enable them to become more employable. This partnership could also involve industry and academia in going as far as curriculum development. Employability audits would be done internally by the institutions themselves and be verified, externally, by the QA agencies working together to enhance the employability of students and graduates. Records of work done would be kept to assess the impact of these activities which would entail carrying out tracer studies to follow-up on graduates and to record how they are coping in their jobs. There is, of course, a concern that such audits might be linked with employment rates and this might put undue pressure on institutions in terms of accountability, rather than improvement and even use employment rates to acquire more funding (Harvey, 2000; Rooney *et. al.*, 2006). Therefore, a distinction needs to be made between graduate employment rates and employability. The latter entails the preparation of students for the world of work and the ability to adjust and adapt to changing workplace requirements and a willingness to continuously learn and improve (Rooney, *et al.*). Therefore, employability does not mean employment.

Harvey (2000) agrees and suggests that such employability audits must take the following into account:

- An analysis of the employment development opportunities for a structured reflection on these employability audits by students, staff and employers.

- The audit should cover the whole experience of students – including, in particular, the teaching and learning that goes on in the classroom - to see whether it is linked to the development of employability attributes.

- A narrow focus when conducting such audits should be avoided. The audit should cover all aspects, including teaching methods used and curriculum and resources used to foster employability attributes which might also be duplicated by what happens in programme reviews done by QA agencies.

- Employability audits should be linked to satisfaction surveys from graduates that link up with the above bullet. These would give institutions feedback on students' experiences and how they have assisted graduates adjust to the world of work. Such surveys would, typically, be done in the first or second year into employment - or even beyond.

It is also argued that in some countries, like Spain, such employment development opportunities are left to individual students to pursue on their own and in their own time (Rooney *et al.*, 2006). However, in realising the value of such activities, it is important to provide opportunities within the curriculum so that all students have equality of access and levels of success. An employability audit would also provide a very good opportunity for HEIs to identify current practices and gaps in provision.

Likewise, Forrier and Sels (2003), and Rooney *et al.* (2006) assert that employability is a life-long learning process that influences an individual's chance to step into a job in the internal labour market system. The process of learning begins with basic education and continues through to undergraduate and postgraduate level. Learning does not end with formal schooling, it continues right into the world of work. It can be compared to the process of maturing, i.e., growing up and maturing with time which is also a process. At any point in the development or education of individuals, their employability can be described or measured. This process is illustrated in Figure 2.9, below.
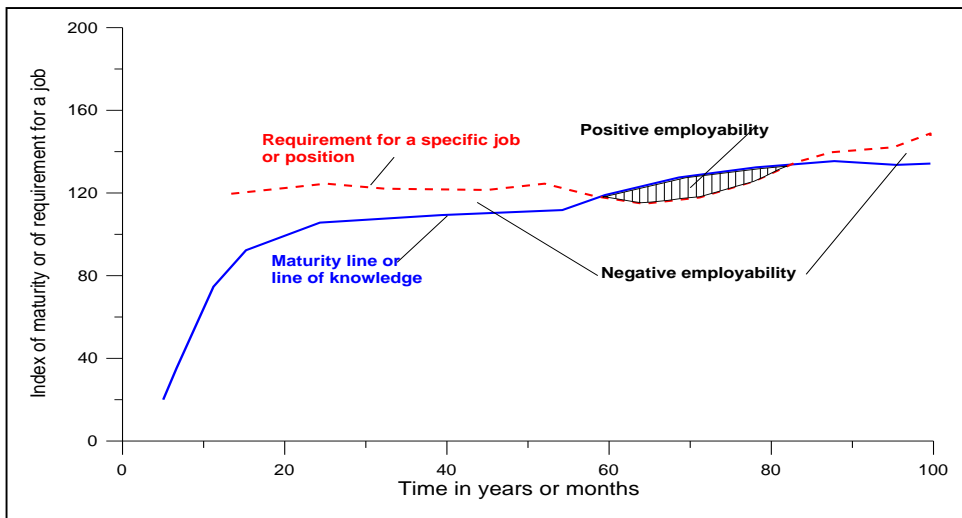
**Figure 2.9: Employability as a Process of Life-long Learning**

It seems that employability can no longer be the responsibility of higher education and employers only. Employability is a process affected by other external factors or contexts, such as the supply and demand of labour. These economic factors are often linked with the theoretical framework of employability to explain the complexity of the concept. Simply put, the supply side of the labour market cannot entirely explain all the issues related to the employability of graduates. Employability is not just about producing graduates who are employable. Employers must also have a demand for the skills being offered and have jobs in place for graduates. In addition to economic factors, individuals must have the ability to project themselves as suitable candidates for the job. It is, therefore, up to the individuals to search for opportunities that make them employable and enable them to find jobs.

Hennemann and Leifner (2010) argue that individual and personal factors are also relevant. They contend that Individuals must be willing to up-skill themselves and find employability development opportunities. Other factors that affect the individual may include job seeking skills, such as knowing how to obtain information using the Internet and other social networks on the market. Students and graduates should be self-starters and they should be adaptable. It is argued that personal factors, such as home background contribute to individuals' attitudes as the type of family they come from and how they were brought up are important factors. Family ties and circumstances may prevent individuals, for example, from moving to locations where they could be more employable. Access to housing may prevent graduates from moving and leaving their home area. All these factors are important in enhancing employability or reducing graduates' chances of stepping into a good job. The same applies to social factors, such as cultural background. Graduates' culture and social background may influence their ability to get into a job. There may be cultural biases and groups of people that employers do not want to employ and these are outside the ambit of the employability of graduates and certainly beyond the control of HEIs.

Therefore, indicators of employability in this study will be examined according to Forrier and Sels' (2003) argument that employability can be measured using the following dimensions and indicators - illustrated in Figure 2.1, above:

i. **Individual characteristics** that include the ability, attitude, knowledge and willingness of an individual to find and keep a job.

ii. **Context,** which is the labour market situation in a particular environment, including the social and cultural background of the individual. It includes the demand for labour within a specific industry - in this case ES and recruitment factors - and satisfying the demands of the employer. For example, an individual being required to be able to move within the job to either a higher position or different task or location**.**

iii. **Effect** on employability. For example, the position that an individual has in the job. This is also an indication of the employability of that individual. The quality of the job is taken into consideration and its relevance to the individual's degree and the possibilities for growth and development.

iv. **Personal factors** include the activities individuals are willing to undertake to enhance their employability, such as training and life-long learning. These also include personal factors, like attitudes and behaviour that individuals show towards enhancing their employability in terms of training or any activity that may enhance their abilities.

Thus, employability is often used as an indicator of the quality of graduates because it focuses on their effectiveness in the workplace and, hence, the argument that it could also be used as an indicator of the quality of HE. This study, therefore, intends to measure the quality of graduates in terms of employability in the form of knowledge and 21st century skills, but has no intention to use these as indicators of the quality of HE. Employability in this study is used as an indicator of the quality of graduates in terms of 'fitness for purpose'. It is clearly stated by Forrier and Sels (2003) that it is almost impossible to measure employability because it is not a static characteristic of an individual - as indicated in Figure 2.8, above. Hence, it may be difficult to use it as an indicator of the quality of HE. The concept of employability is, therefore, grounded in the premise that graduating students should seek to attain more knowledge and skills that keep them employable and not unemployed because HE may not provide them with all the knowledge and skills needed in the workplace. Higher education certainly cannot guarantee employment either. Forrier and Sels argue that "lifetime employability" not "lifetime employment" is the current dispensation and norm.

### 2.5.3    Specific Research Questions

The main research question for this study is: **How do industry, higher education and employability audits contribute to ensuring that Environmental Science students and graduates are employable?** In order to answer the research question, the following specific questions needed to be addressed:

1. **To what extent do students and graduates of the Environmental Science degree programme from the University of Botswana have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana?**

This question attempts to determine what knowledge, skills and competencies ES students and graduates have by the time they leave the university and whether these are in line with what the employers expect and require. Furthermore, this question explores and describes whether, indeed, ES graduates are fit for purpose. The answers to the question will establish the gaps that exist within the curriculum - as demonstrated by graduates in employment - and how these gaps could be plugged. The 21st century skills required which are part of employability skills include technology and mathematical skills, in conjunction with others, such as adaptability, communication and problem-solving skills (Binkley *et. al.,* 2010).

2. **What are the possible roles of industry and higher education in preparing students and graduates for the world of work?**

The central issues here are what the employer wants and what higher education can do to provide what is needed. In addition, this question seeks to find out what role the employer can play in ensuring that when graduating students enter the world of work, they are ready to do the work expected of them. The role played by the employer is also to ensure that the transition of graduates into the word of work is a smooth one. However, the responsibility could be shared with higher education institutions. This question does not ignore the role played by students and graduates, themselves, in ensuring their own employability. This latter observation forms part of the sub-question where it was also addressed and it is also reflected in the conceptual framework in terms of individual and personal factors.

3. **How does the massification of tertiary institutions internationally affect the employability of graduates of Environmental Science in Botswana?**

Tertiary institutions are increasing at a fast rate. What impact does this have on the employability of ES graduates in terms of the nature of work they do? Does this impact on the roles graduates play at work? If so, how do institutions and employers deal with the challenge? This is particularly true of ES graduates who are employed in a variety of positions and a wide range of careers. Although there are only two institutions educating ES graduates so far including the newly established Botswana International University of Science and Technology (BIUST), the question will also focus on ES graduates coming from outside the country - if any - to determine what influence they have on the employability of ES graduates locally.

4. **How, and to what extent, could employability audits in higher education play a role in ensuring the employability of ES graduates?**

This question seeks to explore possible ways that employability audits could be introduced in higher education and the role they would play in enhancing the employability of ES students. The question also seeks to discover how these audits could be designed in order to be effective. The question would be answered by all stakeholders involved, that is, students, graduates, employers, academics and administrators within the institution. While focusing on employability audits it was necessary - in the absence of employability audits at the UB - to determine the internal quality assurance mechanisms which the Department of Environmental Science has put in place to ensure the quality of their programme. This was important to consider and to explore in this sub-question to link it up with employability audits. Employability audits are an external form of QA, but internal QA mechanisms are key to ensuring the quality of the programmes being offered.

Chapter 2 has reviewed the relevant literature which reflects what has been done globally within the context of the role of higher education and industry in employability audits in enhancing the knowledge, competencies and employability skills of graduates in Botswana and reveals gaps that this study will attempt to fill. It has outlined a conceptual framework within which this study is argued and it discussed and posed specific questions related to the main research problem. Chapter 3 will look at the methodology of the study by outlining the research design and methods used in gathering data and analysing it.

# CHAPTER 3

# RESEARCH DESIGN AND METHODS

## 3.1    INTRODUCTION

The research design and methods used in this study enabled the researcher to explore in depth the circumstances concerning the employability of ES students and graduates as well as, the roles of higher education, employability audits in higher education and industry in preparing students and graduates for the world of work within the context of Botswana. According to Blanche, Durrheim & Painter (2006) this type of research is both applied and basic research because it aims at contributing to solving practical problems, helping in the process of decision-making and policy analysis while, at the same time, advancing knowledge about the relationship between the employability of ES graduates and the quality of HE. This chapter focuses on the design and methodology that was employed in carrying out the study. In presenting this chapter, Section 3.2 presents the research design applied in this study and how the sub-questions were addressed; Section 3.3 describes the research methods used including the sample and participants, instruments and data collection strategies, research procedures and data analysis; and Section 3.4 gives the methodological norms applied in this study including issues concerning ethical considerations adopted.

## 3.2    RESEARCH DESIGN

While this section presents the research design used in the study, the justification for using mixed-methods is also given and the philosophy underpinning mixed-methods research is discussed. The structure of this section begins with sub-Section 3.2.1, the case study research design, followed by sub-Section 3.2.2, the philosophical underpinnings of mixed methods, and ends with sub-Section 3.3.3, a justification for using mixed-methods.

### 3.2.1    Case Study Design

The primary design of this research is a case study of the ES programme which is offered by the Department of Environmental Science at the University of Botswana. The study is an exploratory type of a single case design that explores a contemporary problem (Yin, 2009), namely dealing with the employability of graduates. The use of a case study approach provided an opportunity for an in-depth description, inductive analysis and understanding of the issues of employability of graduates and how effectively employability audits in higher education and the role of employers could be integrated in enhancing the employability of graduates within a specified field of study (Merriam, 1998, 2009; Yin,

2009). Thus, the case study was instrumental in understanding whether ES graduates are employable and fit for purpose without making predictions between variables. Furthermore, this study was also on a voyage of verification (Bryman, 1984) in the sense that the use of the questionnaire data helped verify

whether or not ES students possess employability skills. The use of a case study also allowed the application of multiple data collection methods (Merriam, 1998, 2009) - in this case the use of semi-structured interviews and questionnaires to get a broader and deeper understanding of the problem (see Figure 3.1 below). The use of quantitative data, alone, can miss the evidence from experiences and knowledge that qualitative data brings and, therefore, Pragmatic Sequential Mixed-Methods (Mertens, 2005) were employed within the case study design. However, one of the main disadvantages of the case study design is that it does not allow for statistical generalisation of findings but, where possible, the concepts could be applied to similar situations in terms of analytical validity (Merriam, 1998, 2009; Yin, 2009).

**Qualitative and Quantitative Research objectives**

**Collect Qualitative Data**

**Collect Quantitative Data**

**Perform qualitative Analysis**

**Perform quantitative analysis**
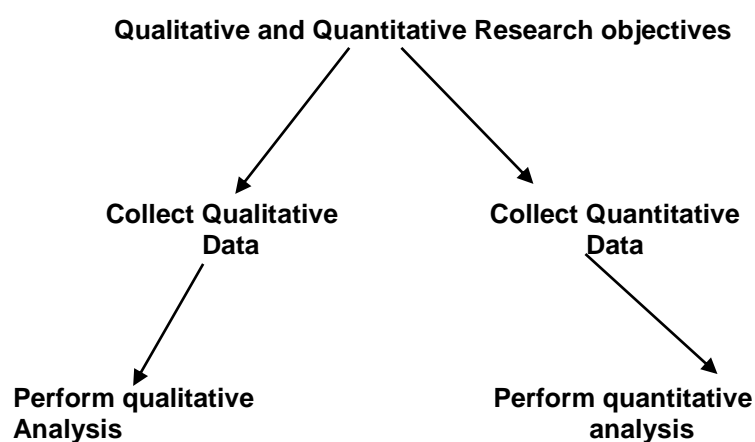
(Adapted from Johnson & Onwuegbuzie, 2004)

**Figure 3.1: Mixed Model Design**

The research design and methods used are designed to answer the main research question. To reiterate the research question: **How do industry, higher education and employability audits contribute to ensuring that Environmental Science students and graduates from the University of Botswana are employable?** In order to answer this question, the specific research questions were addressed in the following manner:

1   **To what extent do students and graduates of the Environmental Science degree programme from the University of Botswana have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana?**

To address this question, first and fourth year ES students were given a self-administered questionnaire. Graduates on the other hand, who were the key participants, were interviewed face-to-face. Academics and administrators at the university and employers were also interviewed face-to-face. The answers were, then, compared to what the students had

responded and thought about their employability skills and what could be done to bridge the gap - if any - before they stepped into the world of work.

**2**   **What are the possible roles of industry and higher education in preparing students and graduates for the world of work?**

This question targeted all the participants: academics and administrators, employers, students and graduates. Semi-structured interviews were conducted with all participants except students. First and fourth year students were given self-administered questionnaires.

**3**   **How does the massification of tertiary institutions affect the employability of graduates of Environmental Science?**

Employers, graduates, academics and administrators were interviewed to find out how the massification of tertiary institutions has affected traditional labour market segmentation, the content of occupations (Yorke, 2004) and the work done or assignments given to ES graduates. Although the University of Botswana is the only institution that offers Environmental Science locally, it was important to investigate whether there were many ES graduates coming from outside the country who would influence the employability of local ES graduates. Face-to-face, semi-structured interviews were conducted with academics and administrators and first and fourth year students were given questionnaires.

**4**   **How, and to what extent, could employability audits in higher education play a role in ensuring the employability of graduates?**

This question targeted employers, graduates, academics and administrators and because from the pilot study it was evident that the concept of employability audits was a difficult and therefore interviews were used. Face-to-face, semi-structured interviews were conducted to obtain a deeper understanding from all the participants - as to how they think audits could be conducted and structured to enhance the employability of ES students and graduates. . It was also prudent to explore the possible impact or effects of these audits on higher education and graduates in a rapidly changing workplace environment. The employability audit was a new concept to many and the concept had to be explained first before the question was asked.

### 3.2.2   Philosophical Underpinnings of Pragmatism

> *"A pragmatist is one who believes that ideas are hypotheses to be evaluated in terms of their practical effects in resolving problems causing dissention and confusion. Pragmatism is a method, not a creed, an attitude, not a conclusion. It encourages diversity in point of view for the sake of a common end, not the solidarity for the purpose of sanctifying a private dogma"* (Weiss, 1942, p. 184).

The pragmatic approach, the main paradigm underlying the philosophical framework of mixed-methods (Johnson & Onwuegbuzie, 2004; Mertens, 2005), has no restrictions as to which research methods may be used. The focus of this research is to seek knowledge and understanding of the problem under investigation. As such, the best methods to answer the research question were adopted. There should be no confusion between epistemology and methods of research used because the two are not synonymous (Johnson & Onwuegbuzie; Bryman, 1984). Their argument is that the logic of justification of the findings - an important aspect of epistemology - does not dictate data collection methods and how the data should be analysed. However, this does not mean that the methodology used is not important or considered when answering the research question. Thus, although this study is mainly qualitative, quantitative research methods were used, where appropriate. The scientific steps were followed in carrying out the research in order to arrive at convincing conclusions. The use of standardised methods to check validation and reliability or trustworthiness of the findings is discussed in sub-section 3.4.2 at the end of this chapter.

With the background given, this study adopted pragmatism in search of understanding and sharing knowledge about the employability of graduates. Standing on the shoulders of giants, like John Dewey (1938) and Charles Sanders Pierce edited by Weiss (1942), this study adopted the view that what is considered reality or an understanding of knowledge should be based on the practical experiences of the participants involved in the study. What is real or practical to the participants and how they react to that in their environment is what is considered a practical approach to determining the truth in research (Johnson & Onwuegbuzie 2004; Dewey, 1938). Therefore, the logic of meaning or epistemology should be derived from the very practical experiences and consequences of these experiences on the people who live the situation under observation. In terms of research methods, it is the practicality and consequences of the methods used that should be the focus of finding the truth and not just what the truth, itself, might be (Ontology). "In short, when judging ideas we should consider their empirical and practical consequences" (Johnson & Onwuegbuzie, 2004, p. 17). According to John Dewey, what this means is that for some research problems qualitative research methods may be suitable while for other problems quantitative research methods may be more suitable. On the other hand, the use of both methods may be the right approach to tackling some problems and, hence, the mixed-methods approach. That decision, however, should be left open to the researcher, provided arguments are given for the choice of mixed-methods.

According to the quantitative methodology, the philosophical underpinning is that of positivism (Dewey, 1938; Ayer, 1959; Sale *et al.,* 2002) where there is only one truth based on logic and the systematic measurement of observations. The purists contend that there is only one objective reality based on scientific proof of the findings of research, but qualitative methodology (Lincoln & Guba, 1985; Stake, 1995; Creswell, 2007) advocates a philosophy based on interpretive paradigm. This paradigm acknowledges humans as complete social beings influenced by their environment and culture and that the way they see reality is based on how they interact with the same environment. The methodology used would be those that would encourage individuals to voice their feelings and experiences. In this

study the researcher is more interested with uncovering the truth and interpreting it according to how the participants view it - based on their experiences and how they interact with the problem under investigation. Therefore, there can be no one objective truth and, as such, philosophers acknowledge the fact that there are multiple truths because different people have different beliefs, perceptions, experiences and needs. Hence, the constructivist approach.

The problem under investigation in this study covers various aspects and different participants and, therefore, there was no incompatibility stance of either/or in terms of the paradigm chosen for the research. Many methods were found suitable for this study to cover students, academia and industry. The study had no intention of establishing causal linkages and a generalisation of outcomes because only one educational programme, i.e., Environmental Science, was being studied. The aim of using the pragmatic approach which applies triangulation was to get a deeper understanding of the experiences of students, graduates, academics, administrators and industry with respect to employability and audits. At the same time, the study is also concerned with evaluating the qualities of graduates and students in terms of the knowledge, skills and competencies they have. These could only be measured numerically, using the quantitative approach. Validity was an issue of concern for the researcher and, to improve that, a larger sample was necessary. A bigger sample would have been impossible using interviews and so students were engaged by means of self-administered questionnaires. Therefore, the use of both quantitative and qualitative approaches was necessary to capture the experiences and views of all the participants and to make objective measurements and a logical analysis of the employability of graduates.

### 3.2.3.  Justification for Using Mixed-Methods

The case study method used in this study allows for a discovery and interpretive approach where any research methods that are likely to bring results are used (Yin, 1989; Johnson & Onwuegbuzie, 2004). This research uses the strengths of both qualitative and quantitative methods, combining the depth (qualitative) and breath (quantitative) of the two methods which strengthens validity. This approach allowed one type of data (qualitative) to provide a basis for the collection of another type of data (quantitative) and *vice versa*. "Quan" stands for "quantitative" and "qual" stands for "qualitative". "⟶Stands for "sequential", capitals denote "higher priority" and lower case denotes" lower priority". In this case qualitative data was given higher priority because it involved key participants and its depth in exploring the problem under investigation was deeper and more detailed. The analysis of one type of data raised questions that lead to more data collection, especially during the pilot stage of the research (Mertens, 2005).

The use of mixed-methods was chosen because of the complex nature of the problem under investigation. Issues concerning the employability of graduates are complex and require a vast range of participants to give a large variety of perspectives of the problem under investigation. The inclusion of academics, administrators at UB, students, graduates and employers could not be done with due diligence if only one method of inquiry was adopted. In this study the use of qualitative research methods

gave insight into the experiences of participants concerning the employability of graduates. Participants were able to describe what they understood about the concept of employability and how it could be achieved. On the other hand, through quantitative research it was possible to describe reports about students' employability skills and whether students were reported to have or lack them and, their perceptions on what needs to be done to improve the situation. The power of numbers was critical in this study to support the validity of the study and its findings. Achieving a deeper understanding through face to face interviews and obtaining a sizeable sample could not be achieved using one method. Thus, the use of a mixed-method was intended to search for complementarity by seeking an elaboration and clarification of the results from self-completed questionnaires, by comparing them with the results from interviews (Johnson & Onwuegbuzie, 2004). The expectation was that two research approaches would produce data that complement one another. Interviews tended to be more detailed and one could seek more clarification and explain concepts that were not clear to the participants to get deeper insights into the problem.

A mixed-method approach was also used for the triangulation of data collected. The triangulation here was done by using questionnaires with students - the beneficiaries of the ES programme - and interviews with academics and administrators, ES graduates and employers. The supplementing of face-to-face interviews with a closed-ended instrument to systematically describe the reported employability skills of students was considered critical for this research. What the academics and administrators said could be validated with what students thought about the same issues. Including employers and graduates in the loop enabled the researcher to further triangulate the data collected from academics and administrators with what employers and graduates thought about the same issues. Furthermore, statistical results obtained from quantitative analysis were better explained through the findings of the qualitative data analysis from interviews. Hence, using both descriptive and statistical analytical tools that were available offset the weaknesses of both methods (Sale *et al.*, 2002). With the mixed-methods approach the researcher was not limited by the strict confines of either qualitative or quantitative research.

However, to effectively employ mixed methods the researcher was mindful of the main relevant characteristics of the qualitative and quantitative methods described above. To be more precise, when designing the instruments for each of the methods, conventions applicable to each were followed. Standardised data collection methods were used for collecting the data. The quantitative method focused on deduction and the use of statistical analysis in order to validate the findings. The main characteristics of the qualitative approach are inductive and exploratory methods of inquiry whereby the researcher is the primary 'instrument' of data collection. The use of scientific methods for qualitative data analysis was also employed. These are explained in more detail in the section below.

The use of mixed-methods did not come without any challenges. The following are the challenges the researcher faced and how they were overcome:

i)  First and foremost, using mixed methods was time consuming and, therefore, a more expensive. One way of overcoming the issue of cost and, consequently, time spent was to have one location of study which was the city of Gaborone. This minimised the cost of travel considerably.

ii)  Applying mixed-methods in a single study and integrating the data in such a way that it did not result in two separate studies was important. Since this is a single case study, it was critical to produce converging evidence (Yin, 2006) to make the case for the study - perhaps also the strongest point of mixed-methods. One way of doing that was to retain one main research question and one unit of analysis, and answer it in two different ways as suggested by Yin.

iii)  Interviews produced a great deal of data which was a challenge to interpret. Transcribing interviews was time consuming and needed much patience on the part of the researcher.

Qualitative and quantitative approaches were mixed during the collection of the data and during the analysis of the data. Although the instruments used for data collection (see Figure 3.2, below) were different, the variables used and the actual items were analogous (Yin, 2006). "The more that the items overlap or complement each other; the more the mixed methods can be part of a single study" (Yin, p. 44).
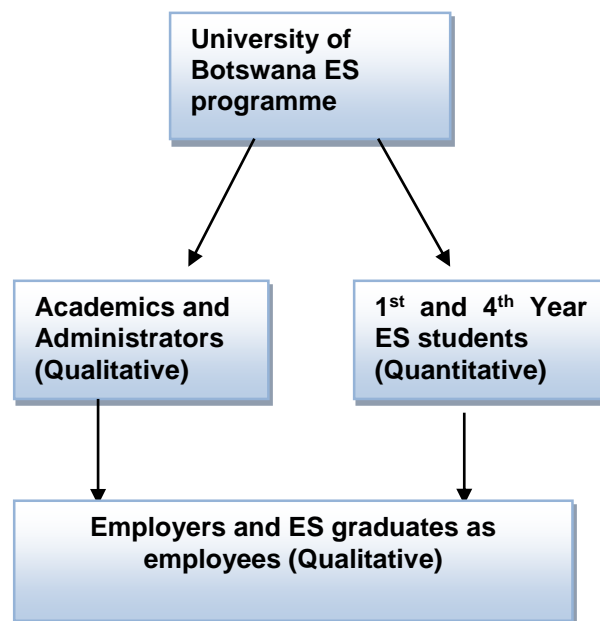


(Adapted from Yin, 2006)

**Figure 3.2: Integrated Unit of Analysis**

The diagram below (Figure 3.3) was produced to illustrate how the different instruments are related and how the items were cross-walked (Yin, 2006). The interviews with academics and administrators did - to a great extent - influence the kinds of questions that employers and graduates were asked. Questions in the questionnaires for students were similar to those academics and administrators and, to some

extent, that ES graduates were asked. To some extent the answers from the questionnaires did influence the kinds of questions academics and administrators were asked to validate the findings from questionnaires and, hence, the focus on triangulation. For example, where in the interview schedule for academics and administrators the question asked what employability skills graduates needed for the world of work and why, the questionnaire for students asked them to select employability skills they thought they had or needed on a Likert Scale. These were, then, measured numerically using descriptive statistics. The questions on the interview schedule were more conceptual and qualitative - seeking descriptive data - while those in the survey were more numeric and quantitative.

**Instrument for Method 1 (Questionnaire)          Instrument for Method 2 (Interview schedule)**
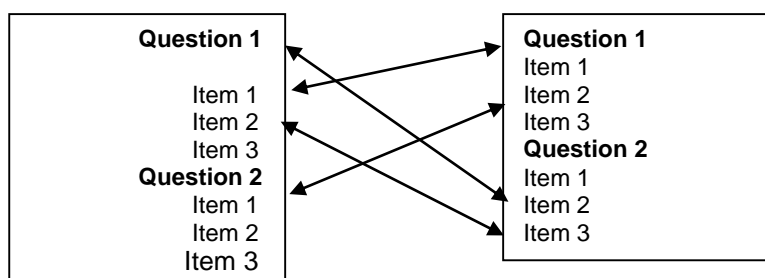


 (Adapted from Yin, 2006)

**Figure 3.3: Instrumentation and Data Collection: Cross-walked Items and Variables**

The mixed-methods approach used in this study - as seen above - integrated qualitative and quantitative data collection and analysis in one study (Creswell, 2004; Yin, 2006).

## 3.3 RESEARCH METHODS

This section focuses on the research methods used in this study to collect and analyse data. Instruments used for data collection, questions that were asked, how the data was analysed and how the participants were chosen are explained in more detail. The sub-section is structured in such a way that in sub-Section 3.3.1 the sampling of participants is explained while in sub-Section 3.3.2 the instruments used for data collection are discussed.

### 3.3.1    Sample and Participants

There were multiple sites for this research (see Table 3.1, below) which are grouped under the University of Botswana and Industry where employers and their employees are based. The first site was the University of Botswana with its population of students, academics and administrators. There were two samples of students who participated in this study; initially a sample of 100 fourth year and 100 first year students was indicated but on distributing questionnaires more students were available

and willing to participate. The realised sample was 117 and 132, respectively. The sampling design used was stratified simple random sampling. Since the population from which the sample was drawn is not homogeneous, a stratified sampling technique was used to get a representative sample (Mertens, 2005; Blanche *et al.,* 2006; Fink, 2009) from different years of study groups. This is was the first and fourth year sub-groups. To make meaningful statistical comparisons between the subgroups, a slightly larger sample than initially planned was obtained.  Within the sample both available first year groups were included in the sample. The fourth years were selected by simple random sampling of the available classes (i.e.: sampling the lecturers who were available and who allowed their classes to participate in the study). Some of the lecturers did not allow their classes to participate because of the pressure of work. First year ES students were required to assess their expectations of the university and also assess their experience and skills they brought with them from basic education. Fourth year students provided answers as to whether their expectations were met - based on the experiences they had at the university - and assess their readiness for the world of work.

**Table 3.1: Sampling of participants and sites used**

| Site | Population | Sampling methods | Reasons |
|---|---|---|---|
| University of Botswana | Administrators | Non-random Sampling (purposive) | Key policy-makers and strategic individuals, for example, the Dean of the Faculty of Science and Head of Department, were purposively included as key decision-makers. The Head of Department is the driver of the vision and mission of the department. The Dean of Science is the key policy-maker and drives the strategic plan for the entire faculty. He is aware of how different departments are performing. |
| | Academics | Non-random sampling (purposive) | Mostly, this technique was used for convenience. Those lecturers who were available were interviewed and also targeting people with different specialisation within ES, such as Physical and Human Sciences and those teaching techniques, like Geographical Information Systems (GIS). Each group had to be represented. The plan was to interview 3 to 4 lecturers but 6 were interviewed because more data was needed to cover the various types of courses offered and there were more people willing to participate. |
| | Students (1st and 4th years) | Stratified random sampling within which simple random sampling was exercised | These are sub-groups within a larger student population that are not homogenous. The study specifically targets 1st year ES students (132) and 4th year ES students (117). The two groups were given questionnaires. Fourth years were randomly sampled by using the class lecturers who permitted the researcher to distribute questionnaires to students. One of the lecturers refused to allow his classes to be interrupted because they were preparing for examinations. |
| **Employer (Industry, government, private organisations or NGOs)** | CEO or Director | Non-Random sampling (purposive) | The Head of Department or Chief Executive Officer (CEO) designs recruitment procedures or drives policies or a strategic plan. Some of these people took part in interviewing prospective employees. Six CEOs or Heads of Department were interviewed. |
| | ES Graduates | Non-Random sampling (snowballing) | The key people in this study who would provide information about their employability and experiences within the world of work. This type of non-probability sampling was chosen using snowballing because no tracer studies were done by the institution. Six ES graduates were interviewed in the companies and departments visited. |

Six lecturers and two administrators were interviewed face-to-face. Purposive sampling - which was convenient - was used. This targeted academics or lecturers from the human and physical aspects of ES. Two were from Human Sciences while three were from Physical Sciences - one of whom also taught techniques (GIS). All the interviews were recorded and later transcribed.

The second site comprised employers and included three private companies and three central government departments (Environmental Affairs, Town and Regional Planning and Waste Management and Sanitation). Two graduates from the Department of Waste Management and Sanitation were interviewed together at the same time. Some of the private companies were medium-sized and others were very small ones, employing up to five people. The details of these private companies and government departments were obtained from the telephone directory and others came from the participants interviewed by means of a snowballing process. All of them focus on environmental issues

as consultancies in areas such as Environmental Impact Assessment (EIA).The Environmental Affairs Department was strategically chosen because it coordinates environmental issues in Botswana. Six employers and six graduates were interviewed from the companies and departments. Graduates were referred to the researcher by employers. The researcher did not choose which graduates to interview because it was not possible, but asked to interview anybody who was available and who would be willing to participate in the study.

### 3.3.2 Instrument Development

This section focuses on the instruments used; how they were developed; and how the data was collected. Semi-structured interview schedules were drawn up for collecting qualitative data while self-administered questionnaires with a few open-ended questions were compiled to collect quantitative data. In order to present this information clearly, in sub-Section 3.3.2.1 the interview schedules are discussed while in sub-Section 3.3.2.2 questionnaires are discussed.

#### *3.3.2.1 Semi-structured interview schedules*

Semi-structured interview schedules were developed to conduct in-depth, face-to-face interviews with participants to elicit their subjective thoughts and knowledge, based on the experiences they have had with the subject of employability. To interview all the stakeholders involved, the researcher had to develop 3 sets of interview schedules. The interview schedules were developed by the researcher and shared with the supervisor for feedback. After several revisions the final draft was piloted with two academics, an employer and one ES graduate. Questions that seemed to be too long had to be revised and the researcher also learnt from this piloting, for example, when to stop talking and to listen. Lengthy questions were either split or asked differently. The final schedules were approved by the supervisor before the actual interviews started.

Although the different schedules covered more or less the same questions, to increase the reliability of the data collected, there were some issues that directly affected one or other of the groups. For example, issues concerning the delivery and management of the curriculum could only be answered by the academics and administrators and only employers could comment on how best they thought the curriculum could be delivered. For the issues that were common to all, the participants answered questions, such as how best to prepare students and graduates for the world of work and whose responsibility it was. The schedules contained questions that enabled in-depth interviews with individuals which were semi-structured. However, as the interviews progressed they became more structured and more formal (Mertens, 2005). Semi-structured interviews were held with various participants to expand or maximise the variability of the entire population concerned. The participants were the following:

a. ***Academics.*** This group was made up of mainly lecturers. The plan was to interview four lecturers, but instead six lecturers were interviewed. The 'theoretical saturation' point was used

o determine the size of the sample where no new cases were included if they did not add any new information to the study (Fink, 2005; Maykut, *et al.*, 2004; Blanche, *et al.,* 2006). Generally, questions focussed on the understanding of employability; how this concept is incorporated into the curriculum; and measures taken by the department to ensure that students obtain employability skills. Employability audits were also discussed as a quality assurance measure that could be used to ensure the employability of graduates and students. These types of questions were deep and detailed. Probing was important to get to the deeper meaning of what was said, which could not be achieved by means of the questionnaires.

b. ***Administrators.*** The Dean of the Faculty of Science and the Head of Department were interviewed and they were asked questions related to policy and vision for the department as far as employability and quality of graduates is concerned. The schedule also contained questions on how employability audits could be introduced to enhance the employability of graduates, especially graduates from the Department of Environmental Science.

c. ***Employers.*** Six employers were interviewed from six establishments. The establishments represent organisations either private or public that employ Environmental Science graduates. Some of these are private consultancies doing Environmental Impact Assessment work. Six employers were interviewed after which saturation point was reached where no new information was obtained. The main focus was to find out if graduates that they employed had the appropriate employability skills for their business/organisation and whether there was need for more graduate-level skills in the workplace or better use of the existing ones. Furthermore, it was critical to investigate which skills they valued more; what measures they had in place to improve graduates' employability skills; how - as employers – they contributed to the enhancement of employability skills of ES students; and what recruitment policies they had in place to ensure that they recruited the best graduates. The questions also covered the effect - if any - that massification had on finding quality graduates; and whether or not they had experienced any differences in the quality of graduates.

d. ***Graduates.*** Six graduates from the same six establishments were interviewed. Six graduates were interviewed after which saturation point was reached where no new information was obtained. The schedule contained questions related to their employability status; what employability skills they possessed; which skills they considered to be in most demand within the context of Botswana; and whether or not their employability skills contributed to their getting the jobs. The schedule also contained questions concerning their education and whether it helped them obtain the skills they had and how it had done so; what they, themselves, had done to improve their employability skills; opportunities they had in the work place to obtain more skills; what work they did and whether it was related to their qualifications; and whether they had competencies for the jobs. There were also questions on how employability audits could help students become more employable.

**3.3.2.2 *Questionnaires***

The questionnaires were structured ones with a few open-ended questions for ease of analysis. The instrument was self-administered in the sense that the questionnaires were distributed to students who then filled them in on the spot and handed them back to the researcher. There were two questionnaires for two different categories of students, i.e., first year ES students and fourth year ES students. Both first and fourth year questionnaires were developed from a sample questionnaire from the South African Qualifications Authority (SAQA). A letter had to be written to request permission to use this questionnaire contained in a study that SAQA conducted which was similar to this study. A few questions were selected from SAQA's questionnaire and adapted to suit the context and focus of this research. To ensure the content validity of the instruments for the two sub-groups, a specifications matrix listing the items and what they intend to measure (Mertens, 2005) was used when designing the questionnaires to make sure that no irrelevant questions were asked. The drafts of the questionnaires were shared with the supervisor for her input. After several revisions, a pilot study was conducted with a few students - two from the first year sub-group and the other two from the fourth year sub-group. The piloting of the questionnaires was done to make sure that questions were clear, short and focused. This process did not only assist in clarifying questions but helped determine the focus of the questions. Furthermore, this process was introduced simply to obtain feedback from students and to determine whether there were questions that were not clear. A few questions seemed problematic and those were revised. The final draft was sent back to the supervisor for her final input before the questionnaires were administered. Both instruments for collecting qualitative and quantitative data were approved by the Ethics Committee before data collection began.

a. ***First year ES student questionnaires*** – One hundred and fifty self-administered questionnaires were distributed and only 132 could be used. The rest that were either not well answered or had many gaps in them were discarded. Questions were closed-ended with a few open-ended questions for greater depth. Except for the open-ended questions, all the questions had answers given on a Likert scale. These questions were, basically, meant to elicit issues, such as what skills first year students brought with them from basic education; why they chose their programme of study; how they thought the university could help them acquire employability skills; whether that was happening; how they, themselves, were going to make sure they gained the skills needed in the labour market; and which skills they thought were the critical ones. It was also important to find out how they thought employers could contribute to enhancing their employability skills and how the TEC - through employability audits - could help to enhance their skills.

b. ***Fourth year ES student questionnaires*** - For the final year students, 140 questionnaires were distributed but only 117 could be used. Some were not returned and others contained many gaps and could not be used. As in the case of first years, these were distributed in class and were self-administered. The questions were similar to those of the first year students but focused more on whether their initial expectations had been realised; how HE helped them become more employable; and whether or not the teaching methods used enabled the development of employability skills. It was also important to establish which teaching methods were more effective in enhancing employability skills and knowledge. The questions also

attempted to find out what competencies they had and whether they were ready for work as they prepared to enter the labour market.

The measurement of knowledge, skills and competencies (KSC) as objects of measurements was done - not in terms of the actual measurement of KSC, but in terms of which ones are most critical and which ones they possess, compared to what graduates and what employers said in the face-to-face interviews. In this way qualitative and quantitative data collected was integrated and compared for analysis. Both nominal and ordinal scales were used in measuring KSC. The former was used for comparing categories of respondents, i.e., first and fourth year students (Blanche *et al.*, 2006; Walliman, 2007). It was also used in the questionnaires for "YES" or "NO' answers and answers, such as the faculties they came from; types of sponsorships they had; and which skills were developed during their years' of study. Ordinal scales form categories that are different from each other which can be ranked or ordered in terms of attributes, such as "disagree" and "strongly disagree", where mathematical relations of < and > can be established (Walliman, 2007). Ordinal scales were used to measure the KSC that students have - as opposed to what employers want and Likert scales were used to measure students' employability skills, knowledge and competencies. This scale was also used to measure participants' satisfaction levels on how the curriculum was delivered.

### 3.3.3    Data Collection

This section focuses on how data was collected, using the instruments described above. It should be noted that priority was given to qualitative data, using the sequential data collection method. The initial qualitative data collected and analysed helped provide an insight into some of the issues that could be verified and explored further by using the quantitative data collection instruments. Issues, such as teaching methods used; how effective they were; and whether there was any relationship established with employers, could easily be triangulated with the questionnaires from the students. Qualitative data, therefore, helped build the quantitative data instrument. The third phase was another set of qualitative data instruments which further explored issues raised and provided an opportunity to verify claims made either by students, academics and administrators. Furthermore, such a mix or variability of participants provided opportunities to integrate qualitative and quantitative approaches during the data collection process. Using results from the qualitative data collected and analysed to assist in the design of a quantitative instrument is a form of integration (Creswell, 2004). Likewise, data collected and analysed from the quantitative instruments contributed to the design of the qualitative instrument to enhance and enrich the study. The discussion in the sub-section will be presented as *per* the type of data.

#### 3.3.3.1  *Semi-structured interviews*

Face-to-face interviews were preferred because they are more effective in collecting and sourcing detailed information from participants as opposed to using questionnaires to collect quantitative data. Such interviews also allow for probing. To collect data through in-depth, face-to-face interviews some preparation needed to be done. Semi-structured interviews of about an hour's duration were to be

conducted which first required letters to be written to explain the process and to make appointments with the participants. Arrangements with all the participants, academics, administrators and employers, to meet them in their offices where there was privacy, less noise and fewer interruptions were made by phone. With the graduates a quiet spot was chosen within the work environment, if they did not have their own office. All the interviews conducted were on a one-to-one basis except for one interview where two graduates preferred to be interviewed at the same time. During that interview the researcher made sure that neither of them dominated the discussion as the interviewer gave each one an opportunity to answer each of the questions asked - even if it was just to say that they concurred with their colleague. A data collection kit was prepared by the researcher with all the materials needed for the interviews, such as a voice-recorder, batteries and electrical cord. A researcher's journal was used for taking notes during the interviews which was useful in some cases; where the recordings were not clear the researcher could cross-check with the notes taken. Impressions gained from the interviews were also noted in the journal.

All the interviews were recorded using a voice recorder. No participant was uncomfortable with the use of the tape recorder as once permission had been obtained to use the voice recorder and it had been explained why it was necessary to record the interview, none of the participants objected to its use. The voice recorder was placed on the table in front of the interviewee where they could see it to maximise sound and clarity of the recordings. Immediately after the interviews, as much as possible of the recordings were transcribed. All 19 interviews were conducted and transcribed by the researcher which was thought to increase the reliability of the data collected. No research assistants were engaged for this job. This process allowed the researcher to obtain a better understanding and insight of what participants said. It also helped in preparing for the following interviews; how to ask questions better; and where, necessary, to cut down on time spent on the interview. Having the researcher do all the interviews was also necessary to ensure that the interviews were conducted with professionalism and skill and focused on the critical issues which only the researcher would be aware of to maintain consistency. After transcribing the interviews the reports were sent back to the interviewees for possible correction and additional information, where necessary. In some cases it was not possible to return the reports because the interviewees had left the country or they were just not available.

### 3.3.3.2 Self – administered questionnaires

The use of self-administered questionnaires involved the delivery and the administration of the questionnaires. Arrangements were made with the Head of Department and co-ordinators of both first and fourth year students to request their students to participate in the study. Appointments were made to meet with the two groups of students in specific lecture rooms. Once co-ordinators or lecturers agreed to have their classes included in the study, appointments were made to administer the questionnaires. The idea was to use lectures that were attended by the majority of first year and fourth year students. However, it turned out that for first year students there were only two groups and both groups were included in the study. With the fourth year students only those whose lecturers were willing to have their lectures taken up by the questionnaires were included in the study. The lecturers or coordinators, themselves, were chosen at random. This was the best and easiest way of accessing

students. Otherwise it would have been almost impossible to find the students on campus. Once the researcher was in the lecture room, the students were briefed about the exercise and requested to volunteer to participate. Questionnaires were distributed, personally, by the researcher in the lecture hour and students were requested to complete them, after which they were all collected. Only the students who accepted to participate in the study were given the questionnaires to complete. In most cases almost all the students in class participated.

### 3.3.4    Research Procedures

This section discusses the procedures that were followed when carrying out the research. All the critical steps taken in the research are discussed and explained in detail. Figure 3.4, below, illustrates in more detail precisely how this was done.
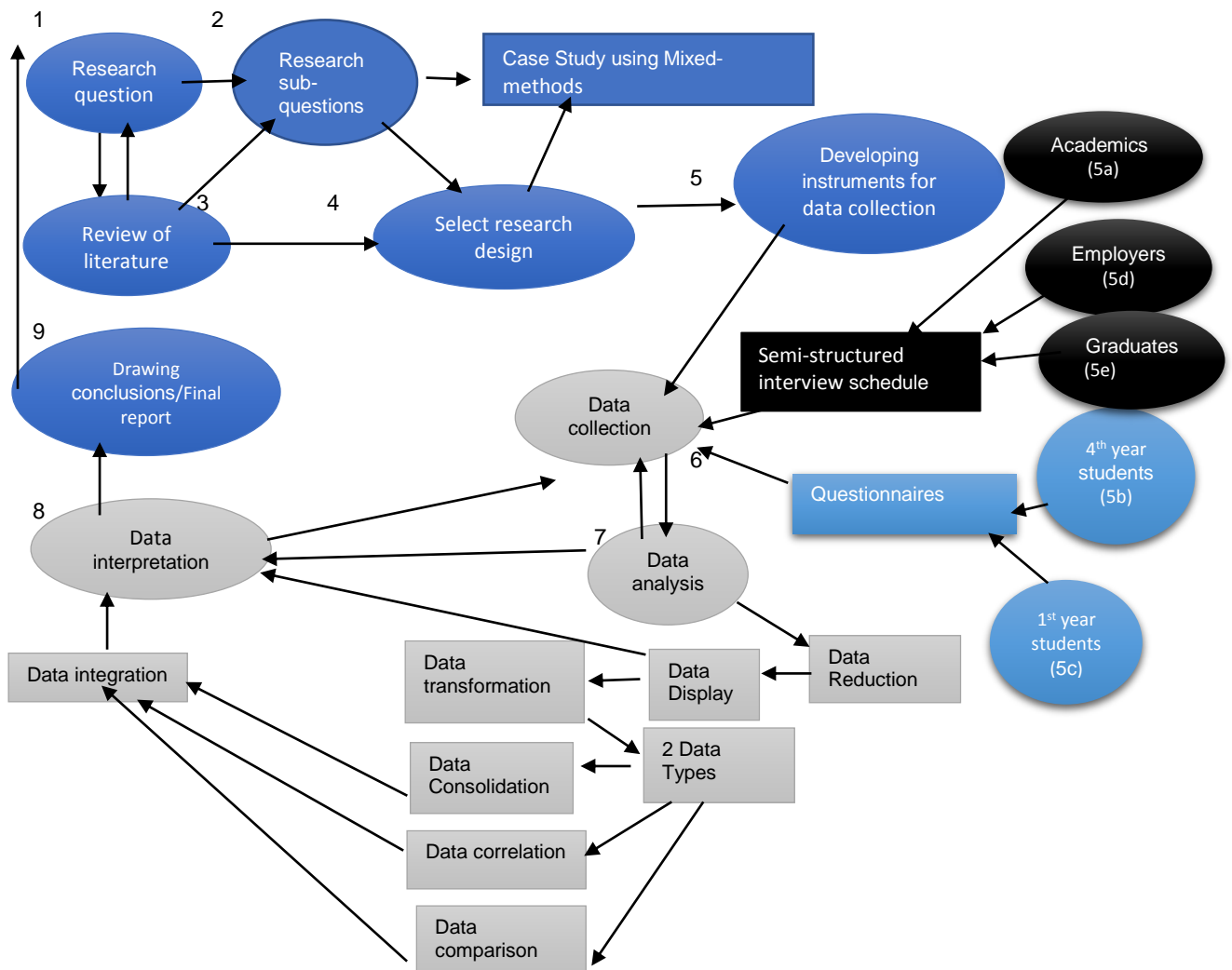


**(Adapted from Johnson, & Onwuegbuzie, 2004)** (Circles 1-8 represent steps in mixed-methods; diamonds and squares represent components of the process.)

**Figure 3.4: Mixed Research Process Model**

The study began with a tentative **research question** (1) which was revised after the **review of the relevant literature (3).** In between, the purpose of the mixed methods was considered looking at its strengths and weaknesses. The research question and the review of literature informed the development of the **research sub-questions** (2) which led to, the use of, the mixed-methods. The review of literature was, basically, to narrow the research question and focus it on what had not been covered by other research studies to break new ground. That process was followed by selecting a **research design** (4) which, in this case, is a case study design, using mixed methods. This approach was seen as the best way to answer the research question and at the same time benefit from the strengths of both quantitative and qualitative research methods. The process lead to the development of **research instruments (5)** guided by the research question. The main instruments that were designed were interview schedules for the qualitative data and the questionnaires for the quantitative data. Each sub-group group had its own instrument, i.e., the students, the academics and the employers each had a different research instrument. **Data collection (6)** consisted of three stages: i) the conduct of structured interviews with academics was followed by ii) the distribution of questionnaires to students (quantitative data), after which iii) more interviews were held with employers - followed by graduates (qualitative data). Interviews with academics and administrators could not be completed before distributing questionnaires to students. Students were in the process of preparing for examinations and the researcher had to finish collecting data with students before going back to continue interviews with academics. At times, because of the challenges regarding the availability of participants or the cancellation of appointments, interviews were held in between with employers and their employees, i.e., the graduates. The process was not a straight forward, smooth one and the researcher had to go back and forth. The diagram presented is a graphic presentation of the research process for the study.

**Data analysis (7)** was structured in such a way that as interview data was collected, the data was immediately transcribed, coded, memorandums were written and analysed (*data reduction*). With questionnaire data analysis the data was reduced, using descriptive statistics followed by factor analysis. *Data display* is describing the data pictorially through the use of matrices and networks for qualitative data and bar charts and tables for quantitative data. After *data reduction* and display, data transformation was done whereby quantitative data (open-ended questions) was transformed into qualitative data, coded and analysed using Atlas.ti. *Data correlation* involved the correlation of questionnaire data with interview data to see the links and relationships. *Data consolidation* involved bringing the two types of data together to create consolidated variables. After that *data comparison* was done comparing qualitative with quantitative data to determine similarities and differences - even contradictions, if any. *Data integration* facilitated **data interpretation (8)** which characterises the final stages of the research where both quantitative and qualitative data were integrated into one whole study whose results are reported in the drawing of conclusions. The conclusions drawn are expected to answer the main research question **(1)**.

### 3.3.5  Data Analysis

This section discusses the analysis of the qualitative and quantitative data. The analysis of qualitative data was done simultaneously with data collection. The researcher did not wait until all the data was collected before it was analysed (Fink, 2009). During the data analysis process, there were several other stages that took place as represented by the squares in Figure 3.4. The quantitative data that was collected informed the analysis of qualitative data by providing data that could be verified and compared.

#### 3.3.5.1  Interview data

As this data was collected, it was analysed because it was the first type of data to be collected. The 19 interviews were transcribed and then uploaded into Atlas.ti as primary documents assigned to the project, named "Graduate Employability PhD".  To facilitate the analysis, the primary documents were grouped into different families according to the source of the data. Consequently, 3 primary document families were created, namely, academics and administrators, graduates and employers. This process was followed by the coding of the data, writing memorandums and comments within a single project contained in one Hermeneutic Unit (HU) digital domain (Friese, 2012). Through interpretive- descriptive analysis (Maykut *et al.*, 1994) and as more interviews were analysed, the data began to make sense and one could form opinions of the meanings of what was collected.

Thematic content analysis was used to analyse all the qualitative data. This was done by coding the entire data set according to emerging themes to find common answers to open-ended questions (Fink, 2009). In this case codes were created in response to specific research questions which were answered through the patterns of meanings (themes) that emerged across the data set. Since this is qualitative research the frequency or prevalence of the themes across the data set helped establish issues of grave concern to the participants which also became of interest to the researcher. The prevalence of the themes also helped to discern what was important and to strengthen the nature of the "truth" according to how participants viewed it. Some of the themes emerged from one interview or data item but as long as they answered a critical research question they were captured and analysed (Braun & Clarke, 2006). As such, thematic or content analysis is seen as a method that can be used in qualitative research to draw out or tease out detailed - yet complex - accounts of the data collected (Wilkinson, 2000; Braun & Clarke). It is argued by Braun & Clarke that this method is free of theoretical and epistemological stances, making it available to be used across a range of theoretical and epistemological approaches used in research to reflect and unpack reality.

The constant comparative method was used to identify different themes from similar and consistent answers to the same question. Different units or components of meaning were collected and grouped with those similar to them and coded or categorised (Maykut *et al.,* 1994). If none of the units were similar, then a new category or code was formed which could later be re-grouped into a single family or merged and renamed. Codes emerged as themes were identified across the entire data set that tended to answer specific research questions which matched the inductive approach rather than the deductive approach. Everything that was said relating to the employability of graduates was coded, covering

diverse themes that were not necessarily related to previous research (Wilkinson, 2000; Braun & Clarke, 2006). Through this method 83 codes were created. Once the data was coded with memorandums and comments attached, quotations were produced from segments of the primary data which could be used in the further analysis of the data by using various tools available on Atlas.ti. Making use of such quotations in the analysis and citing them in the report was critical in this research because this is an under-researched area in Botswana and very little is known about the views of the participants (Braun & Clarke) - especially in the case of academics, administrators and even employers (TE Policy, 2008; Ama, 2008).  Some of the tools used were the Query Tool and the Co-occurrence tool.

### 3.3.5.2  Steps taken during the thematic content analysis

Below is a summary and an outline of the steps taken during thematic content analysis. The ideas were adapted from Wilkinson (2000).

**Summary of Steps taken during Thematic Content Analysis**

i) **Familiarising myself with the data.** Data Collection by the researcher that involved conducting interviews assisted the researcher in forming a good picture about the data and areas of focus and interest for the analysis. Notes were made during data collection which the researcher went back to at the analysis stage.

ii) **Transcription of voice recordings from interviews.** All 19 voice recordings from interviews were transcribed and written out before thematic content analysis and coding could be done. Each interview took about 8 hours to transcribe. While transcribing, interpretive analysis was being done as well because this was a good way of obtaining a deeper insight of the data and views put forward by participants. Entire conversations were transcribed *verbatim* or orthographically and non-verbal utterances like laughter, were also included. Questions that were asked by the researcher were also included. Punctuation was included because this could change the meanings of what the participants said (Wilkinson, 2002; Braun & Clarke, 2006).

iii) **Getting to know Atlas.ti.** The software used for the analysis of qualitative data was Atlas.ti In preparation the manual was reviewed as were papers and books written by experts, such as Friese (2009) and Contreras (2011), on the use of the software. **Generating initial codes in Atlas.ti.** Once the data was transcribed it was uploaded into Atlas.ti. Variables were individually named and coded so that once in the database system they could easily be analysed (Fink, 2009). Coding was done by the researcher not *in vivo*. The codes were carefully created as themes emerged in the entire data which were of interest to the researcher and answered specific research questions. Memos and comments were also written that would later assist in the analysis. Codes produced quotations that would be used in analysis.

iv) **Searching for emerging themes.** Once all the data was coded, various themes that emerged were identified and categorised into families that addressed specific issues, e.g. competencies that graduates possess or how audits could be used in institutions to facilitate the employability of graduates. All the codes related to these themes were put together and their extracts or

quotations were attached as evidence. Visual presentations were produced with the help of Atlas.ti. such as tables and networks. This is where relationships between codes and themes were established with the help of tools, such as the code co-occurrence tool and the Network View Manager and the Query Tool. Some of the initial codes became themes, while others formed sub-themes or were discarded or merged into other codes to form themes. Some of the codes that did not seem to belong anywhere formed a new category, called miscellaneous, for further analysis.

v) **Reviewing selected themes.** During this stage the researcher reviewed all the themes created; what they meant and which research questions they addressed. This was done by reading all the comments and memos written to see what ideas emerged and what the researcher thought about the quotations generated. Where themes did not seem to make sense they were re-arranged, broken down, re-coded and codes re-grouped. The idea was to create coherent groups and identifiable distinctions (Braun & Clarke, 2006). What was missed in the initial coding was then coded. The purpose of this stage was to make sure that the story unfolded by the codes and themes was clear and in line with the research questions. The story was presented in writing as findings. The writing of findings was an on-going process.

vi) **Analysis of themes created.** Analysis begins with transcription and coding. This stage was the detailed analysis of the themes created and their quotations and what they meant in relation to the main research question and the specific research questions. The researcher started writing the findings and discussion chapters from this kind of analysis. It was also important that the themes identified did not overlap but each related a different aspect of the bigger story portrayed in the data. Data integration, comparison, correlation and consolidation started at this stage when quantitative data was introduced. After analysing the statistical data the results were integrated with the analysis of qualitative data to create the bigger picture brought forward by the two types of data. Sub-themes were also created at this stage of the analysis to give a structure to the entire data set. Where necessary themes were re-named.

vii) **Writing the report.** Writing the report at this stage was merely collating all the ideas already written down in a coherent, concise, logical and non-repetitive manner. The task was to convince the reader of the validity and merit of the analysis and that the story told had something new to add to the body of knowledge already collected. Extracts or quotations generated from the data were used to illustrate arguments made or as evidence.

Description is the primary aim of qualitative research (Maykut *et al.*, 1994), but it is inevitable not to interpret data when one has to decide what to report as the outcome of the research. Therefore, writing the discussion chapter went beyond just describing what was in the data but also interpreting it within the context of the research questions and how each of the themes related to one another. It was critical to make the arguments and discuss them within the theoretical framework of the study. It was also important at this stage to compare the findings with the claims made by other authors, elsewhere, emphasising the importance of the context of this study - the epistemological approach (Wilkinson, 2000) used in this study and, hence, the breaking of new ground. The context of this study is discussed in terms of location which is the city of Gaborone and cultural and societal background where the UB

at the time was the only university offering the ES programme being studied. Data was carefully managed using the Atlas-ti qualitative data analysis programme.

### 3.3.5.3 Questionnaire data

All the data from the questionnaires was entered into the SPSS, Some of the first year data was entered by the research assistant and the rest of the first year data and fourth year data were entered by the researcher. The latter was important to gain an insight of the data presented. Missing data was indicated and analysed. Original data was kept as raw data that would assist in the analysis - in case some of the data had been wrongly entered. This proved very useful because even at the stage of writing the report, these questionnaires had to be re-visited. Descriptive statistics were generated and measures of central tendency were analysed. For example, nominal data from responses, such as "Yes' or "No", dichotomous variables were categorised without any order. Descriptive statistics, such as mode and median, were used to determine the frequency of occurrences. Where ordinal data was collected, such as asking participants if they agreed or disagreed about the competencies they had, descriptive statistics were calculated including median and mode, rank order correlation and non-parametric analysis of variance. As the questionnaires contained some categorical data, statistical computations and Chi-square tests were calculated for statistical inferences and were also used to compare the different categories. Correlation co-efficient, for example, were calculated between what the employers said they want in terms of skills and the skills graduates thought they had. All these computations were done with the help of the SPSS programme. However, as no causal relationship can be determined by this research design, only associations were sought.

The data had to be cleaned before analysis to make sure that it was of good quality and to ensure that it produced results that could be trusted. Other categories of students that were not meant to be part of the study were merged into the two categories, i.e., first and fourth year sub-groups as *per* the intention of the study. The categories that were merged were second years and third years. Second years were merged into first years and third years into fourth years. The alternative was to remove these two categories which would have meant losing valuable data.

### 3.3.5.4 Secondary data

Document analysis, as a qualitative research method, was used to collect secondary data. A number of documents were reviewed and analysed to elicit meaning and gain an understanding and knowledge of issues related to the subject of this study (Merriam, 1988). These documents contained text recorded without the researcher's intervention (Bowen, 2009). For example, Environmental Science curriculum and policy documents were read and analysed to see if there was any correlation with responses from students, graduates and academics about skills acquired and whether these skills were embedded in the curriculum or not. Document analysis, therefore, provided a good form of triangulation for credibility of data collected from the interviews and the questionnaires. In a case study using mixed-methods, document analysis also helped provide a rich description of the employability of graduates and how

higher education and employers or do not enhance the employability of graduates. Documents, such as policies, strategies and the curriculum, gave empirical evidence for a case-study (Bowen).

## 3.4 METHODOLOGICAL NORMS (VALIDITY AND RELIABILITY ISSUES, AND TRUSTWORTHINESS/CREDIBILITY)

The methodological norms in this study are discussed in terms of mixed-methods - distinguishing qualitative from quantitative research methods. The ideas expressed were obtained mainly from Walliman (2006). The presentation in this section follows the following structure: In sub-Section 3.4.1 the provision for trustworthiness in qualitative data is discussed while in sub-Section 3.4.2 the validity of quantitative data is presented.

### 3.4.1 Provision for Trustworthiness in Qualitative Research

Trustworthiness or credibility of findings is an important provision in qualitative research that addresses the believability of the research findings that emerged from this study. The following processes contributed to the trustworthiness of this study:

#### 3.4.1.1 *Purpose of the study*

The purpose and objectives of this study were clearly outlined in the introduction of Chapter 1. That had to be done at the onset in a transparent way for any reader to follow the chain of reasoning throughout the thesis. This transparency contributed to the believability of the research. Furthermore, the aims of the study presented in Chapter 1 are achievable and were achieved. The aim of this study was to explore and describe the basic situation concerning the employability of Environmental Science (ES) graduates in Botswana and to provide evidence that would either confirm or refute claims that graduates in Botswana, in general, are not employable. It was also the aim of this study to investigate whether employability audits could be used to ensure the employability of graduates in Botswana. All of that was achieved. If aims are not achievable, that - in itself - becomes a form of deception for the researcher and the community at large (Walliman, 2006).

#### 3.4.1.2 *Multiple methods of data collection*

The combination of interviews, questionnaires and the review of relevant documents all contributed to an understanding of the issue of employability of ES graduates from different perspectives and ways of knowing. Data integration and interpretation was done without losing the meaning of what people actually said by presenting quotes, where possible, from some of the participants. Transcription was also done *verbatim*. Frameworks, such as Quantitative/Qualitative Legitimation Models (Johnson & Onwuegbizie, 2004) were used in the final stages of the research to assess the trustworthiness of both the qualitative and quantitative data at the data collection, data analysis and data interpretation stages. This was done in the case of inside-outside legitimation by checking interpretations and conclusions made by the researcher especially in terms of qualitative data. Capitalising on minimising the weaknesses of one method by the strength of another method in the case of weakness minimisation

legitimation also helped improve the trustworthiness of this research. Having a bigger sample in quantitative method for example, was an effective way of minimising the weakness of a small sample in interviews conducted.

### 3.4.1.3 Building an audit trail

Using a researcher's journal to keep an accurate account and to document what was done; how it was done; the information obtained; techniques used; the analyses made; and the results obtained all contributed to an audit trail. A clear and detailed description of the data collection and analysis of both qualitative and quantitative data was useful in the audit trail. A tape recorder was used with the consent of the participants to store the interviews and the original interview transcripts and field notes were all kept to add to the audit trail and walk readers through what happened in this study from beginning to the end.

### 3.4.1.4 Working with a team

Working with a few research assistants helped increase the trustworthiness of this research. Several debriefing sessions and meetings were held with research assistants to walk them through the process of capturing the quantitative data. The SPSS template that was used was checked several times before the completion of the data entry. A statistician was consulted several times, when necessary, to assist with the analysis of quantitative data. That helped the researcher a great deal in understanding of the quantitative data and what to report and how to report it.

### 3.4.1.5 Member checks

After the interviews the research participants were given the transcribed interviews to check whether the data accurately captured their experiences. However, it was not possible in all the cases to give the participants the transcriptions because some of them were not available.

### 3.4.1.6 Maximum variation sampling

Maximum variation sampling (see sub-Section 3.3.2.1) was used for trustworthiness where the range of experiences of the phenomenon is achieved through the variability of the selected sample (Maykut & Morehouse, 1994). This type of sampling also achieved triangulation, for example, interviewing the head of department, the dean and lecturers helped validate the collected data. When interpreting data, no data was left out or excluded because it did not seem to agree with the researcher's ideas as that would be considered a serious breach of integrity (Walliman, 2006). Furthermore, bias may have occurred, but again the researcher did not deliberately leave out information that was contrary to the findings as that would be a serious breach of honesty.

### 3.4.2 Provision for Validity and Reliability in Quantitative Research

To ensure the content validity of the instruments for the two sub-groups, a specifications matrix was used (see sub-Section 3.3.2.2.) when designing questionnaires to make sure that no irrelevant questions were asked. The instrument was also pre-tested before it was used. The students were asked

what they thought about the questionnaire and if they thought it captured all the important questions that should be asked. Based on their answers, minor modifications were made to the layout and wording before the instrument was distributed for the final collection of data. Where necessary, language and sentence construction in every question were examined and adjustments were made to ensure that participants did not confuse the content of the items. Criterion validity was also used to ensure the validity of the instrument by adapting an existing instrument that measured a similar concept (DeVaus, 2002). Adaptation was necessary since this instrument was not meant to be used in the Botswana context (see sub-Section 3.3.2.1).

Randomisation, as another means of gaining validity, was achieved through the random sampling of students for validity, since the study sought to explain the link between employability and the quality of graduates. At the same time, a slightly larger size (249) of sample was obtained to achieve external validity. Randomisation avoids bias and affords the generalisation of the data. However, because this was a case study the issue of statistical generalisation was not a critical one. What was important was to achieve validity for analytical generalisation (Yin, 2009) in order to be able to apply the results to similar situations and this was achieved (see Chapter 7 which concludes the study).

When measuring the skills of students and graduates, bias of any sort was avoided. The students were drawn from the same programme of study and had completed the same courses for construct validity and to avoid construct-irrelevance variance (Mertens, 2005). Disciplined analysis was used where from the beginning the researcher removed all forms of prejudice, preconceived ideas and prejudgement from the analysis (Maykut *et al.,* 1994). This allowed the data to present its findings without prejudice and to improve the validity of the study. The measurement in the instrument used was meant to collect the opinions of the participants.

In terms of reliability, the data collection instruments were consistent. There were no interventions or manipulation of participants, for example, when measuring the employability skills of graduates. Skills which were the attributes to be measured of students at first and fourth year level were measured within the same environment with no interventions or manipulation of their skills.

## 3.5    RESEARCH ETHICS

Ethics in research is about ensuring that the research conducted is legal and protects the rights of the individuals who participated in the study. Ethical research should also result in some good for the wider community and, if possible, the participants themselves (Walliman, 2007). Therefore, the chosen research methods were considered in terms of any possible harm to the participants. Taking these into consideration went a long way to making sure that the research was ethical and posed no harm to the participants. The University of Pretoria and the Government of Botswana have very strict policies on research ethics. The Ministry of Education and Skills Development (MOED) in Botswana has developed

ethical clearance procedures with which the researcher had to comply before undertaking the study. Forms had to be completed and a clearance certificate had to be issued by the Ministry before the research commenced. The University of Botswana will not accept a study without this certificate. The University of Pretoria also has its own procedures and an ethical clearance committee through which this research had to pass before permission was granted to carry out the study. Documents were prepared outlining the processes the research would follow to ensure the protection of participants. The committee examined the documents and approval was granted on the 29 February 2012. As one of the first steps in conducting ethical research two issues were kept in mind at all times:

i)   Values of honesty and frankness and personal integrity; and

ii)  Ethical responsibilities to the participants, like consent, anonymity and courtesy.

The following is a brief summary of how the above two points were taken into consideration. Most of the ideas expressed are adapted from Walliman, (2007).

a.  **Issues avoided when writing the report:**

- **Age** – avoided being patronising or disparaging;
- **Cultural diversity** – avoided discrimination, bias, omissions and stereotyping;
- **Disability** – avoided marginalising individuals and being patronising. In fact, there were no instances where this was necessary;
- **Gender** – avoided gender stereotyping. Just presented the data as it is; and
- **Sex** – avoided prejudice, intolerance and discrimination. In fact, there were no instances where this was necessary.

All these issues were taken into consideration as much as possible and avoided during the entire research process - not only during the writing stages.

b.  *Presentation.* This is concerned with how the researcher presented herself. Presenting herself as a student doing academic work was done without misleading the participants. The researcher did not attempt to present their institution or to position herself to get responses because this might have encouraged participants to respond in certain ways. This was avoided unless there was need to explain the role of TEC in quality assurance. It was important to adopt this position because the researcher's position may influence the attitude and expectations of the participants. The researcher was as friendly as possible - without it being misinterpreted to mean something else. Participants, for example, were not given the impression that by participating it would improve their situation, especially in the workplace.

c.  *Participants.* Participants were protected by ethical considerations. The researcher was always careful about what she said and how she said it. Courtesy and respect was observed at all times. When choosing participants, no pressure was exerted on them, like just dropping

a questionnaire off without a prior arrangement. Participants were given enough time to decide whether or not to participate so that they did not regret it at a later stage. Participants were informed of their choice to be able to withdraw from the study once it had started. No undue coercion was put on them to remain in the study if they wished to withdraw and this was made very clear at the onset of the study.

d. **Consent.** Obtaining consent for participants to participate in the study, in some instances, involved consulting with different people at different levels, depending on who the participant was. In some cases several layers of consent were required. At UB, for example, the consent of the Dean of the Faculty of Science was sought before going to the Department of Environmental Science. However, no consent was necessary from the Deputy Vice-Chancellor (VC): Academic Affairs before reaching the Head of Department, lecturers and students. The Head of Department's consent was necessary before speaking to the lecturers and students. Consent forms were issued to all the participants involved and they were signed by both the researcher and the participant before the study commenced. The written consent forms contained information consistent with the guidelines of the University of Pretoria. The consent form included the contact details of the supervisor and the researcher in case the participants changed their minds about participating or wanted to report any thing they were not happy about. All these forms were checked by the supervisor before they could be sent out to the participants. Conflicts of interest were avoided, such as between management and employees. Introductory information accompanied the questionnaires to provide sufficient information about the study. No commensurate compensation was necessary, for example, for the time of, and inconvenience caused, the participants. All the participants were, generally, very comfortable and volunteered willing to be part of the study.

e. **Anonymity.** This was ensured as every attempt was made to keep all the research data private and anonymous. If quoted, for example, it was done in a manner that it would not be easy to identify individuals as they were all given code names. The participants were informed beforehand of the strict confidentiality that would be maintained during and after the study. The consent forms they signed for the research included a statement on confidentiality. It was explained that the information provided would not be shared, except for research purposes. Protection for those who made comments of criticism was sought by ensuring anonymity through the use of code names. The participants were also informed that although their voices were recorded their names could not be used, only extracts of what they said. Pseudonyms - in this case - code names were used, where necessary. During the ethical clearance process with the university, the researcher had to stipulate how the data would be kept and who would access it. For example, only the research assistants, employed to enter data, had access to the quantitative data. It was also stipulated in the ethical clearance that data would be kept for as long as the study was still continuing, after which it would be discarded. The voice recordings together with the questionnaires would be destroyed once the study had been completed.

Chapter 3 began by discussing the research design in terms of case study design, the philosophical underpinnings of pragmatism and the justification of using a mixed methods approach. It continued by outlining the methodology of the study by giving details of the participants, the instrument development and the methods of gathering and analysing the data. Ethical considerations which guide the study were also discussed. The next chapter, Chapter 4, is the first of three separate chapters that are devoted to addressing each of the research questions.

# CHAPTER 4

# KNOWLEDGE, SKILLS AND COMPETENCIES ENVIRONMENTAL SCIENCE GRADUATES AND STUDENTS HAVE AND NEED FOR THE WORLD OF WORK

## 4.1 INTRODUCTION

In the review of the relevant literature it was clear that university graduates of the 21st Century need 21st century knowledge, skills and competencies for employability and a smooth transition into the world of work. The aim of this chapter is to address the first research sub-question, namely: **To what extent do students and graduates of Environmental Science degree programme from the University of Botswana have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana?** The skills, knowledge and competencies of students will first be identified when they enter the university and at the time of graduation to determine and evaluate the impact of higher education. These results will be evaluated against the skills that employers require or wider job requirements in order to establish any mismatch and the fitness for purpose of ES graduates (see Chapter 1).

In reporting the findings, both questionnaire and interview data will be integrated, compared and triangulated (see Chapter 3). Questionnaires were self-administered by 249 first and fourth year students while the interview data was collected during face-to-face, semi-structured interviews with six graduates, six employers and eight academics and administrators at UB. The analysis of the questionnaire data was done with the use of the SPSS where factor analysis was employed for data reduction. Descriptive analysis also involved cross-tabulation to compare the sub-groups. Qualitative data was analysed with the assistance of Atlas.ti, which made the coding of the data manageable. From the codes emerging themes were identified with the use of Atlas.ti (see Chapter 3).

In presenting the findings Section 4.2 will present the profiles of the participants; in Section 4.3 participants' views on the employability of ES students and graduates will be given; and in Section 4.4 the views concerning what knowledge, skills and competencies students and graduates have are matched with what employers expect. In 4.5 the conclusions of this chapter are presented.

## 4.2 PROFILE OF PARTICIPANTS

The demographics and profile of participants who took part in this study, namely, students, graduates, academics, administrators and employers are presented in this section. In Table 4.1, below, the number of students who participated in the study, the categories and their distribution in terms of gender are presented.

**Table 4.1: Student sample by year of study and gender in 2012**

| Year of study | Gender | | | | Total | |
|---|---|---|---|---|---|---|
| | Male | | Female | | | |
| | N | % | N | % | N | % |
| **1** | 50 | 37.9 | 82 | 62.1 | 132 | 53.0 |
| **4** | 48 | 41.0 | 69 | 59.0 | 117 | 47.0 |
| **Total** | **98** | **39.4** | **151** | **60.6** | **249** | **100.0** |

The student sample comprised a total of 249 participants from two sub-groups: first and fourth year ES students at the University of Botswana. This total includes the 26 2nd and 3rd years who were initially not part of the sample. The first year sub-group accounted for 53% of the total sample. Interestingly, the majority of students were females - constituting 61% of the total sample. It must also be reported here that in the sample there were some 2nd and 3rd year students who happened to be in the same classes as the sub-groups selected, either because they were repeating courses or making up credits. In total there were 26 such students, 9 were in 2nd year and 15 in 3rd year. Of these 18 were repeating students (see Table 4.2). In this table two participants did not answer the question on whether they were repeating or not.

**Table 4.2: Number of ES students repeating in 2012**

| Year of Study | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| | **N** | **%** | **N** | **%** | **N** | **%** |
| **1** | 6 | 4.5 | 126 | 95.5 | 132 | 100.0 |
| **4** | 12 | 10.4 | 103 | 89.6 | 115 | 100.0 |
| **Total** | 18 | 7.3 | 229 | 92.7 | 247 | 100.0 |

The other demographic to report on is that of location in terms of which secondary schools students attended. This question was only addressed to the first year sub-group. This is interesting data to report on in order to find out which part of the country first year students came from so that the researcher could establish a relationship - if any - between this variable and what they think about their choice of ES as a programme of study and their employability as ES graduates. Most of the first years 15 (12%) came from Naledi Senior Secondary School which is located in the capital city, Gaborone (see Annexure A, Figure A1). There is not much variation in terms of the schools attended. A few schools account for the majority of the students. The only one that stood out was Naledi Senior Secondary school while the rest of the students are clustered around a number of locations.

The age distribution of the student population that participated ranged from below 20 to over 30 (see Figure 4.1).
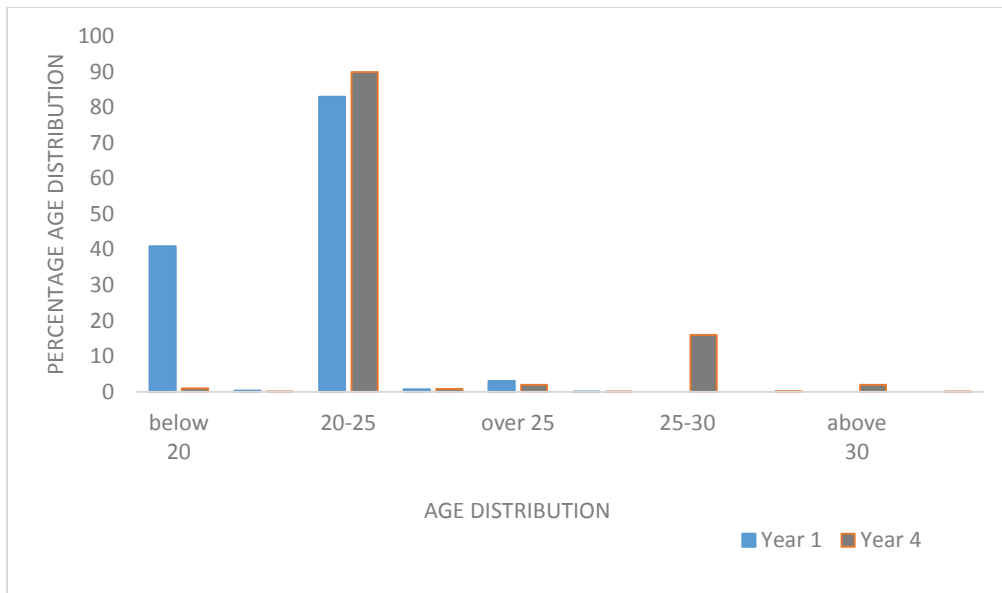
**Figure: 4.1 Age Distribution of Students by Year of Study**

Seventy-three per cent of the students (173) were between 20 and 25 years of age which represents the mode and mean age group of the sample population. 52% (n=90) of these students were in the fourth year while 48% (n=83) were in the first year.

It is also important to report on the faculties that the two sub-groups of students came from in order to indicate which of these students belong to the Faculty of Science. Two hundred and two (82%) students out of a total of 249 - with only 1 missing - were from the Faculty of Humanities. In both first and fourth year sub-groups, Humanities students were the majority of students - 107 (61%) and 94 (39%), respectively. The next large group, 26 (11%), came from Social Science while the Faculty of Science constituted only 13 (5%) of the total number of students. This is an interesting finding considering that the programme is housed in the Faculty of Science. Furthermore, when first and fourth year students were asked which programme of study they were doing, a total of 170 (69%) students - 108 (44%) first years and 62 (25%) fourth years, respectively - said they were doing BA Humanities. None of the students was doing a BSc in Environmental Science. Only 5 (3%) said they were doing a BA in ES (See Figure 4.2).
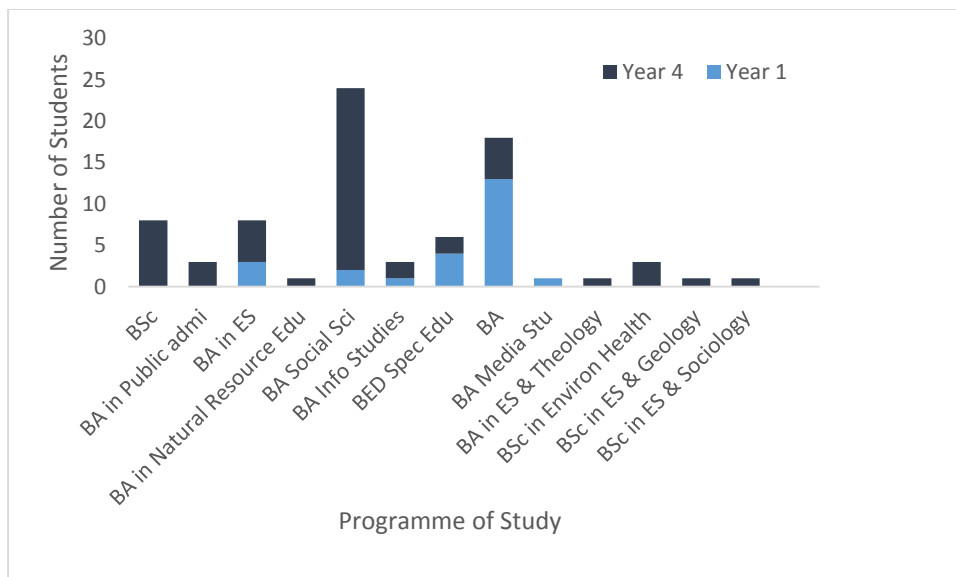
**Figure 4.2: Programmes taken by First and Fourth Year Students in the Department of ES**

Students had difficulty reporting what programme of study they were doing because they were taking courses from other faculties regardless of the fact that they were registered at the beginning of the year. Some reported ES as a course they studied while others considered it to be a programme of study. For example, some students said they did BAS which is a Bachelor of Social Sciences or Bachelor of Arts (BA), but did not go further to say what programme of study they were doing. They also confused programme of study with qualification obtained at the end of the programme. Students did not understand the difference between programme of study and qualification. Moreover, the UB website, under the Department of Environmental Science or the Faculty of Science does not have the programmes listed in Figure 4.2, above. The only programme of study offered by the Department of ES is a BSc in Environmental Science. Nevertheless, students indicated that they enrolled in programmes, such as BA in ES and BA in ES and Sociology. When asked about this anomaly, one senior academic in the faculty said:

> "*I think as far as ES is concerned we have not **differentiated** it. I think as a faculty we are at least since I became…. we have been making efforts to do just that and I think ES is aware needs to differentiate the qualification. And you are right even the employer out there doesn't know the difference*" (PA11:52:52).

This view was supported by another academic:

> "*Well if you are a double major that means you take them on an equal basis meaning you are half English and half ES so if you are registered in that faculty then you are still BA ES not BSC. BSC are only those who registered from the beginning as Science students*" (PA6:20:20).

Therefore, the qualification that the department says it offers is not a true reflection of what is happening on the ground. The qualification that is advertised both in the student manual and on the website is BSC in Environmental Science yet there are all these qualifications offered as indicated in Figure 4.2. The academics interviewed also indicated that ES, as a programme, needs to be differentiated into various areas of specialisation to include some of the qualifications currently not identified on the department's website. The academic (PA6) further acknowledges and recognizes the need for specialization which some of his colleagues in the department might not agree with. However, it was suggested that the differentiation of qualifications would assist employers understand who they are employing and the qualifications that the graduates are bringing and that will help employers assign tasks that are more appropriate and specific to the employee's capabilities.

The fact that most of the students are registered in other faculties is an issue that academics within the Department of Environmental Science are aware of. When they were interviewed about this they confirmed their awareness and also showed a concern and dissatisfaction about it. One of them said:

> "*Yes the BSc ES programme is a much smaller aspect of students we produce from the faculty as compared to combined major, and in Social Science. So the hundreds of students who graduate do not graduate in the faculty, they graduate somewhere else. So that is what is happening right now at least that is what I am aware of but this can be confirmed*" (PA11:70:70).

The statistics presented above confirmed that. In support of this view another academic said:

> "*Most of our students come from Humanities and second is Social Science and last would be Science. They are fewer. A lot of Science students transfer after the 2nd year. But within the Faculty of Science we might be having the highest proportions of science students*" (PA10:32:32).

Thus, Environmental Science is housed in the Faculty of Science but yet the majority of their graduates come from other faculties, such as the Faculties of Social Science and Humanities. Academics are concerned that they have no control over the majority of the students they produce because they graduate from faculties other than the Faculty of Science. That means that they cannot influence or guide them in terms of what courses they take - yet the students go out into the market and claim that they are graduates of Environmental Science.

From the nineteen interviews with academics and administrators, employers and ES graduates that were conducted in this phase of the study, six of these were with ES graduates. Of the six, four were females and two males and half of them were employed in private companies while the other half were from public or government departments. Three of the females were from private companies and one was employed by a government department. The two males were both from government departments. All the graduates interviewed had been working for at least one and a half years and they were all based in Gaborone where the study was conducted. The longest time reported for any of them to get a graduate job related to their field of study was 5 years. Likewise, eight academics were interviewed: six

were lecturers - four at professor level and two were administrators; one was Head of Department; and one was the Dean of the Faculty of Science.

## 4.3 VIEWS ON EMPLOYABILITY OF ES STUDENTS AND GRADUATES

This section addresses the question whether or not ES graduates are employable. The term employable here is used to mean having the knowledge, skills and competencies that employers want (see Chapter 1). It is also used to mean that employees are easy to train once they are in a job because of the knowledge, skills and competencies they bring to the workplace. In answering the research sub-question, both interview and questionnaire data are reported and integrated. To start the discussion a general overview on employability is given. In Section 4.3.1 the views of students concerning their employability are given; in Section 4.3.2 the views of ES graduates about their employability are discussed; Section 4.3.3 reports on the views of academics and administrators; and, finally, Section 4.3.4 reflects the views of employers on the employability of ES graduates.

### 4.3.1 First and Fourth Year ES Students' Views Concerning Their Employability

This section focuses on only the views of both first and fourth year sub-groups concerning their employability as Environmental Science students. In addition, the understanding of employability by students will also be given.

Students were asked what they thought about their employability as ES students. Specifically, the question was investigating whether ES students thought they were more employable than students who do not take Environmental Science as a course. Almost half of the students either said they were more employable or they were not sure - 43% and 47%, respectively. Only (n=25) 10% said they were not (see Table 4.3, below).

**Table 4.3: First and fourth year students' views on their employability on graduation**

| Year of Study | Employability on Graduation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | Not Sure | | Total | |
| | N | % | N | % | N | % | N | % |
| **1** | 42 | 33.1 | 12 | 9.4 | 73 | 57.5 | 127 | 100 |
| **4** | 61 | 53.9 | 13 | 11.3 | 41 | 35.7 | 115 | 100 |
| **Total** | **103** | **42.6** | **25** | **10.3** | **114** | **47.1** | **242** | **100** |

The point to note is the consistency of the responses. The table suggests that most of the 4th year students 53% (N = 103) said they were employable while only 33% (N=42) of the first year sub-group said thought they were employable. Among those who were not sure about their employability the

majority 57% (N=73) were the first year sub-group. The Chi-square test was used to determine if there was a relationship between the two category variables and the results indicate a significant relationship between the year of study and the way students think about their employability. This is consistent with the fact that half of the students said they were not employable while the other half said they were not sure. It also means that it is not by chance that students think the way they do. This is illustrated in Figure 4.3.
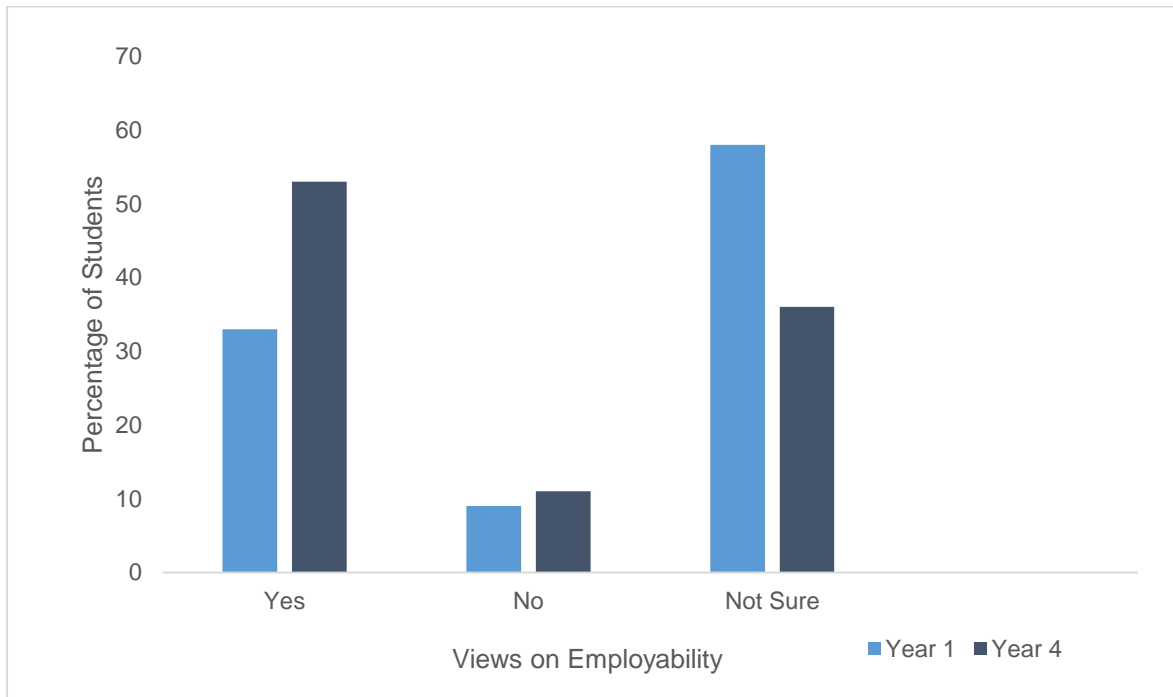


**Figure 4.3: First and Fourth Year Students' Views Concerning Employability**

There did not appear to be much of a relationship between gender and employability (see Tables A3 and A4 in Annexure A)[1], however, the correlation between the schools attended and employability among the first year sub-group is a very strong one (see Table A5 in the Annexure A)[2].

There were a total of 37 secondary schools attended by different individuals from the first year group. Of a total of 125 first year students, 34% (n=42) said that they were more employable than students not doing ES and about a third (12) of these came from only two schools, Naledi Senior Secondary School and Seepapitso Senior Secondary School. One school is located in an urban area while the other is in

---

[1] The strength of the relationship between gender and employability is almost negligible. Cramer's statistic is .11.
[2]The correlation between the schools attended and employability among the first year sub-group is a very strong one Cramer's statistic is .60.

a rural one. Of interest to note is the fact that almost half of the students from Naledi Secondary School who chose ES thought that they would be more employable as ES students. This might imply that when they chose the programme they had the labour market in mind and suggests that someone at the school might have given them that information.  The other group that said they were more employable were nine students who came from three schools, namely: Materspei College, Lotsane Senior Secondary School and Shashe Senior Secondary School, and all 3 schools are located in the north-eastern part of the country.  Fifty-seven per cent (n=70) of the 125 students said they were not sure if doing ES would make them more employable. The majority of these came from Madiba, St Josephs, Shashe, and Naledi secondary schools. Two of these are located in urban areas while the other two are in rural areas. Altogether, the four schools accounted for 24 of the students. From this finding it seems that the catchment area has no real influence on students' views concerning whether or not they are employable. However, the school they came from seems to have some influence on their views of employability. This may be as a result of the way Geography or Social Studies were taught at school and the kind of career guidance students received from the school might also have influenced their thinking.

In terms of faculty, it is important to report that although the majority of students came from the Faculty of Humanities - as presented in Figure 4.2, 44% of the students within that faculty maintained that they would be employable as ES students, that is, they expect to be employable upon completion of the degree. Forty-nine per cent said they were not sure and only 7% said they were not. Thirteen students came from the Faculty of Science, which is just 5% of the total sample that answered this question. Only 3 of these said they would be employable. From these findings one may observe that coming from the Faculty of Science does not, necessarily, mean that students feel more employable as ES students compared to those from other faculties.

To triangulate students' views on employability there is a need to look at the reasons they gave for why students thought doing ES would make them more employable or why they were not sure (see Tables 4.4 and 4.5, below).

**Table 4.4: Reasons first and fourth year students gave for employability**

|  | Year of Study | | |
| --- | --- | --- | --- |
| Reasons for employability | 1 | 4 | Total |
|  | N | N | N |
| Has work experience with ES firm | 1 | 2 | 3 |
| Industries are going green, course is  relevant | 30 | 26 | 56 |
| Knowledge, skills and competencies learnt in the course | 12 | 24 | 36 |
| Good grades | 0 | 4 | 4 |
| **Total** | 43 | 56 | 99 |

Almost all students (92) who said they were more employable said so for two main reasons: they thought ES was more marketable since many industries were going green and they found the course relevant or because of the competencies and skills they learnt in the course.

When students were asked to give reasons for lack of employability (see Table 4.5, below), more reasons were given by students who were not sure of their employability as compared to those who thought they would be employable on graduation.

**Table 4.5: Reasons first and fourth year students gave for lack of employability**

| Reasons for lack of employability | Year of Study | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | 1 | | 4 | | Total | |
| | N | % | N | % | N | % |
| Not sure about job opportunities and whether programme is marketable or not | 34 | 54.8 | 17 | 36.2 | 51 | 46.8 |
| Many students taking the same course; too much competition | 15 | 24.2 | 12 | 25.2 | 27 | 24.8 |
| No workplace skills and only theory on surface level | 5 | 8.1 | 9 | 19.1 | 14 | 12.8 |
| Taking one course in ES which is not enough the job market | 0 | 0 | 4 | 8.5 | 4 | 3.7 |
| Others, hadn't done research on the job market | 8 | 12.9 | 5 | 10.6 | 13 | 11.9 |
| **Total** | **62** | **57** | **47** | **43** | **109** | **100** |

From the table above, 51 students (47%) were definitive and said they were not sure if ES would make them more marketable and, hence, a lack of employability or a lack of confidence about employability. It is worth noting that students spoke about employability in terms of skills and competencies, indicating their understanding of the term. However, when asked to define employability 48% of them gave an answer which was not in line with the definition used in this study. They said employability meant not having a problem getting a job. Surprisingly, more than half of these were among the fourth year sub-group. Only 28% of the students gave an answer in line with the definition used in this study which talks about skills and knowledge that make one perform well at work. Only 2% of these students were fourth years.

When this data is triangulated further against what influenced students to choose ES as a field of study, there may be more clarity on their views of employability (see Table A6 in Annexure A). From these findings it would appear that employability was not a factor when students chose ES as a programme of study. Only 9% of the students thought the labour market was important. The majority of students chose the programme either because of a government scholarship or it was their own choice - the basis of which may be linked to the reasons given in Table 4.5, above. However, the students appear divided in their opinions about employability.

### 4.3.2 Graduates' Views on Employability

This section presents the results of the interviews with graduates on their employability now that they were out in the field working. Six graduates in the field were interviewed face-to-face (see Chapter 3) and like the students, they were asked if they were more employable as ES graduates. The results were similar to some of those from the students except the graduates' answers were more definitive. Three of the six of graduates (50%) said that doing ES did not make them more employable because they were not well prepared for work. The other three said they were more employable. Whilst this section gives the views of graduates, other views from different participants may be mentioned as well to compare, contrast and confirm the views presented in this section and also to give different perspectives, where necessary. Thus, this section is structured in terms of the reasons mentioned for employability or lack of it.

#### 4.3.2.1 Knowledge as a reason for employability or the lack of it

Although several reasons were given for employability or the lack of it, this section deals with knowledge as a reason for employability or the lack of it. Half of the graduates interviewed said they were not employable because of inadequate subject knowledge and a lack of practical exposure. This is what one graduate said:

> "*Yes it is just theory not even detailed. If at least they could change the situation maybe say after teaching the course and how to do an Environmental Impact Assessment (EIA) they go and do an EIA for this particular project. That is when I think it could help because most of the things we learn them from the workplace. We don't actually come knowing what to do you see that you spend most of your first year learning how to do the basic things. When we come from school we are not really prepared to actually do the job you are supposed to do*" (PG14:96:96).

This graduate, from the Faculty of Humanities, integrates knowledge with skills and explains employability from that perspective. The quote also shows that the graduate has some understanding of the concept of employability. Environmental Impact Assessment (EIA) is one of the courses offered in ES. Two issues emerge from this quotation, namely, inadequate subject knowledge and a lack of practical exposure on concepts, such as EIA. This graduate is saying that without practical exposure on how to put theory it into practice, the theory students learn becomes meaningless. When they go into the field and they are asked to apply their knowledge they face challenges. This view was supported by another graduate when she was asked what was lacking in the programme. She said:

> "The *practical side, hands-on experience because there was no internship*" (PG25:116:116).

Another graduate had the same view, except that it was much stronger. She said:

> "A*s a graduate of ES under Humanities we are not employable. We are the 3ʳᵈ grade of environmentalists they want. We are not employable because employers want practicals*" (PG29:194:194).

The issue of content and a lack of practical exposure to the world of work was a real issue among ES students and graduates. The interesting point is that this last graduate believes that Environmental Science graduates from the Faculty of Humanities are of a lower standard than other ES graduates who may have done Environmental Science from other faculties, such as the Faculty of Social Science. The issue of course combinations becomes critical in this case. What emerges is that there may be other course combinations that may be more meaningful and useful in the world of work. The same graduate goes further by saying:

> "*Oh, personally I feel the ES offered at UB under humanities is not relevant because the market doesn't want it. They either want ES under science or they want engineers. What people are saying out there is that ES under humanities is just theory. I think that is the first explanation to it. No practicals nothing just theory more like Geography. That is why most of us when we finish they go to be Geography teachers and Social Studies. It is not practical to the industry. May be that is why it is so irrelevant*" (PG29:77:77).

Issues raised by this graduate confirm some of the skepticism among employers that the TEC became aware of in 2005 during consultative workshops that it conducted. It also confirms what is stated in the TE Policy (2008), namely that programmes of study may not be of quality and relevance in terms of the difficulties expressed by new graduates in getting employment. The other important point made here concerns graduates from the Faculty of Humanities and how they do not compare well with graduates from other faculties. More importantly, half of the ES graduates indicated that because of the kinds of course combinations they take and as a result of the different faculties they come from, the content learnt is insufficient to make them employable. This issue directly leads us to the next point.

### 4.3.2.2 Qualification as a reason for employability or lack of it

Some graduates said that they were not more employable because of having done a double major combining ES with another course, such as English or Archeology - the very issue that was discussed above. This was a very important theme and one of the major issues that cropped up throughout all the interviews. Graduates were of the opinion that such combinations did not provide them with much content which is associated with the level of knowledge they brought to the organization. This is what one graduate said to that effect:

> "W*e just cover those as smaller topics you know unlike with the BSC who would do it for two semesters or like environmental engineering they would do it for two semesters. Those are the ones who are specializing on EIA. We just cover it as a short topic.*" (PG29:82*:82).*

A graduate who did a single major confirmed this view and said:

> '*I have a BA degree in ES. It was offered in ES because I did a single major so that one is offered as a degree in ES. I focused, basically, on ES so one of the courses I did was Environmental Impact Assessment (EIA). I did it in the first and second semesters. It was offered in both semesters. It is one course that really helped me and I believe that the skills and whatever I learnt in that course I am basically using them but again you find that it is not preparing you for the job scenario. When I got here I really thought while I was in school I*

*could have come here to this department particularly this division, find out what they are doing, interview them*" (PG30: 108:108).

Although this graduate realizes that the programme he did was relevant in terms of market needs and some of the skills learnt, he acknowledges that as a single major he had more exposure in terms of content. However, that was still not sufficient for the workplace:

"*Yes it was not enough for this job. Even though I did single major I went into more detail but it was still not enough for this job. Ya, because talking about EIA it is a very broad field because you have to learn about how to review the review methodologies, those you have to know. We also undertake audits environmental audits it is a course by itself which I did not do"* (PG30: 161:161)*.

There were many issues that emerged in the interviews concerning the programme related to qualification in terms of double major, single major and minor - as discussed earlier. This is what one graduate who did a combination of minor-major said when asked if he possessed the right knowledge needed in the workplace as a result of the combined major. He said:

"*Just a little bit of it. Like I said if you are a double major student you don't do everything. For some reason I don't know, you don't really do the whole thing like they do with single major students" (*PG14:184:184).

A graduate who also did a minor-major course combination was asked whether the content in Geographic Information Systems (GIS) that they did was sufficient. She said:

"*We just cover those as smaller topics you know unlike with the BSc who would do it for two semesters or like environmental engineering they would do it for two semesters. Those are the ones who are specialising on EIA. We just cover it as a short topic*" (PG29:82:82).

It is worth noting that GIS is one of the core skills areas taught at UB in the techniques category. It is a compulsory course taken by all students - irrespective of the faculty they come from - but many graduates said they did not learn much because of the lack of practice. Some of them said there were only a few computers that they had to share, which did not give them enough exposure to practice. The main issue that emerged here is that the combined major is a major challenge and does not enhance their employability.

It is important to point out that one of the graduates had a different view in terms of the content he learnt in the same qualification. When this graduate - who also did a minor-major - was asked if he was employable this is how he responded:

"*I believe so, I do work with people who deal with waste management so I know everything that they are doing. I know what I am capable of doing"* (PG29:191:191).

He believes that when comparing himself with his more experienced colleagues he has sufficient knowledge, despite being enrolled in the Humanities. This view contradicts what other graduates said

with respect to the combined major. However, these views will be verified later in the discussion when graduates, specifically, address the issue of knowledge.

### 4.3.2.3 Work experience as a reason for employability or the lack of it

One of the reasons given by the graduates who said they were employable was work experience. However, only two out of six graduates said they were more employable because of the work experience they had had. One of them said she had work experience and did a double major combining ES with Archaeology. In her view a double major degree was beneficial to her:

> "*Ah, I think I think I am maybe looking at the experiences from training I got while I was still in school, I think I am highly employable because most of the students they really hate fieldwork so that is where I had to put my focus on so that it works for me*" (PG28:147:147).

She added:

> "*The competition is high on the environmental side*" (PG28:119:119).

In this case the combination of courses assisted the graduate in making her more employable - a view that contradicts the views of other graduates. However, she was still on internship when she was interviewed. This raises questions about her claims concerning employability. Also, her job had nothing to do with archeology. She writes reports on the consultancies conducted by the company and monitors projects that are ongoing. A second graduate who also was of the view that she was more employable because of her experience then said that with time it would be difficult for people like her to compete in the job market:

> "*Ahm, now I think I am employable but with time it is going to get difficult because UB is not changing its systems. The same subjects I was taught they are still being taught now. With the current changing work environment, ehm I think it is going to be a bit of a challenge if the education system continues producing people like myself. They need to change and make it a bit diverse and dynamic*" (PG25:200:200).

She made the very important point that the programme - as it is - does not address the current changing work environment and present needs of the industry. It would be interesting to find out what employers think. However, none of the 3 graduates who said they were employable spoke about skills and competencies. One of them talked about knowledge but none mentioned anything about skills and competencies gained from the programme of study that made them perform well at work. It seemed to them employability was about getting a job and not about skills and competencies they had for the workplace.

### 4.3.3 Views of Academics and Administrators on the Employability of ES Graduates

This section reports on the views of academics and administrators at UB concerning the employability of their graduates. Six lecturers and two administrators were interviewed. Two main views of the academics emerged that explain the employability of ES graduates. These are:

### 4.3.3.1 Employment rate of ES graduates

Academics and administrators at UB had a different view from that of some of the graduates and students about their employability. All eight academics and administrators said that their graduates were employable. In order to address the issue of employability a senior member of staff was asked if the programme addresses the needs of the industry. This is what he said:

> "*Ah, to the extent that I have not perceived a lot of sentiment that the graduates are not being employed. So far it seems like the graduates are being employed if they are not it would be news to me. So to that extent I would say it meets the needs of the industry. Ah, I am aware that perhaps there are a number of public services that need those graduates the Department of Environmental Affairs (DEA), the teaching professions and other departments of Wildlife, Tourism, Surveys, Agriculture there are many out there I cannot say them all these are fields that I believe our students do get employed in*" (PA11:004:004).

For this academic, the fact that ES graduates were being employed meant that they were employable. He did not commit himself as to whether that also implied that they had the necessary skills, competencies and knowledge required to make them employable. However, he acknowledged and confirmed that graduates with a double major may have problems in terms of employability:

> "*On that aspect you can see what is driving the students to do that because they are Humanities and they may feel that with the Humanities degree they may not get a job. So they are going to take a few courses in ES and market themselves as people who have done ES. The people when they hire them find that they are not competent. And this is something also I find that probably is happening*" (PA11:060:060).

This view is in line with what some of the graduates said on the same issue. In his view students from the Humanities deliberately went out shopping for courses that were likely to make them more employable, including Environmental Science. This view also suggests a lack of control that one academic alluded to earlier.

The view on employment rate was supported by two other academics. One of them said:

> "*I think of all the departments in the university we believe that graduates with ES as a major have a higher probability of getting a job and we see this when we move about. We go to the departments that deal with environment and we often find our graduates holding strategic positions, such as the Department of Environmental Affairs, Range Ecology and Water Affairs and Lands*" (PA10:022:022).

This academic is not only talking about the employment rate of their graduates, but he is of the opinion that those graduates, in particular, who did Environmental Science as a major or as single major students are more likely to get jobs than other ES graduates. According to this academic, it means that not all ES graduates are employable which confirms the views of some of the graduates who were interviewed. In his opinion all the major government departments that deal with environmental issues employ their graduates. In support of his colleagues another academic said:

*"You know I told you like water courses there was a rise in numbers [of students] and then because all the people from my programme went out to Water Affairs, Agriculture in private industries they are all getting jobs"* (PA9:028:028).

This academic teaches Hydrology and he believes that all his graduates obtained jobs in those departments and in the private sector. Again, these are single major students doing Environmental Science as a major. The critical point to report here, however, is that no tracer studies have been conducted and yet academics are confident that their graduates are employable. Their analysis is based on the few graduates they have met and this is what one of the academics said:

"*No, but it is the undergraduates who come back for postgraduates, it may not be a very large number but like in other discipline it may be smaller numbers but here it's up to 20 people coming back. So 20 people is a lot of employment and we give them first priority in selecting them for teaching assistants because these are our students.*" (P9:055:055).

For him, 20 employed graduates is a large number out of a total of about 300 that they produce every year. However, the most important point to make here is that academics and administrators think that their graduates are employed in large numbers - even without tracer studies being conducted.

### 4.3.3.2  *Qualification offered by the Department of Environmental Science*

Academics are divided on the effectiveness of the qualification they offer in the world of work. The issue of contention is the one of double majors, single majors, minors and minor combinations. Five out of the eight academics and administrators feel that the course combinations being offered are relevant and that they produce employable graduates. The view is that these combinations allow graduates to fit into different areas of the profession. One of the lecturers said:

"*Even Wildlife has two components. There are those who deal with communities. In that case you may need someone who has done ES and Sociology. These combinations are very useful. The physical component would be more relevant to the biophysical component of wildlife to deal with animals, vegetation and water sources. Even employers need to understand. They may say they have openings for ES, what kind of graduate do you want from ES and what are they going to use him for?*" (PA6:074:074).

From this quotation it is not clear whether or not there is an issue of relevance, but this academic is convinced that the graduates they produce are employable as long as employers understand that they are not specialists. The Department of Environmental Science maintains that they do not train specialists, but that the knowledge graduates acquire is enough to make them employable. This academic goes further and contradicts himself by suggesting that it is possible that ES graduates may not be employable. He said:

*"I know there are some students here who complain that when they leave they don't know where they are going. They don't know whether they want to be climatologists, hydrologists, etc. and that is another problem we have here. We don't have students that really specialise. That is something that should be understood by employers. When they say they are not employable, of course they may not be. These are graduates that need to be re-shaped and trained for that specific job"* (PA6:089:089).

After declaring that their graduates are employable, he goes further to say that employers are right - their graduates may not be employable and they would need re-shaping and re-training. This view supports that made by graduates and some of the students - many of whom said that they were not sure if they were employable or not. One senior academic confirmed that the course combinations they have are different in terms of content, which may affect the employability of ES graduates taking such courses. He said:

> "From 3rd to 4th year then you have people who are now because the course starts spreading out you don't have two or three core courses. You now have the full menu, some go to soils, water, climatology, then those single major double major, major minor. Remember we have single major, major-minor, we have major-major we have minor-major so someone could be taking 3-4 credits of ES. Someone could be taking six someone could be taking 7-8 someone could be taking nine someone 12. So that is ES - it is, in fact, different dosages" (PA35:010:010).

It is these different dosages that graduates are disgruntled about because, according to them, they end up with insufficient knowledge resulting in insufficient skills and competencies for the world of work. There is a realization here too that some of the combinations may lead graduates nowhere. It is clear that academics are aware of the market demands and the limitations that these course offerings may have in terms of the employability of their graduates. However, they continue to offer such programmes - according to one of the academics the reason being because they are a public institution. He said:

> "UB is not a private entity. And even now this week, we are in week 7 [within the semester] we are finishing the first part of the semester and the Ministry of Education are still bringing new students" (P35:110:110).

> "To come and study it is a joke. It is a joke and now they ask you why they are failing. It is a joke. Even the government, the ministry or whatever, they are not serious. It is a joke. So it is pressure coming from elsewhere to say you are a public institution take these students" (PA35:114:114).

It seems this last academic is frustrated and feels helpless because UB has no control over numbers and what type of student comes to their department. As a public institution and the biggest university, government has control over numbers and whom to sponsor and it does not acknowledge the academic calendar. Students keep streaming in throughout the year, leading to poor results. His colleague, on the other hand, feels that the university is doing a good job in producing graduates fit for the market and in his view those different dosages are sufficient for the market:

> "You see, a university is different from a polytechnic or a college. A college produces technicians, people that learn the nuts and bolts of the industry. We train the mind and that's the major difference between us and other tertiary institutions like teacher training institutions. They train classroom teachers and we train people that are **adaptable**. Technicians fit in industry straight away they will have the actual skills industry requires. That is not our focus and mandate. Our mandate is to create thinkers, people who will come up with new ideas new products for industry by looking at industry who can use the science we expose them to, who can use the theories, the conceptual approaches to things and come up with solutions to societal problems or problems of industry" (PA10:077:077).

He believes that they do not produce graduates to fit into any particular field; they train generalists who are knowledgeable and trainable or 'adaptable" - another key theme that emerged - to fit into any work environment related to their field of study. However, the crop of graduates he is talking about is those who did ES as a major - as he said earlier - not those who get a small amount of ES, such as major-minor or minor-minor. This is critical because it is these graduates - many of who are from Humanities - that go out looking for jobs and are disgruntled about the preparation they received at the University.

Another very senior academic supported the views of his colleagues that their graduates are employable:

> "As I told you when I write a book I do not write it for a specific audience so like when we produce graduates it is about the skill and how this graduate can impress the employer" (PA9:127:127).

Yet another academic said:

> "But you see no government in the world can give 100% jobs nowhere in the world. We train them so that with that knowledge and skill so that they can say I know this and that or say I can take up this job. Of course you see when you go to any particular industry what you need immediately is orientation into that industry, how the skills can be used. So that needs introduction into the industry maximum 6 months really to catch up everything. But without the basic knowledge it would be difficult for them to move. So Industry is looking for next day after employment to be perfect. No you cannot really prepare that kind of a person" (PA9:046:046).

From the examples of workplaces quoted, this academic and his colleagues may be talking about graduates who took ES as a single major. In the above quotation there is an element of the fact that ES graduates may not be fit for purpose because they are not specialists and would require re-training. In summary, then, academics do agree that their graduates are employable but they may have limitations resulting from the course combinations offered by the department. What has also transpired is that virtually all academics interviewed believe that their graduates are employable, but that employers need to understand the types of graduates they are recruiting and how to get the best out of them.

### 4.3.4    Employers' Views on Employability of ES graduates

This sub-section gives the general views of employers on the employability of ES graduates they have employed. The intention is to report on the issues that were raised not in terms of numbers of people but the ideas that emerged from the six employers interviewed. Three views emerged concerning the employability of ES graduates and why graduates may or may not be employable. Thus, the structure of this sub-section will follow the views presented.

### 4.3.4.1  Lack of initiative and need for supervision

When employers were asked the same question concerning whether or not ES graduates were employable, five out of six employers said they were not. To support their views, this what one of the five employers from a government department said:

> "*If you employ a fresh graduate you know the expectation is he is qualified, he will come and do the job. They have realized that instead he sits down and does nothing. At the end of the day they are not employable, but of course government has been employing them looking at the qualification and all that. But the private sector, it becomes very difficult*" *(PE27:104:104).

What she meant is that government used to employ these graduates, based on qualifications and not skills and competencies, but that labour market demands have now changed. The meaning of this quote is that, currently, even government departments will not employ a graduate without work experience. This implies that graduates must have employability skills. This employer is also saying that the private sector will not employ someone without work experience because they want to see graduates 'hit the ground running.' There is also a lack of initiative on the part of graduates that has been pointed out - that of the 21st century employability skills. From this quotation it can be seen that the expectation is that even on day one employers still expect graduates to find work to do with minimal supervision. She is saying that they do not want someone who comes in in the morning and sits waiting to be given work, which means that they must find work and start doing it with very little supervision. The same view was expressed by another employer from a private company:

> "*You have to be self-driven. If there is a project that needs to be done you need to follow it through and give it time limit and submit everything so that you can get your pay. If you delay you are delaying your own payment*" (PE31:062:062).

The message, here, is that graduates must be self-driven, i.e., they must work without supervision. Being timely and focused and honouring time-lines is what this employer wants. These are some of the attributes employers are looking for from graduates and this could mean that this employer has had a different experience. If they are not self-driven and need constant supervision, there is a problem.

### 4.3.4.2  *Lack of practical exposure and application of theory*

Lack of practical exposure and application of theory is an issue that was raised by all employers who were interviewed. A lack of practical exposure, especially, to the workplace and application of theory has led to employers believing that ES graduates are not employable. This results in ES graduates having to be retrained on-the-job - something that all six employers said they did not want to do. From the private sector, this is what one of the employers said:

> "*Besides the actual content in subjects that are taught in terms of now the quality of the graduates we get, you get someone because of the nature of work we do here, it requires someone who can hit the ground running. If someone comes and they have done research, consultancy is all about research, what differs may be the depth. Consultancy is a bit on the surface when scholarly research will be a bit deeper. If someone has done a thesis in undergraduate, I am telling you we are very disappointed there. The only thing you can get out of them is use them as research assistants*" (PE26:042:042).

This sounds like someone who is very frustrated. She expects a graduate to have some understanding of how to do research and, instead, she is disappointed because this graduate cannot manage a research project. An explanation for this type of graduate was given by an employer from another private sector:

"*I think the problem with the university is that now they are on to what I would call mass production they are not focusing on the quality they are rather focusing on quantity*" (PE7:044:044).

This resonates well with what the academic (PA35) said about a lack of control in terms of the number and types of students they received from government. When this employer was asked about the quality of ES graduates she employed as a consulting firm, she said:

"*I would say it is mediocre*" (PE7:144:144).

According to another employer:

*Like I said at the beginning they are not well groomed to handle what the industry has to offer they are not well groomed"* (PE7:148:148).

The situation, therefore, is that employers need to retrain graduates - something that all of them said they did not like to do, especially training people in skills they believed graduates should already know. They said it was expensive, time consuming and focused attention away from productivity and performance - a luxury they could not afford:

"*You know in terms of productivity you don't have time you know to start teaching people. That is the major problem. There is no time. When you hire somebody you give them the job and you want these people to drive the job in order to drive performance in order for you to achieve your outcomes, where you want to go as an organization. But you know if you start teaching them, then you are wasting a lot of time on teaching them and then at end you score very little in terms of productivity*" (PE27:084:084).

This was an employer from government and the issue of retraining and the time it takes seems to be the crux of the matter as far as the employability of ES graduates is concerned as well as graduates, in general. The view here is that graduates must come prepared and be ready to work - what was earlier referred to as the immediate utility of graduates. The issue of time and productivity are of great concern for employers, but at the same time one senses that the problem is much more than that. It is what graduates do not bring to the workplace. This is what one employer said:

"*I have to spend time first designing my training programme for these people. From there doing the actual training and this is time. And this time could be used in the actual project. Although I cannot say at the end of the day we don't benefit as an organization, we benefit when we train people in the end. They will become exactly what you want them to be. But in terms of the time that we devote to that it is a lot. It goes to our costs. Taking them outside. While we do recover the money we spend in training from Botswana Training Authority (BOTA), in terms of the employees' time here, someone is supposed to be working on a project, that person is elsewhere going for school. You see what I mean. So but we don't think these things cannot be done here. We do get some graduates from elsewhere, they come here you might think they have 5 years' experience*" (PE26:088:088).

This employer was comparing UB graduates with those from other places, like South Africa and the United Kingdom. In her view those graduates perform much better than UB graduates. BOTA used to support in-house training and re-reimbursed companies and departments the money spend on training their employees. The idea is to encourage on-the-job training. However, from what has been presented

so far the issue is not training *per se* but what kind of training is done. This is what an employer said to clarify that:

> *"Those who come here they don't understand what we are doing, we have to train them"* (PE31:119:119).

From what emerges here from employers' point of view, it does not seem that ES graduates are ready for work. The implication also is that the type of work-based training provided by employers should not include content that should have been taught at UB. The issues of on the job training raised here confirm the observations made by the TEC during the consultancy workshops it conducted (see Chapter 1).

### 4.3.4.3 Lack of subject specialisation

This point is directly related to that of qualification reported on above. The issue that employers from government and private organizations, alike, raised was that the ES graduates they receive from UB are generalists while they require specialists in various areas that cover environmental issues. One of the employers from a private company had the following to say about this issue:

> *"We need tourism specialists and land-use specialists; we need ecologists, air quality, noise, climate change specialists"* (PE26:060:060).

As an environmental consulting firm these are the kinds of specialists they require. What this means is that they cannot get any ES graduates from UB with any of these specialist areas. The same sentiment was expressed by yet another employer - this time from a government department - who said:

> *"For example, when we talk about the national environment lab obviously that one is very, very clear it has to be either a chemist or biologist. We can't take someone who can't do the analysis, but in other areas like public education and awareness you know, the feeling is it is not a specialized job, you know, you can get a graduate and train that person and expose them to talking to people at a "Kgotla" meeting. I don't think it is a highly specialized job, but they feel under-utilised and bored. But you know for a chemist I cannot take any one who is not in the chemistry field and then start teaching them to titrate and how to see the colours and all that it would be very difficult"* (PE27:072:072).

The views expressed here capture the concern that employers have with the type of training they find themselves having to provide. This is the type of training employers say they do not want to do – as in the case of a chemist - where they would have to retrain graduates on basic concepts that they believe they should know. What they are willing to do, however, is to provide more focused job training, like giving graduates skills on how to prepare for presentations at public meetings. At the same time this employer says that exposing graduates to work that she believes they can handle, like addressing meetings at village level, is - according to the ES graduates - not sufficient. They get bored because they feel under-utilised. One senses the dilemma that this employer has considering that she was also of the opinion that UB did not produce people who are relevant for their needs, including environmental chemists, environmental biologists and environmental engineers.

The conclusion from this sub-section is that in terms of employability employers feel that ES graduates are not employable for the various reasons listed above. Academics, on the other hand, believe that their graduates are employable - again for the reasons provided which contradict the views of the employers. There is no agreement between the two groups on this issue. Unfortunately, academics and administrators do not have concrete evidence of the employability of ES graduates while employers and graduates support their views by their experience. From the point of view of the ES graduates, what emerged strongly was that they did not think they were employable. The evidence provided in terms of the experience they have, points to the fact that they lack the required knowledge, skills and competencies that would enable them to do well at work.

## 4.4    REPORTING KNOWLEDGE, SKILLS AND COMPETENCIES OF ES STUDENTS AND GRADUATES

This section gives detailed findings of specific areas or themes on employability, which are knowledge, skills and competencies that students and graduates have or do not have. The objective of this section is, specifically, to address the sub-question: **To what extent do students and graduates of Environmental Science degree programme from the University of Botswana have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana?** Although the sub-question was partly answered above, here the idea is to zoom in on specific themes related to employability, as stated in the sub-question. What is given are the views of first and fourth year students, obtained from questionnaire responses; and from face-to-face interviews that were conducted with ES graduates, academics and employers on the knowledge, skills and competencies of ES students and graduates. Repetition of issues that have already been addressed in the above section will be avoided. The questionnaires for both first and fourth year students included Likert scale options according to which students were asked to rate themselves in terms of the specific areas.  This section will, therefore, be structured according to the views of the various participants on the different themes. In Section 4.4.1 the focus will be on responses concerning the skills and competencies that ES students and graduates do or do not have, followed by Section 4.4.2 which considers the views about the knowledge that students and graduates do and do not have.

### 4.4.1    Perceptions on Skills and Competencies of ES Students and Graduates

This section will focus on reporting the views of all the participants related to the skills and competencies that students and graduates possess. The different views will be presented according to participants' responses, starting with sub-Section 4.4.1.1 which will give the views of students on the skills they think they possess, followed by sub-Section 4.4.1.2 which presents the views of graduates on the skills they possess. Sub-Section 4.4.1.3 will report on the views of academics concerning the skills their graduates possess and, finally, in sub-Section 4.4.1.4 the views of the employers concerning their experiences with ES graduates in terms of the skills they do or do not have will be discussed.

### 4.4.1.1 Students' ratings and their views on their skills and competencies

This sub-section only reports the views of students on the skills they thought they have. Students were asked to identify the skills that they thought were most needed in the workplace; whether these skills were taught; and - if yes - how they were integrated into the curriculum.

In order to understand and unpack the issue of the employability of ES graduates and students, there is a need to go into more specific areas in terms of skills, competencies and knowledge. A Likert scale was adapted from the study conducted by Griesel and Parker (2009) in South Africa and to start with students were asked to identify the skills and competencies that they thought they had from the following list:

i)     Ability to find and access information
ii)    Ability to use new information
iii)   Proficiency in English
iv)   Oral presentation skills
v)    Written and oral communication skills
vi)   Mathematics competence and basic competence in Science and Technology
vii)  Computer literacy
viii) Creativity, innovation and entrepreneurship
ix)   Social and civil, including cultural competencies
x)    Critical thinking and problem solving
xi)   Learning to learn and
xii)  Collaboration and teamwork

Students were asked to indicate which skills they had learnt - either at secondary school if they were in their first year or while at UB during their study period as fourth year students. A factor analysis was conducted in order to reduce and focus the number of skills into factors. In doing this it was easier to know which ones were considered to be more important and to name the factors accordingly.  A principal component analysis (PCA) was conducted on the twelve variables with orthogonal rotation (varimax). Four factors were extracted with Eigenvalues over 1 with a total variance of 63% explained. After several attempts **Mathematical competence and basic competence in Science and Technology** and **critical thinking and problem-solving** were removed from the analysis because they did not correlate well with other variables. Mathematical competence and basic competence in science and technology did not correlate well with other variables because it is of a different category than the rest of the variables. Critical thinking and problem solving skills also did not correlate well with other variables for the same reason. That is why for example, language produced a different Factor or component with one variable because it is the only variable that deals with language. However it is not recommended that a factor should have one variable (Costello & Osborne, 2005) but this factor was maintained because language is a very important skill in enhancing the employability of graduates or anybody else for that matter. In the initial solution they did not also explain enough variance with other

factors. **Mathematical competence and basic competence in Science and Technology** had a communality value of .475 and **critical thinking and problem-solving** was .301. After removing these two variables the loading of factors improved considerably. All the variables had a communality value above .5. The variables loaded very well in different components, resulting in four factors or components.[3]

The results of the analysis are shown in Table 4.6, below. These were the skills that students said they had learnt while at school or at UB. It must be pointed out that some of the labels used to name the factors were borrowed from Binkley *et al.* (2010) but some of the variables used in this study did not quite fit the labels they suggested because of the exploratory factor analysis. Factors analysis correlated variables differently resulting in groupings which diverged from the one they had suggested.

**Table 4.6: Loadings of factor analysis**

| Extraction Method | | Principal component Orthogonal (varimax) |
|---|---|---|
| Variance accounted for after rotation | | 63% |
| Item loadings | | |
| Factor 1 Communication | Ability to find and access information | 0.67 |
| | Ability to use new information | 0.77 |
| | Oral presentation skills | 0.66 |
| | Written and oral communication skills | 0.65 |
| Factor 2 Tools for working | Computer literacy | 0.70 |
| | Learning to learn | 0.66 |
| | Collaboration and team work | 0.75 |
| Factor 3 Ways of thinking | Creativity, innovation and entrepreneurship | 0.74 |
| | Social and civil, including cultural competencies | 0.77 |
| Factor 4 Language | Proficiency in English | 0.84 |

The fourth year sub-group was also asked which of these skills they considered to be the single most important one. A multiple response analysis was conducted and the results are presented in Table 4.7, below. According to the fourth year sub-group, the single most important skill for the workplace performance is **collaboration and teamwork**, which accounts for the majority (32%) of those who responded. This was followed by **computer literacy, critical thinking and problem-solving skills, creativity, innovation and entrepreneurship, written and oral communication skills, ability to use new information and ability to find and access information.** These are mainly Tools for Working, Tools for Thinking and Communication as *per* the labels introduced above. Seven out of the ten skills filtered out through the factor analysis. Most of the students who chose collaboration and team work

---

[3] The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis at .687. Bartlett's test of sphericity $X^2$ (285) and a significance of <.001 means that the correlation between variables were large enough for the PCA.

said it was because the workplace is about working with people from different backgrounds. They also said collaboration and teamwork would help people work well together and it would enhance communication between individuals which would then achieve good results and productivity in the workplace. Those who chose critical thinking and problem-solving said it was because one needed to use their brains to solve problems in the developing world and it also helped deal with issues rationally and allowed for independent thinking. It is also interesting to note that those who said computer literacy was the single most important skill said so because there was need to adapt to new technologies - information is computerized and there is need to access it. The issue of accessing information returns again.

**Table 4.7: Single Most Important Skills - According To Fourth Year Students**

| Skills | N | Percent |
|---|---|---|
| Ability to find and access information | 8 | 8.00 |
| Ability to use new information | 5 | 5.00 |
| Proficiency in English | 2 | 2.00 |
| Oral presentation skills | 4 | 4.00 |
| Written and oral communication | 8 | 8.00 |
| Mathematical competence and basic competence in Science and Technology | 1 | 1.00 |
| Computer literacy | 14 | 14.00 |
| Creativity, innovation and entrepreneurship | 9 | 9.00 |
| Social and civil, including cultural competencies | 1 | 1.00 |
| Critical thinking and problem-solving | 13 | 13.00 |
| Learning to learn | 3 | 3.00 |
| Collaboration and teamwork | 32 | 32.00 |
| **Total** | **100** | **100.00** |

Fourth year students said that computers are needed to survive in a global village. Those who chose creativity, innovation and entrepreneurship said they did so because the world was changing and creativity would help solve problems and bring new ideas. Both fourth and first year students were then asked to rate themselves in terms of these skills (see Table 4.8, below). According to this table, 200 students out of 249 answered this question and about half of the first and fourth year students were in the "very strong" category - 51% and 50%, respectively. In fact, this finding is in line with the fact that half of them said earlier that they were not sure of their employability because they did not have the necessary skills. As expected, more fourth year students than first year students show greater strength in most of the skills identified but, generally, the number of students in each skill area was almost the same. It must be noted that in the "mathematics competence and basic competence in Science and Technology" skill first years showed a slight lead in this category – 59% as opposed to 42% for the fourth sub-group. This is surprising considering that the majority of the first years were from the Faculty

of Humanities. When rating the skills students had all the initial variables were included in the analysis. Factor analysis was not used here.

**Table 4.8: First and fourth year students' ratings indicating "very strong" ability**

| Skills | Year of Study | | | | | |
|---|---|---|---|---|---|---|
| | **1** | | **4** | | **Total** | |
| | **N** | **%** | **N** | **%** | **N** | **%** |
| Ability to find and access information | 37 | 36.6 | 58 | 58.6 | 95 | 47.5 |
| Ability to use new information | 31 | 30.7 | 45 | 45.5 | 76 | 38.0 |
| Proficiency in English | 38 | 37.6 | 43 | 43.4 | 81 | 40.5 |
| Oral presentation skills | 29 | 28.7 | 37 | 37.4 | 66 | 33.0 |
| Written and oral communication skills | 39 | 38.6 | 37 | 37.4 | 76 | 38.0 |
| Mathematics competence and basic competence in Science and Technology | 24 | 23.8 | 17 | 17.2 | 41 | 20.5 |
| Computer literacy | 29 | 28.7 | 54 | 54.5 | 83 | 41.5 |
| Creativity, innovation and entrepreneurship | 31 | 30.7 | 28 | 28.3 | 59 | 29.5 |
| Social and civil, including cultural competencies | 28 | 27.7 | 26 | 26.3 | 54 | 27.0 |
| Critical thinking and problem solving | 38 | 37.6 | 40 | 40.4 | 78 | 39.0 |
| Learning to learn | 40 | 39.6 | 57 | 57.6 | 97 | 48.5 |
| Collaboration and teamwork | 54 | 53.5 | 64 | 64.6 | 118 | 59.0 |
| **Total** | **101** | **50.5** | **99** | **49.5** | **200** | **100.0** |

The skills that most of students chose as the one they were "very strong" at was **collaboration and team work** (59%) followed by **learning how to learn; ability to find and access information; computer literacy; and proficiency in the English language**. These are the same skills that stood out in the factor analysis as **tools for working, language and ways of working**. More fourth year students said they possessed these skills compared to the first year sub-group, indicating a correlation between the two variables. The relationship is a strong one which is r= 0.71. It is also interesting to note that very few - 53 (21%) out of 249 - students that answered this question rated themselves as being "very weak" in these skills (see Table A7 in Annexure A). The skill that most of them – 21 out 53- said they did not have in the 'very weak' category is **mathematics and basic competence in Science and Technology,** 15 of these were first years**.** This is the same skill that had the weakest communality with other factors and had to be removed from the factor analysis.

When asked about additional skills that they would like to learn, very few students (23%) of the total sample answered this question. The majority of these were fourth years (67%). This may mean that most of the skills were covered in the options given. However, the majority (81%) of those who answered the question said the additional skill needed in the curriculum were workplace skills and competencies. This, again, is in line with the views expressed earlier by students, graduates and employers about the

need to be exposed to the workplace environment while in training. It is surprising though that a few students answered this question despite the fact that many of them and graduates criticized the system for not exposing them to the workplace through internship programmes.

Students were further asked to rate themselves in terms of their competencies (see Table 4.9, below).

**Table 4.9: First and fourth year students' ratings of competencies in the "strongly agree" category**

| Comptencies | Year of Study | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | 1 | | 4 | | Total | |
| | N | % | N | % | N | % |
| I can apply knowledge to new situations | 50 | 52.1 | 52 | 59.8 | 102 | 55.7 |
| I can recognize a problem situation | 43 | 44.8 | 51 | 58.6 | 94 | 51.4 |
| I can choose appropriate information to address new problems | 44 | 45.8 | 53 | 60.9 | 97 | 53.0 |
| I can apply an appropriate approach to problem solving | 41 | 42.7 | 43 | 49.4 | 84 | 45.9 |
| I can plan and execute tasks independently | 38 | 39.6 | 42 | 48.3 | 80 | 43.7 |
| I can monitor and evaluate own work-related issues | 42 | 43.8 | 47 | 54.0 | 89 | 48.6 |
| I can devise ways to improve on own actions | 41 | 42.7 | 54 | 62.1 | 95 | 51.9 |
| I can deal with different cultural backgrounds | 52 | 54.2 | 55 | 63.2 | 107 | 58.5 |
| I have understanding of changing workplace practices | 34 | 35.4 | 42 | 48.3 | 76 | 41.5 |
| **Total** | **96** | **52.5** | **87** | **47.5** | **183** | **100** |

In the "strongly agree" category more fourth years than first years "strongly agreed" with most statements. The relationship between year of study and the competencies is a strong one at r=.76 indicating that it was not by chance that students produced such results. The statements that most of the first and fourth year students "strongly agreed" with were: **I can deal with different cultural backgrounds** and **I can apply knowledge to new situations,** 59% and 56% respectively. This tallies well with the fact that earlier they said they had very strong competencies in **finding and accessing information; ability to use new information;** and **critical thinking and problem-solving skills.** It is worth noting also that students in this category said they could deal with different cultural backgrounds and yet earlier they said they were weak in local and general global issues. The two variables are related. It is possible students could not see the correlation.

The statement that the least number of students (42%) strongly agreed with, again, was **understanding of changing workplace practices** which confirms the previous findings that this was an area that many of them did not possess. It also confirms the concerns of employers that graduates have no workplace skills with little understanding of the changes taking place there. Slightly more than half of the first and

fourth year students agreed with the statements - as shown in Table 4.9. This category constituted 53% of the first year students and 48% of the fourth year students. Very few students - only 24 out of 249 - were in the "strongly disagree" category. More than half (15) of these said they did not have an **understanding of changing workplace practices** (See Table A8 in Annexure A).

In summary, from the ratings students seem to have had average confidence that they had the skills identified, including a proficiency in English and the competencies for the workplace. Very few students (21%) were in the "very weak" category in terms of skills and competencies while the majority was in the "strong category". In terms of competencies, the majority of the students were in the "agree" category. These ratings must be looked at from the view of what students had said earlier about their employability. Almost half of them said they were employable while the other half said they were not sure. Very few said they were not employable. Workplace skills were identified as additional skills they believed they required but did not have. These views will be compared with the views of academics, employers and graduates.

### 4.4.1.2 *Graduates' perceptions of their skills*

This sub-section discusses what ES graduates believe when they were asked to identify the skills and competencies they had upon graduation. However, it must be pointed out that graduates could not differentiate skills from competencies. The difference between competencies and skills had to be explained but when discussions were taking place during the interviews not much was said in terms of competencies. The distinction had to be reiterated by the researcher. A different picture to the one presented above concerning students' views on their employability emerged from interviews with the graduates in the field. All six ES graduates interviewed were also of the opinion that they did not have the necessary skills that are needed in the workplace. Unlike students who were provided with a Likert scale, graduates were asked to rate themselves on a 10-point scale.

The ES graduate, quoted below, rated her skills at average upon graduation but with work experience she said her skills had become very good. When asked about the skills she possessed, she said:

> "*Like the example I gave you if I had done GIS I would know how to produce maps. I can write a report but I can't produce maps. The organization has to find somebody else to produce a map for my report of which it would be something I would do as part of the report*" (PG14:130:130).

GIS stands for Geographical Information Systems and it is one of the courses offered at UB under techniques or technical competencies given to students. This graduate confirmed that computer literacy was an important skill which she did not have. She also maintained that proficiency in English was a critical skill because it was required for writing reports which she was expected to do. The latter, she said was a skill she acquired while at university.  When asked what skills she possessed, the same graduate said:

> "*Well I have communication skills of which it means I learnt at the university.* (PG14:176:176). "*There were courses on communication skills that is where I learnt those. Then the computer skills, and the  ...*" (PG14:178:178).

There was then silence. She could not add any more skills she thought she had - she suddenly went blank.  Here she says that she has computer skills, but previously she said that she cannot produce maps using GIS which is one way of showing competency in computer skills. It is not clear which computer skills she possesses but one must point out that producing maps is just one aspect of computer skills out of many. Another graduate who was asked the same question said:

> "*So I would say I possess customer care skills, I also have the reading skills, ya over time they have developed and also analytical skills even that over time they have improved and communication skills as well*" (PG30:102:102).

When asked to rate his skills out of 10, he said:

> "*When I started it was 3 but now since I have been here I would say 7 is ok*" (PG30:202:202).

He was again asked why he gave himself 3 out of 10. This is what he said:

> "*Because I did not possess some of the skills that were required like earlier on I indicated that some of the analytical skills, communication skills I really acquired a lot while I was here. Ok at school I had to critique also documents but it was not like an everyday thing but here you make decisions almost every day. So here you find that you have got no choice but to acquire the skill and apply it. So I would say the 3 is because of the little I learnt at the University and overtime I grew up to 7*" (PG30:207:207).

This graduate reveals that when he joined the work force he acquired some skills which he did not acquire at university. The skills he brought to the workplace were insufficient. It must be noted also that this is one of the ES graduates who did a single major, yet he said when he joined the workforce his skills were rated at 3. He also acknowledges the fact that he learnt a lot in the workplace. Other graduates expressed similar views. Some of the skills they said they had were skills, like presentation skills. One of the skills they said they needed but they did not have was environmental auditing. Another graduate mentioned skills which were low levels skills that are expected from a graduate.

> "*Ok, I could say operation of surveying equipment, e.g. GPS total station used for measuring distance of an area and elevation and the coordinates of that area*" (PG28:181:181).

There were, basically, no other skills she could talk about. She had to be probed and given examples to be able to answer. Although she had said Archaeology made her more employable, the job she was doing was in the Environmental Science field and the company she was working for was an Environmental Science consultancy firm. She could not recall any skills she learnt in Archaeology that were needed where she was working. Another graduate - when asked about her skills - said:

> "*I have the skills to some extent I do especially when you are talking about writing skills. I would say 70%. I am not that good a writer but I can write something that someone can understand*" (PG25:212:212).

In her view she has writing skills and she rated her writing skills at 7 out of 10 and gave herself an overall score of 8. However, she also said that when she started work her skills were around 4 out of 10. Now, with five years' experience those had improved.

In general, all the ES graduates thought that UB did not prepare them well for the world of work - not for specific jobs but for work, in general. They lacked what they called workplace skills because of a lack of exposure to the world of work. They also lacked subject based skills, such as GIS skills, which is a software needed to analyse maps on the use of land. Therefore, the GIS work has to be given to other consultants to do for their companies. The other specialised skill that two of the graduates said they needed, but did not have, was environmental auditing. These are graduates who are doing work for the Department of Waste Management. The university did not offer courses in environmental auditing. All the graduates interviewed acknowledged the fact that most of the skills they had were learnt on the job. When participating in the research, they rated their skills at between 3 and 5 on a scale of 1 to 10. However, with work experience they admitted that they had improved considerably and were more confident.

### 4.4.1.3 Views of academics on skills and competencies of graduates

Academics were also asked to comment on the skills and competencies of their graduates. Almost all of them believe that their graduates were given the right skills needed for the workplace. Some of the skills were the ones that graduates said they had, such as analytical skills and research skills. One of the lecturers interviewed said:

> "*So we teach our students about these processes so that even when they go out there whether self-employed or work for government or parastatals, they understand the processes because everybody has to understand these processes in order to apply whatever they are mandated to apply in their respective workplaces. Whether you are in wildlife, they interact with the environment. Whether you are in agriculture, agriculture interacts with the environment*" (PA6:012:012).

In his view the knowledge they give graduates can be applied in the workplace. When asked specifically about skills, he said:

> "*Let us say they go to Environmental Affairs, environment affairs is not all about the physical aspect, there is quite a lot to do with people out there, how they use the environment, how they conserve it and the current issues. We give them those skills so that when they leave here they know about the conventions that the government signs, climate change and the current issues on that. We give them those skills*" (PA6:078:078).

He believes they provide graduates with the necessary skills. There is no mention, though, of the application of the skills. What is mentioned here seems to be knowledge rather than skills. Another lecturer - who was in agreement with his colleague - said:

> "*One has to have a basic skill without that foundation you cannot build any structure. We are laying them with all kinds of skills in different areas like how to tackle livelihood issues, how to tackle urbanisation or how to deal with water supply issues how to recycle water, you see, name it everything is there. Over and above that there are some technique courses we offer that is basically in GIS, Remote sensing and cartography*" (PA9:034:034).

This quote is linked to another one from Primary Document 8 which is an interview with another lecturer who supports this view. There is an emphasis, here, on technical knowhow, i.e., the application component which was lacking with the previous speaker. When asked the same question as to whether graduates had the skills needed in the workplace, this lecturer - in support of PA9 - said:

"*But from my own side one thing about the curriculum in ES apart from the theory and the principles that we teach in each course, there is an emphasis on skills development. There are certain skills and we have discovered that in the job market it is really those skills that they are looking for. Skills that deal with how you describe, analyze, model, map and monitor the environment. So that is why almost all of our courses have lab or practical exercises related to them. In other words it is not just lectures and it is not just theory more especially in the section where I am*" (PA8:023:023).

This quote directly contradicts what students and graduates said about the course being, mainly, theoretical. More importantly, this lecturer who is lecturing in courses covering the physical environment, believes that the types of graduates that employers are complaining about are those who did double major or one of the combinations we saw earlier, like minor-minor, minor major or major major. He said:

"*But as I said in terms of preparing students for the market as long as we have this major-minor combined that weakness is still there and some of the people the market is complaining about it is not single major students they are double major-minor students*" (PA8:073:073).

This statement confirms the fact that there may be challenges as far as the current graduates of ES are concerned. The quote also provides an example of some academics who do not support double major programmes because they believe that the system does not produce competent graduates. He went further to acknowledge the fact that as academics they do receive complaints from stakeholders about the quality of their graduates. He spoke specifically about writing skills and when asked if this was just a problem for ES graduates, he said:

"*No no. this is a general university problem. People complain about what kind of graduates are you sending out who can't write English and what we have done here is if one is not careful, students like multiple choice questions and answers very much. They don't want to think ok, and here in this department as much has possible we don't use multiple choice questions and answers after the 200 level. In other words in the 300, 400 levels you should be writing*" (PA8:077:077).

This issue links up with the earlier quotation of another academic who also expressed the frustrations academics have with large classes and, because of that, they are not able to make sure that writing skills in particular and research skills are integrated into the curriculum and instilled in the learners. The levels refer to the year of study - for example, the 200 level refers to year 2. This is what that academic said:

'*As I said before, if you compared our department like say engineering, law which are streamlined, what lawyers do and engineers is straightforward. It's kind of a narrow field. But for us here, first is the numbers of students we have which is hundreds that we deal with on a daily basis. Even if I were to give them skills the contact between us and the students is a shortcoming. [It] makes it very difficult to shape the students in the manner that would help*" (PA6:085:085).

The issue of class size was raised by all other academics as a serious challenge they face in delivering the curriculum and making sure that students are well prepared for work. That, again, confirms the fact that there may be an issue with the quality of graduates. He went further to say:

"*Because if you taught a small group you have the ability or chance to attend to them individually or smaller groups and see their shortcomings, their abilities and problems they have not only abilities in doing well in other skills like writing*

*skills. You need to give them assignments in addition to tests. You have to check their writing skills, research skills that shape them for work. But if you have large numbers that is next to impossible"* (PA6:087:087).

This challenge may confirm the fact that as a result of these shortcomings it is possible that graduates may not be performing as well as expected - as explained by the employers. It is also in line with a comment made by one of the employers and an ES graduate that UB focuses only on quantity and not the quality of the graduates they produce.

In fact, the shortcoming mentioned was confirmed by one of the lecturers interviewed. When she was asked if ES graduates had the necessary skills and competencies needed in the workplace, she said:

> "*It is just a small percentage of the kind of student I have described. You observe the student with the kind of attitude they have with their school work that would translate into the workplace. So if we still have students who may be now its middle of the semester and they are still coming to say I didn't know there was a test, you know, if you still have that kind of attitude obviously what can you expect in the workplace, but we are not saying all students are like that. We have a small percentage who will go you know, the extra mile who can read beyond the class notes"* (PA13:051:051).

In addition to the fact that the majority of their students are not ready for work, this lecturer confirmed that many of the students were not ready for the workplace because of the large numbers which made it difficult to find internships for all of them. She said:

> "*Now because of the numbers we don't, we are not able to do* internships *which we tried at some point during vacations where students can be attached and work because that could also actually help them. But you find that they are so many students and you don't know if all of them can find attachments because that can help"* (PA13:049:049).

There are clear divisions in what lecturers think. Some argue - as has already been indicated - that their graduates are employable and have the necessary skills and competencies required in the workplace while others argue that they are not. The majority, though, maintain that their graduates are well prepared for work and that they possess the necessary skills needed in the workplace.

In summary, five academics and administrators of the eight interviewed argue that ES graduates have the necessary skills required in the workplace. Three of them, however, are skeptical about those students who do a double major or take ES as a minor because they believe they may be lacking in certain areas. One of them said that because of numbers it is difficult to ensure that all students are assisted - meaning that they may not get the attention and the help they need to ensure that the skills required are obtained. It also means that reading through their work and making sure that communication and writing skills are developed might not be done satisfactorily. Finally, one cannot state, categorically, that all the lecturers are confident that their graduates have the skills needed for the workplace.

### 4.4.1.4.        *Views of employers on skills and competencies of ES graduates*

What emerged from the face-to-face interviews conducted with six employers, ES graduates do not have the necessary skills and competencies required in the workplace. All six employers who were interviewed expressed frustration with the graduates of ES from the University of Botswana. There were

a number of skills and competencies, such as writing and analytical skills, that they said they required and expected from graduates. When one employer was asked what skills graduates brought to the workplace, she maintained that they did not bring any. When asked if that included writing skills as well, she said:

> "*Oh don't get me started on that one. They can't even spell.*" PE7:172:172. "*For example in our company we do a lot of analysis you find that most of the students who do these combined majors they don't do thesis and they don't write papers so that thinking, analysis thinking is not there. So we have a big big problem when it comes to them thinking outside the box*" (PE7:044:044).

There is a sense of frustration in the voice of this employer and what she says directly contradicts some graduates who were confident that they possessed analytical skills. Her views support those ES graduates who said taking minor and major or one of the other combinations does not prepare them well for work. By saying that graduates cannot spell when computers have spell-checks implies a worst case scenario. This is the same employer who said that the quality of graduates is mediocre. One can, immediately, sense that this sentiment came from the frustrations she experienced with the writing skills of ES graduates. The same view was expressed by another employer from the private sector. She said:

> '*Writing is a very serious problem (with emphasis) and we have taken these people to a course so many times but it would be a two day course, and one would like to believe if the writing skill was actually emphasized right from the beginning, in the training programme it would be much better than trying to take someone on a two day report writing course. And there are communication skills as well. We communicate here through writing. If that was made part of the programme until someone finishes their programme, I think it would help us a lot. Because no matter how good you are, if you cannot get your message across through a report, you are as good as not having done whatever you did. So report writing skills, research skills, and then communication in terms of being able to now present your work verbally*' (PE26:064:064).

Employers spoke about research skills and presentation skills - the latter was categorized earlier under written and oral communication skills. Many of the Environmental Science organizations are consultancies and, therefore, they do a great deal of research and make presentations to stakeholders that require writing and presentation skills. The same employer emphasized the point by saying:

> "*Because the type of work we do requires research. There are some impacts which we can just sit down and say we understand. We need to sit down and say how does it impact and how do other people approach it. So we need to be able to know how to research and the ability to use the different media of finding information. Because you find that those who did research know how to use the internet, know how to go out there but those who didn't just get stuck into the routine. So it is very difficult you have to notch them to go the extra mile*" (PE7:098:098).

The ability to find and access information was discussed earlier in terms of the questionnaire data that was collected from students and it is important to note that employers are concerned with that too. The kind of graduate they require is succinctly presented below by the employer who said:

> "*For example, we are just doing an EIA for coal mining. We have so many impacts from coal mining now how do you bring all that information, air quality, ecology, water and all those things? How do you analyse how the impacts are able to impact on not only the environment, the community, they are all interrelated. One impact can snowball into another. How do you know the*

*impact that can snowball and how do you mitigate its snowballing?"* (PE7:124:124).

This kind of analytical thinking and thinking outside the box are some of the attributes employers require of graduates. They expect graduates to come to work with these attributes in the training they received at university. Other employers also expressed frustration with the graduates they have employed for similar reasons. This employer from the private sector said:

> "L*ike I said before, they can't mainstream environment into our projects. For example, every six years the government produces district plans. And in there they want environment among other things to be mainstreamed in these plans. They mainstream other things such as HIV, etc. but our interest here is environment. And you win this project and there are 16 districts in this country, you cannot have one person doing that from the UB. I have my people here from the UB [when you say] let's do this job [it's like] you will be talking Greek talking environmental mainstreaming. So now what I think is lacking is the depth and the practicality, these two things"* (PE26:076:076).

Here mainstreaming means integrating issues, such as HIV, into all areas of the environment. This employer revealed her frustration as she spoke of a lack of technical skills or applied theory on the part of ES graduates, which is termed competency in this study. This is something about which many of the students and graduates were also dissatisfied with when they spoke about the programme that is, mostly, theory and lacks a practical component and their lack of work experience - yet more evidence of the deficiencies in graduates. The following quote contains more support from another employer on the same issue:

> "*Now coming with that basic skill, technical skills, a graduate would say I have seen an atomic absorption spectrophotometer before and I have worked with it before. Then that person you know, at least he has basic skills, he is not seeing a monster (laughter) which he will start from scratch undressing. You know, with some of the graduates we have realised you know, they will say I have read the theory of how the atomic absorption spectrophotometer works. So now theory is very difficult especially if it is not applied theory. So applied theory is when you know you can have a feel of how does this thing work. This is what we need. We have come across people who would say, I have read it in the book, but you know he can't even switch it on because they didn't expose them to that"* (PE27:090:090).

What is expressed, above, was confirmed by academics when they said because of the large classes they had, it was difficult to take students out on internship programmes. However, what is expressed here is more than just internship, it is also about exposing students to practical lessons while they are at university. The impression created is that graduates fail to demonstrate an ability to apply what they have learnt - whether they were exposed to practical lessons or not. The same view was expressed by another employer who said:

> '*The skills, the required skills. Whatever they have that is why I am saying there is a bridge between the theory and practical application of that theory. I think that is where the problem is"* (PE31:151:151).

This gap is what employers would like the university to narrow, if not close completely. In summary, all six employers who were interviewed were not happy with the skills and competencies ES graduates brought into the field and, hence, the outcry about their having to spend time and money on retraining them. According to employers, some of the skills that graduates claim to have, such as writing skills,

they do not have which poses huge challenges in the workplace. Two of the employers even expressed frustration about the research skills graduates claim they have. One employer from the private sector said she spend a great deal of money retraining her graduates in how to write. They are often sent to South Africa or consultants are brought in to do on the job training. It is possible, therefore, that some graduates and students over-rated themselves as far as their writing and research skills were concerned. Table 4.10, below, summarises the skills and competencies required by employers and which they believe ES graduates lack.

**Table 4.10: Skills, competencies and attributes required by employers**

| Skills | Competencies | Attributes |
|---|---|---|
| Writing skills | Communication | Ability to work without supervision |
| Oral and presentation | Ability to find and access information | Critical thinking and problem-solving |
| Analytical | Application of theory | Ability to fit into new situations |
| Research | Presentation and ability to convince an audience | |
| Technical/subject – based | | |
| Computer literacy | | |

### 4.4.2    Views on the Knowledge of ES Students and Graduates

This section focuses on the views of participants concerning the knowledge that ES students and graduates do or do not have. Knowledge is a necessary basis for skills and competencies required in the world of work. The views of graduates given in this section emanate from the face-to-face interviews conducted with them. Self-administered questionnaires were given to students containing a list of knowledge areas where they had to rate themselves. Although no actual measurements were taken, students were asked to rate themselves on a Likert scale. Graduates were asked to rate themselves using a scale ranging from 1 to 10.

To present the findings in a well-structured manner, this section will be presented as follows: in sub-Section 4.4.2.1 the views of students and graduates on the knowledge they have will be discussed; in sub-Section 4.4.2.2 the views of employers on the knowledge ES graduates bring to the world of work

will be given; and in sub-Section 4.4.2.3 views of academics and administrators on the knowledge of their students and graduates are presented.

### 4.4.2.1 ES graduates' and first and fourth year students' views on levels of their knowledge

Students were asked in a questionnaire to rate their level of knowledge and their answers were analysed, using multiple response analysis. This method was used because of the large number of knowledge areas defined. Nine areas were defined (see Table 4.11, below). The same Likert scale that was used for rating skills was applied in this instance. Using a multiple response correlation method, first year and fourth year sub-groups were compared on the various levels and percentages were calculated *per* level. From these calculations few students - 31 out of 218 (14%) - rated themselves as having "very weak" knowledge in the various areas (see Annexure Table A9). In this category the majority - 21 out of 31(15 first years and 6 fourth years) – these students said they were weakest in "**Understanding of economics and business realities"**. More students were in the "weak" category (see Table 4.11, below). **Subject or discipline knowledge** and **ability to summarize key issues** had the least number of students as these were the ones in which most students said they had strong abilities. This result is consistent with what was reported earlier under skills in the "very strong" and "strong" categories. It is worth noting that more first year students considered themselves "weak" in many more areas compared to fourth years. Fifty-nine percent of the first year sub-group was found in this category as compared to fourty-one percent of the fourth year sub-group. The relationship between year of study and knowledge in the "weak" category is a very strong one: r =.84. When knowledge areas were correlated with gender, more females indicated weaknesses than males in almost all the variables. The correlation was also strong: r=.77. It is important to note that in the "strong" category more females said they were "strong" in almost all the variables while in the "weak" category more females also showed weaknesses. The value of the strength of the correlation between gender and knowledge in the "strong" category is r=.58, indicating a moderate relationship.

**Table 4.11: First and fourth year students' ratings of knowledge in the "weak" category**

| Knowledge areas | Year of Study | | | | | |
| | 1 | | 4 | | Total | |
| | N | % | N | % | N | % |
|---|---|---|---|---|---|---|
| General knowledge about local and global affairs? | 38 | 38.4 | 23 | 32.9 | 61 | 36.1 |
| Subject or discipline knowledge? | 16 | 16.2 | 9 | 12.9 | 25 | 14.8 |
| Understanding ES core principles and processes? | 35 | 35.4 | 13 | 18.6 | 48 | 28.4 |
| Enquiry and research skills? | 31 | 31.3 | 23 | 32.9 | 54 | 32.0 |
| Understanding economics and business realities? | 56 | 56.6 | 46 | 65.7 | 102 | 60.2 |
| Ability to summarize key issues? | 24 | 24.2 | 9 | 12.9 | 33 | 19.5 |
| Critical and analytical thinking? | 23 | 23.2 | 14 | 20.0 | 37 | 21.9 |
| Ability to follow and construct logical argument? | 32 | 32.3 | 11 | 15.7 | 43 | 25.4 |
| Rapid conceptualization of issues? | 40 | 40.4 | 16 | 22.9 | 56 | 33.1 |
| **Total** | **99** | **58.6** | **70** | **41.4** | **169** | **100** |

The next large group of students was in the "very strong" category (see Table A10 in Annexure A). The knowledge area that most students (45%) chose as the one in which they were strongest at was **subject or discipline knowledge** and **ability to summarize key issues followed closely by ability to follow and construct logical argument**. The knowledge area which fewer students chose was **understanding economics and business realities** - as was indicated in the "very weak" category. An interesting point is that there was not much difference between first and fourth year students - 18% and 30%, respectively. The relationship between the year of study and knowledge in this category is not strong but significant at value r=.39. This means that first and fourth year students showed almost the same level of knowledge in all the areas. The knowledge area in which most fourth year students said they were strongest at was "**inquiry and research skills**".  58 per cent of fourth years said they possessed this knowledge area, compared to 22% of the first year sub-group. This is not surprising considering that fourth years would have been exposed to research skills more than first years.

Most students fell in the "strong" category where a total of 231 out of 249 responded to the question as having "strong" knowledge levels in various areas (see Table 4.12, below). Again more fourth years indicated they had "strong" knowledge levels than first years despite the fact that there were more first years in total compared to fourth years.

**Table 4.12: First and fourth year students' ratings of knowledge in the "strong" category**

| Knowledge areas | Year of Study | | | | | |
|---|---|---|---|---|---|---|
| | 1 | | 4 | | Total | |
| | N | % | N | % | N | % |
| General knowledge about local and global affairs? | 62 | 50.0 | 68 | 63.6 | 130 | 56.3 |
| Subject or discipline knowledge? | 69 | 55.6 | 73 | 68.2 | 142 | 61.5 |
| Understanding ES core principles and processes? | 58 | 46.8 | 65 | 60.7 | 123 | 53.2 |
| Inquiry and research skills? | 74 | 59.7 | 49 | 45.8 | 123 | 53.2 |
| Understanding economics and business realities? | 40 | 32.3 | 42 | 39.3 | 82 | 35.2 |
| Ability to summarize key issues? | 67 | 54.0 | 68 | 63.6 | 135 | 58.4 |
| Critical and analytical thinking? | 62 | 50.0 | 62 | 57.9 | 124 | 53.7 |
| Ability to follow and construct logical argument? | 55 | 44.4 | 71 | 66.4 | 126 | 54.5 |
| Rapid conceptualization of issues? | 58 | 46.8 | 68 | 63.6 | 126 | 54.5 |
| **Total** | **124** | **54** | **107** | **46** | **231** | **100.0** |

Both sub-groups of students were also asked to choose what they considered to be the single most important knowledge area. The analysis of the responses shows that the majority of the students - 34% (n=73) - chose **critical and analytical thinking,** followed by 13% (n=28) for **understanding of ES core principles and processes** and 11% (n=24) for **inquiry and research skills**. This is interesting because these are the very areas that employers also emphasized. The rest of the students were,

almost equally, spread across the different variables. However, the knowledge areas that received the least number of students were **ability to follow and construct logical arguments** (8), **rapid conceptualization of issues** (8) and **interest in ideas** (7). Also worth reporting on is the fact that very few students - 47 out of 159 (30%) - who answered the question earlier said they were "very strong" at **rapid conceptualization of issues,** but they did not regard this knowledge skill as one of the single most important ones.

Finally, after assessing their skills, knowledge and competencies, fourth year students were asked if they thought they were ready for work (see Table 4.13, below). From the results shown in the table, most of the fourth year students (63%) said they were ready for work because they believed they had the right workplace skills and knowledge despite the fact that earlier they had said they lacked in particular workplace skills.  They had also said they had the knowledge but not the appropriate knowledge needed for the world of work yet here they are saying they are ready for work. It may mean that they are simply 'tired of being in school' and that they would like to start working.

**Table 4.13: Reasons for readiness or lack of readiness for work of fourth year students**

| Reasons for work readiness or lack of it | N | % |
|---|---|---|
| Quick learner, eager to learn and can adjust quickly | 11 | 10.3 |
| Have the right workplace skills and knowledge | 67 | 62.6 |
| Did internship/attachment - been exposed to work environment | 7 | 6.5 |
| Just feel ready no specific reason | 1 | 0.9 |
| Not ready to start work because no skills but willing to learn, not exposed to work environment, no attachment | 20 | 18.7 |
| Want to be self-employed | 1 | 0.9 |
| **Total** | **107** | **100.0** |

There were three other reasons given as to why students thought they were ready for work as indicated in the table. However, it should be noted that of the 113 (97%) that had initially answered the question, when asked to give reasons, 107 (91%) gave reasons and the rest did not.

In summary, it can be seen that in almost all the categories such as the "very weak", "weak" and "strong" categories in the levels of knowledge, there were significant differences between first and fourth year students. Most of the students (231) rated themselves in the "strong" category and many more fourth years fell in this category indicating a much stronger level of knowledge than the first years - as expected. Quite a number of students (a total of 169 out of 249 in the sample) were also in the "weak" category.

### *4.4.2.2 Graduates' perceptions of the level of their knowledge*

When graduates were interviewed about the knowledge they brought with them to the workplace the answers they gave focused more on subject or discipline knowledge. All six graduates agreed that they did have subject or discipline knowledge, but that it was not enough. When asked to rate themselves all of them rated themselves at average: 5/10. One of them rated herself at 3 when she joined the company that she is now working for. This agrees with the fact that most first and fourth year students (62%) also said they had "strong" subject or discipline knowledge which is average.  To quote one graduate who is employed in the Department of Environmental Affairs:

> "*When I came may be I would say 5 or so and now 7 because there is still a lot of room for improvement*" (PG30: 247:247).

It means that much was learnt at work and implies that knowledge gained at University was merely average, compared with the demands at work. This graduate is the person who did a single major and his knowledge level is ranked at average - just like the ES graduates who did double major or minor-minor. Another graduate from the Department of Waste Management and Pollution Control expressed the same view when she said:

> "*My knowledge is just average because I have just realized that I don't have enough or what I have is not enough for the market*" (PG29: 235:235).

A graduate from a private consultancy firm said:

> "*Ahm I think I have learnt quite a lot. I still need to learn more because I don't think I am there yet. Ahm I think these things sometimes come with experience. But when I first started I had a bit of the basics, the basic knowledge. I think it was eh maybe a 5/10. But now I think I am at 8/10*" (PG25:234:234).

Only *o*ne graduate rated herself 8/10. This graduate rated herself highly mainly because of the exposure she got in the workplace and the experience she acquired over the years working for different organizations. However, the general message delivered by the ES graduates who were interviewed was that the content they learnt at university was not enough. Among these is the student who did a single major. They said what they learnt was general and mostly theory - not sufficient for the workplace. This is the exact same view expressed by students, and reported on earlier, that the content was mostly theory and they were not given hands-on experience necessary for the workplace.

### *4.4.2.3 Employers' views on level of knowledge of ES graduates*

Much of what graduates said about their knowledge levels was in agreement with what their employers said. Almost all the employers who were interviewed (five out of six) expressed the same views about the knowledge that graduates brought to the workplace. The view of some was that graduates had some knowledge, but it was not enough. There was one employer who was so critical that she said they did not need the types of graduates they got. They needed people who were specialists because the knowledge that graduates brought to the workplace was insufficient. This is what she said:

> '*It is very shallow. My understanding was that because these courses they don't go in depth, you can have six courses and all of them are like hitting on the*

*surface. You come back you cannot claim to be an expert in any of those. At the end you ask yourself, what is this thing called ES? Is there such a discipline called ES? Is it a discipline like you can get law? So in the end there is a lot we have to do to now say we have a tourism specialist, we have a land use specialist, we have a socio-economist. Now that we are here, we have someone who has done this general degree they are not experts in anything. Now as a company what we have to do is spend money training, for this one to be able now to deliver as a socio-economist, I have to take this person to school. This one to deliver my projects in tourism I have to take this person to school. This one to deliver as an ecologist, I have now to take this person for ecology specific training"* (PE26:058:058).

The immediate use of the graduates is brought into question (TE Policy, 2008). More importantly, the issue of the retraining of graduates emerges again. It is clear from this employer that they really do not want to train graduates on skills and knowledge that they should already possess. To quote one employer who felt that, generally, the ES graduates that they recruited had an adequate knowledge to meet the needs of the organization:

"*I would say the UB programme I would speak about the UB programme because that is the one I am close to, it is very good sometimes when I compare my officers here who have been to other institutions especially in SA of course not all of them, some of the universities in SA you can see the difference and the level of caliber. I am particularly happy with the UB programme"* (PE1:061:061).

When asked about the double major issue she confirmed that it worked for them:

"*The beauty of it is that over the years from the time, I did ES, it's like the programme was limiting in terms of what I could do as an ES student. That was my major, but then I had to do English, another person would do history. But now the scope has widened they are bringing in biological sciences. You find a child who did ES and combining that with biology which is good for us because we are managing biodiversity. You realize, in the department I would know who is my biological scientist person in the office when a biodiversity issue comes in and who is going to be charged with that"* (PE1:089:089).

This employer comes from a department that is quite unique in the sense that it coordinates environmental issues and, as a result, it has a demand for Environmental Science graduates in its various sections that deal with environmental issues, waste management and conservation - to name just a few. However, the same graduates mentioned here are not happy. One of the graduates did ES as a single major but he was of the opinion that the content was insufficient. The views of this employer were contradicted by another employer from the private sector who rated the knowledge that the ES graduates brought to the workplace at 40%, which is in line with both students' and graduates' views. Her view of the double and single major was that graduates did not get enough knowledge - which explained the 40%:

"*I think the problem with the university is that now they are on to what I would call mass production they are not focusing on the quality they are rather focusing on quantity. So you find students who go in and all of a sudden they want easy courses they forget that tomorrow the job market doesn't just want any course it wants you to have done a particular course which is suited to that industry. So you have students coming in some of them with ES and Archeology or ES and pastoral you know, courses which are not compatible in any way and they come in half-baked because they did half of ES and half of whatever course they did*" (PE7:044:044).

According to this employer, even those who did a single major degree programme were giving them the same problems. These views were also expressed by another employer working for a government department. She was also critical of the content that UB graduates brought:

> "*I think the ES programme for UB is mostly on the Geography and land use planning side. I did ES from UK and you know, I was more on the environmental issues in depth you know, like we did a lot of modeling, modeling environments, you know, modeling the pollutants in the environment. There was a lot on environmental issues. We did a lot on water waste management, we did a lot on water* quality management, waste water quality management" (PE27:050:050).

It is clear that the some of the employers interviewed are not happy with ES graduates and the level of knowledge they bring to the workplace and it is equally apparent that they are not just unhappy about the knowledge that they need, but also about how it is applied in the workplace. Their views do not contradict those of the students and the graduates.

### 4.4.2.4  Views of academics on the knowledge of ES graduates

At this point it is appropriate to discuss the views of the academics who offer and design the programme in question. Most of the academics believe the programme is good and that it offers students the right knowledge and competencies required in the world of work. According to one academic, a former Head of Department (HOD) who was supported by his colleagues, the ES programme has three broad general areas: the human environment; the physical environment and techniques or tools, such as GIS, Remote Sensing, Environmental Impact Assessment (EIA); and cross-cutting qualitative techniques, such as research tools. He was supported by a colleague who said that the programme catered for:

> "*Two streams of students, the science students who specialise in the physical environment do courses related to the physical environment and natural resources. Ok. Then we do take students from the Humanities and Social Sciences. Those ones specialise in courses that deal with human environment, agriculture, urban environment and things like that. So that is why I said students come from all over the place. We have some courses like tourism which is taken by students from Business*" (PA8:030:030).

This quote partly explains the programme offered in the department for a double major, minor-minor and single major. It is important to note the language used here related to the fact that Humanities students, for example, specialize in the human environment. ES graduates, especially those from the Humanities do not see themselves as specialists in the human environment. They argue that because of the double major and other combinations they end up with very little knowledge.  According to the academics and administrators, the programme is rich and caters for the needs of the country. This is what one of them said:

> "*Our programmes are highly relevant and tailored to the needs of the country. Each time we design courses and review a programme, that's one of the major considerations. We want to make sure we address issues as well as needs of the country*" (PA10: 045:045).

That may be correct, but the issue at hand is that although the programme may consist of all those elements, the scope and depth at which the content is delivered is not enough - according to the students and the graduates and their employers.  Another academic agreed with his colleagues:

> "*The ES programme is the best programme I tell you it is one of the best and competent in the whole world.*" *PA9:26:26.* "*There is no challenge I can tell you it is even better than many countries, most and many many countries. Really those students who take a little interest to go through [the course] seriously I am telling you they have done excellently*" (PA9:028:028).

This academic maintains that their programme is not comparable to those in a number of other countries - it is better and those who finish the programme do well in the job market. This particular academic said earlier that all their graduates were getting jobs, not only those that did the single major programme. This quote shows that the graduates' knowledge is adequate and it addresses the needs of the country.

However, there are some staff members who disagree - especially when it comes to the issue of single and double majors. Here is what one senior academic said concerning this issue:

> "*That is still the weakness in the system because when they are not doing the single major they are combining ES with some other course and you are not required to do this independent project. That is the weakness in the system especially where such students now after graduating they go looking for jobs in the area of ES. Ok but they are really part time (laugh) ES*" (PA8:039:039).

The independent project referred to is a research project. This academic and employers maintain that the research project is a very important component of the course as it teaches students to apply the research skills learnt, including analysis and writing skills. If it is not compulsory then it means they will not take it because it requires a great deal of work and time, which they may not have at their disposal because of their other courses. According to him, these graduates are really not ES graduates; they are part-time environmentalists and feels that this is a serious weakness in the system at UB. He was supported by another very senior academic who said:

> '*Personally I have never really liked this general qualification and I wish it becomes more of a smaller aspect of what we qualify than what it is now where a lot of students are doing these double majors or combined majors and because strictly speaking when a student is a double major none of these departments owns them so you find that yes they end up being half baked. So you find that well yes this student is taking some ES so we are only going to give them certain courses without looking at the competencies that the student is going to come out with so there is a problem there*" (PA11:058:058).

The views of these two academics directly support the already discussed views of some employers who maintained that ES graduates do not have adequate knowledge for the workplace. The view of some of the academics and administrators is that ES students and graduates have the necessary knowledge required because the programme is one of the best in the world. As such, the view of some staff members is that the ES programme is adequate; meets the needs of the country; and produces graduates with the necessary knowledge required in the workplace. The issue of major, minor and minor-minor is perhaps one that the department needs to resolve as some of them believe that this system does not work for the workplace and ES graduates, themselves, are also not happy with it.

**4.5.    CONCLUSIONS**

Many issues from the findings in this chapter emerged. It is therefore important to summarise the critical areas and draw conclusions on the knowledge, skills and competencies of ES graduates

i)   *Many gaps in terms of knowledge, skills and competencies of ES students and graduates have been identified by both students and graduates, employers and academics*. Graduates of Environmental Science do not seem to have the proper knowledge, skills and competencies required to perform the tasks given to them in the workplace. This confirms the findings of other researchers elsewhere such as Hennemann and Liefner (2010), Maharasoa and Driekie (2001), Jayaprakash (2007)  According to the self-ratings given by students, they believe that they have the knowledge, skills and competencies required in the world of work. It is possible students over-rated themselves in some areas especially where employers believe they are not doing well (see Chapter 4, 5 and 6).  Furthermore, from the students' ratings on skills provided in the study, 51% of first years rated themselves as having "very strong" abilities in those skills, while 50% of the fourth years were in that category as well. There was no difference between the sub-groups which may cause concern to academics and administrators. Fourth year students should be showing more skills than first years. This again may mean that first year students over- rated themselves. Another interpretation could be that staying longer at university does not make a difference in opinion about employability as a graduate. As students get older they may begin to see better their abilities and opportunities in terms of future jobs. What they say they can do is not always in line with what is indicated by employers.

ii)  *Employers were very clear as to what graduates lacked yet a few of the academics and administrators believe their graduates have the knowledge, skills and competencies required in the world of work*. The two groups were in complete disagreement about the situation in the workplace in terms of employability of ES graduates. Although some of the academics and administrators conceded that their graduates may have challenges in the workplace, the majority of them were of the opposite view. Unfortunately the latter did not have sufficient evidence to support their views.

iii) *One of the main reasons that emerged from the study ofr lack of adequate knowledge, skills and competencies among ES graduates was the qualification offered by UB of minor and minor major in Environmental Science*. It was argued by students, ES graduates, some academics and employers that these combinations result in ES students and graduates having shallow subject content in the field of ES (see Chapter 4). This was a major concern among students and especially graduates which most academics did not seem to be aware of. However some academics did indicate there could be weakness in the manner in which Environmental Science is offered in the Department. The other reason was that of lack of exposure of students to the workplace through internship programmes. This is a serious issue and a grey area that will have to be addressed by both academics in the Department of ES and employers. In addition employers are of the view that ES graduates lack initiative and require to be supervised at all

times. However, that observation may be a bit unfair if graduates are new in the job. Some kind of orientation and guidance is expected when graduates are new in the job. What is critical perhaps is the length of time they take to adjust.

How much time graduates are given to adjust is an issue that employers should consider. From this study it seems that employers think that when graduates have a university qualification they must know what to do on the first day at work which would be unfair to both graduates and the university. Lack of initiative and the need for supervision may also be a result of the culture at home and how one was brought up which extends to the university and the world of work. It may also reflect culture in terms of the training they received from primary to university level. One cannot rule out the issue of personal and individual attributes graduates have (see Chapter 2). It was indicated in the findings that some students did not put enough effort in their studies which resulted in a serious culture of copying. Such behavior and attitude could easily be transferred to the world of work. These are some of the major issues that came up which are genuine that both the UB and employers need to address. From the evidence provided in this study (see Chapter 4) ES graduates are not immediately employable especially those who did Environmental Science as a minor. This therefore means there is dire need for collaboration and communication between academics and employers. Academics need to know what is needed in the job market and employers need to understand what programmes are offered at the UB and the kinds of graduates educated as reflected by the Vision and Mission of the Department. More importantly there is need for the two groups including students to get involved in discussing how employability of ES graduates could be enhanced.

iv) While that may be the case almost half (43%) of ES students believe that they would be employable on completion of their programme of study while almost another half (47%) said they were not sure. The rest said they were not employable. Examining the reasons given for employability or lack of it, students seemed to have some understanding of the concept of employability. Those who were not sure of their employability denote perhaps very little understanding of why they chose ES as a programme of study. At university level students would be expected to be more knowledgeable about career issues and what the labour market requires. One would have hoped that from basic education and university students would have been guided on career options available and issues on employability looking at what the economy demands. That does not appear to be the case. Students didn't seem aware of labour market needs and what jobs are available that they should be competing for by preparing themselves for the market. Although the majority of the students who said they were unsure of their employability came from the first year sub-group, some 36% of fourth years were also not sure. The r test [4] showed a significant relationship between the responses from the two sub-groups. Furthermore the majority of the students came from the faculty of Humanities but even the few from the faculty of science, the majority of these were still not sure of their employability. Therefore coming from the faculty of science did not seem significant according to students'

---

[4] r stands for Pearson's Correlation Co-efficient

perception of one's employability again indicating little understanding of the concept. Lack of understanding of the concept also has negative implications on how the UB prepares students for work and the need for the UB to further investigate the need for the qualifications they offer in particular the major minor options offered to students from the faculty of Humanities. There is even a greater need for the UB to consider either differentiating their programme or offer specialisations in various areas of environmental science.

In Chapter 4 the knowledge, skills and competencies that ES students and graduates have and need for the workplace have been discussed by examining the profile of the participants and their views on the employability of the students and the graduates. Chapter 5 will look at the possible roles of higher education and industry in preparing students and graduates for the world of work.

# CHAPTER 5

# POSSIBLE ROLES OF HIGHER EDUCATION AND INDUSTRY IN PREPARING ENVIRONMENTAL SCIENCE STUDENTS AND GRADUATES FOR WORK

## 5.1    INTRODUCTION

Chapter Four focused on students' and graduates' knowledge, skills and competencies in terms of their views and the views of academics and employers. Employers believe that ES graduates are not well-prepared for work, a view that is supported by some of the students and graduates themselves. Both students and graduates acknowledged the fact that they may have some subject-based knowledge and competencies, but that it is not enough - mainly because of the nature and type of degrees they follow and their lack of exposure to the work environment in the form of internships or attachments. Therefore, they were of the opinion that they lacked the practical aspect of the theory they learnt in class. The view among employers, students and graduates was that this practical exposure to the world of work would provide the skills and competencies needed in the world of work. The objective of this chapter is, therefore, to be able to recommend what it is that employers and UB can do to better prepare students and graduates for the transition to the world of work. The discussion will present the angle of 'higher education' through the perspective of the academics and administrators, and the perspective of the students and graduates. While it is important to report on the role of other stakeholders, it is equally important to address the role of students and graduates in terms of what they, themselves, can do to enhance their own employability. This is an area which was missing in the review of literature because it is has not been researched much. The literature discusses mostly views of employers or academics on enhancing employability.

The objective of this chapter is to address the second research question, namely, ***what are the possible roles of industry and higher education in preparing students and graduates for the world of work?*** In this chapter the findings from the data collected from both interviews and questionnaires describe the views of all participants with respect to whose role it is to prepare students well for the world of work within the context of Botswana. The discussion of the findings in this chapter will be presented in the following manner: Section 5.2 will look at views of students and graduates about their roles in enhancing their employability; Section 5.3 will discuss views of the role of academics and administrators; and Section 5.4 will present views on the role of employers or industry.

## 5.2    ROLES OF STUDENTS AND GRADUATES IN ENSURING THEIR EMPLOYABILITY

This section will discuss the views of various participants concerning the actions and roles that students and graduates can take and play in ensuring that they acquire the necessary skills, knowledge and competencies needed in the world of work based upon data collected via interviews and questionnaires. Therefore, this section will be structured as follows: sub-Section 5.2.1 will present views on the role of students; sub-Section 5.2.2 will discuss views on the role of graduates; sub-Section 5.2.3 will cover the roles of academics and administrators; and sub-Section 5.2.4 will look at the role of employers.

### 5.2.1    Views on the Role of Students in Ensuring Their Employability

This sub-section focuses on presenting the views of students in terms of what they are or may be doing to ensure that they acquire the knowledge, skills and competencies required in the world of work. The views of other participants on what roles students should be playing may also be given.

After identifying their strengths and weaknesses in terms of employability in the previous chapter, it was of interest to this study to discover whether - in the case of first year students - they consult career and guidance services for assistance and whether they know of its existence at all - in the case of fourth year students. This question was asked in order to determine what input students have in their education and whether they seek information or guidance when they need it in order to make informed decisions about their education. From a total of 130 first year students, only 25% of this sub-group confirmed that they had consulted career and guidance services center for some reason (see Table 5.1 below). Interestingly, slightly more males in terms of percentage (29%) than females (23%) - consulted the services of the center. A Pearson's Chi-square test revealed that there was no relationship between the two variables[5] (see Annexure A12).

**Table 5.1: Consultation with career guidance services by gender by first year students**

| Consultations | Gender | | | | Total | |
| | Male | | Female | | | |
| | N | % | N | % | N | % |
|---|---|---|---|---|---|---|
| Yes | 14 | 29.2 | 19 | 23.2 | 33 | 25.4 |
| No | 27 | 56.3 | 52 | 63.4 | 79 | 60.8 |
| Not sure | 7 | 14.6 | 11 | 13.4 | 18 | 13.8 |
| **Total** | **48** | **100.0** | **82** | **100.0** | **128** | **100.0** |

---

[5] . The Chi-square value of 1.102 is very small with its significance value of .56 being much bigger than .05, indicating that there is no relationship between the two variables

It was found that the majority of first year students (61%) had not consulted the Center as indicated in the graph (see Figure A2 in Annexure A, Table 5.1). More, female students as opposed to males sought the services of the career guidance center. Those who were not sure were the ones who could not remember whether or not they had sought the services of the career guidance center. These findings could mean that students were not yet familiar with the services offered by UB. Thus, it would be interesting to triangulate these findings with those from fourth year students.

When first year students were asked to give reasons why they sought the services of the center or did not seek them, very few of them answered the question from which several reasons emerged. For those who consulted the center and answered the question (26) only two reasons were given: the majority (24) consulted the center at the beginning when they first entered the university, perhaps in seeking guidance concerning choice of programmes and the remaining two students consulted the department for social reasons. There was no male amongst the latter. This, again, could be explained by the fact that there were fewer males compared to females consulting the services of the center. For those who did not seek the services of the center, the majority 13 said that they had never heard of the Centre for Guidance and Counselling. Some said they had no time while others gave reasons, such as they never thought of it or their services were weak and not worth a visit (see Table 5.2, below).

**Table 5.2: Reasons first years gave for *not* consulting the career guidance center**

| Reasons | Gender | | Total |
|---|---|---|---|
| | **Male** | **Female** | **Total** |
| | **N** | **N** | **N** |
| Had never thought about it | 3 | 9 | 12 |
| Did not seek help or counselling | 4 | 7 | 11 |
| No time | 6 | 5 | 11 |
| Never heard of it | 2 | 11 | 13 |
| Not satisfied with the Center | 3 | 8 | 11 |
| **Total** | **18** | **40** | **58** |

The meaning of all the reasons for not consulting the center could be either that the services provided were, indeed, not helpful to students as they say or it could mean that the Department of ES and the university had not directed students to where they could go for career guidance services, especially at the time that students entered the university. It could also mean that students were not willing to accept the responsibility to seek help when they needed it. This issue is a little more complex because when academics and administrators were asked how the department works in conjunction with the guidance and career center, three lecturers said they did not work with the center and that they had never experienced that. This is what one of them had to say:

*"That one I have not seen and there is no link. I think what those people do I am not sure, is focus on those students who are coming in at first year level. But when those students come they are already focusing on a specific programme unless if they tell them they can change from this to that"* (PA6:095:095).

This quote suggests that the Guidance and Career Center focuses on helping students when they come in at first year level. At the same time, this academic is saying that it is not clear - even then – because, normally, students come to the university with a choice of programme that their sponsors have agreed to support - unless the students want to change their programmes of study. Academics are not involved and do not work with the center to assist students to settle in. Once they are registered and they are in the department there is no further contact with the center. Furthermore, this academic is a fairly senior member of staff who has been with UB for a number of years and it is clear that he is not sure what the center does. It also means that, possibly, he has not referred students to the center since he does not know what it does. Another of his colleagues when he was asked if he worked with the center to assist students, he simply said: "*No I don't*" (PA10: 137:137). When asked if he referred students to the center, he said: "*No, students do that on their own initiative*" (PA10:139:139). One of the administrators admitted that UB did not really help students in terms of guiding them. He said: *"They need advice and that I must admit at UB is not very strong."* (PA11:066:066).

From what has been said by these academics and administrators, students do not get guidance and they are not directed to the right people who could assist them. Yet, all the academics and administrators interviewed suggested that students did not exert themselves enough and they did not want to work to improve themselves, including enhancing their employability. One of the academics and administrators had this to say about students' attitudes:

"*We are living in a completely new generation and some of this is not, necessarily, something we can solve as UB - it is a generation issue. We are having young kids who are spending most of their time watching TV, spending most of their time playing games. They are not practicing verbal aspect, expression aspect is not strong and suddenly they come and even in class after giving a lecture if you say have you understood they will all say yes. So we are juggling with things that are really terrible for us and it is very frustrating. I know colleagues who have left teaching because of the current generation. Yes we had colleagues who left teaching and said I am frustrated I cannot link with these young people, I can't. So I am frustrated. I am leaving.*" (PA35:094:094).

One can clearly sense the frustration that this academic has with students, but not much is done in terms of how to handle them to resolve the situation. The sentiments expressed here are in line with what students were saying. They do not have the time to seek assistance because they are focusing on the wrong things playing games and watching TV as indicated in the above quotation. Some of them cannot even think about how to get help when they need it. Others take short cuts and risk expulsion by copying during examinations or when given assignments - as explained by this academic:

"*1. They don't come to class, and 2 they don't submit assignments on time. They don't come for practicals, they don't write quality stuff, they copy and paste because the Internet is there. In fact globally that is what we are facing in the education system. Students who copy start from different sections and then normalize the text and give it*

*to you. You try to read it is not flowing. They are not winning, they are not reading in terms of reading and getting new skills, they are just looking for short cuts. That is the kind of graduate who is going to go into industry."* (PA35:098:098).

As pointed out, these students are the same graduates who will join the workforce where they are likely to continue with the same attitudes. What this academic is saying is that if students are not willing to exert themselves at university, then they are not likely to excel in the work place either. The view is that such students are more likely to take this type of attitude into the workplace.

However, on the other hand, when fourth year students were asked if career and guidance services were available at UB, of the 117 students the majority (88%) admitted that the services are available. Only 10% said they were not sure. The fact that these students were aware that guidance and counselling services were available may mean that they had consulted the center otherwise they would probably not have bothered to find out if its services were available or not. One could also stretch this finding further and say that with maturity and having been at university for longer students' attitudes change and they begin to think about their careers. However, no questions were asked about how they got to know about the center because the focus was to triangulate the issue of whether or not the center existed and was known to students. Furthermore, when first and fourth year students were asked if they would stay at the university longer - until an appropriate job for their qualification was available, quite a number of the first year sub-group - 41% (see Table 5.3, below) - said they would. On the other hand, the majority (63%) of the fourth year sub-group said they would not

**Table 5.3: Responses on whether first and fourth year students would stay longer at the University or not**

| Responses | Year of Study | | | | Total | |
| | Year 1 | | Year 4 | | | |
| | N | % | N | % | N | % |
|---|---|---|---|---|---|---|
| **Yes** | 51 | 40.5 | 34 | 29.6 | 85 | 35.3 |
| **No** | 48 | 38.1 | 72 | 62.6 | 120 | 49.8 |
| **Not sure** | 27 | 21.4 | 9 | 7.8 | 36 | 14.9 |
| **Total** | **126** | **100.0** | **115** | **100.0** | **241** | **100.0** |

The objective of asking this question was to determine how many students were willing to do more by staying longer at the university to improve their employability. It is, perhaps, not surprising that fourth years that were about to complete did not want to remain any longer at the university. It could mean they were tired of schooling and that they probably wanted to earn some money. First year students, on the other hand, had just started and they were still enthusiastic about learning. A Chi-square test

indicated that there is a relationship between staying at school longer and the year of study, although not a strong one[6] (see Tables A13 and A14 in annexure A).

To understand their views, further analysis was done on the reasons given for staying longer or not staying longer at the university. However, when asked to give reasons, only 191 students out of a total of 241 (79%) responded (see Tables A15 and A16 in annexure A). Amongst those who said they would stay longer, the majority (70%) said they would do so to improve their qualifications. The majority was first year students in all the categories concerning why they would stay at university longer and this is consistent with the original answers given. They would rather improve their qualifications than get jobs that they did not want and which did not match their qualifications.  For those who said they would not stay at university longer or that they were not sure, the majority (35%) said they would not stay longer because there would never be right jobs available and so they would rather take any job in order to gain experience that was much needed in the world of work, implying their awareness of the challenges of the labour market. In all the categories where reasons were given for not staying at university longer, the majority was fourth year students. Surprisingly, even those who said they would not stay at school longer because they hated it and it was a waste of time, the majority was from the fourth year sub-group.

### 5.2.2   Graduates' Views on Their Roles in Ensuring Their Employability

When graduates were asked what role they played in ensuring that they acquired the employability skills that they needed, the themes that emerged were: **research, creativity and initiatives**, like enrolling in short courses that they pay for themselves and looking for internship opportunities where the university did nothing to help them. One of the graduates said:

> *"I try to research on a lot of other disciplines not only what I do here [but also] on what other people are doing out there"* (PG14:236:236).

This graduate was in the government internship programme. She was still not absorbed by the department to which she was attached and, here, she is talking about up-skilling herself not only on job-related issues but also other areas outside her discipline. She was doing research on the internet to collect information on different areas she could study or programmes she could enroll in to gain more knowledge. Collecting and finding information is one of the skills that students had indicated was needed in the work place. Here we see that need being put in practice in the workplace. The need for skills in collecting and finding information is in agreement with some of the views of employers who were interviewed. This is what one of them said when asked what graduates should do to acquire employability:

---

[6] A Chi-square value of 16.733 and significance value less than .05 indicates that there is a relationship between staying at school longer and the year of study. The Cramer's v is .26, indicating a fairly weak relationship.

*"I think for me personally it would be for them to be able to broaden their scope by reading, by looking at the various aspects of the environment because it is cross cutting. They need to keep themselves abreast and that is why the Internet is there"* (PE7:323:323).

This employer, from a private company, is not the same person who employed this graduate but they agreed on what graduates should do to empower themselves. The above quotation may also endorse the fact that employers were not happy with the level of knowledge that graduates brought to the workplace and that they needed to gain more knowledge on what the workplace expected from them. This point also confirms the fact that students cannot learn everything that they need to know for the workplace and, hence, the need to acquire life-long learning skills which one of the academics talked about.

When another graduate was asked what she was doing to gain employability skills in support of what had been said, she replied:

*"I think short courses. That is what I am doing and the company pays and they claim from BOTA"* (PG25:240:240).

This graduate is taking advantage of the system and has enrolled in short courses that the company that she is attached to pays for and then claims back a training levy from the Botswana Training Authority. She is also on the government internship programme, but she decided while on internship that she would acquire more skills and knowledge that would make her more employable. She went further in saying:

*"I have done environmental management systems, there is a course that is coming on report writing and any other course I might feel will contribute to my work they will pay for it"* (PG25:242:242).

This is someone who has not only seen an opportunity for further training, but she has also decided to add skills that she thinks she needs, such as report writing. This may also be an indication that she does not feel adequate in terms of report writing. This is the same graduate who said earlier that she had worked for several organizations and had been working for 5 years. She also held a fairly senior supervisory position in the company she was working for.  Even with her experience she was still not confident with her writing skills. This point may also confirm some of the concerns raised by employers about the fact that graduates lacked writing skills. When asked what she thought students should do to ensure that they acquired employability skills, she said:

*"Ho. That is a tough one. My role should be you know, just being willing to avail myself to acquire those skills really. If someone offers me an opportunity to get those skills I should be willing to do it. I think it is tied to opportunities. If opportunities are there [that is fine] if they are not there then that is really difficult. You can try to get out there to acquire skills but then what if you don't get this job we are talking about for 3 to 4 years, what can you do? Some people talk about businesses and I don't know [I am not sure about] self-employment. Do we even have the skills [for that]?"* (PG25:272:272).

Here, she is talking about while in the university and what happens when she is out of the university and one senses a feeling of despondency. She does not think that self-employment was an option if she failed to get a job because she did not believe that graduates had the skills to do that. It seems to her that employment only means working for somebody else. This could also mean that she did not acquire any entrepreneurial skills at university that would prepare her for self-employment. This issue raises concern, considering the fact that jobs are limited in Botswana and the labour market is fairly small (see Chapter 1). It confirms the need for a Graduate Employability Strategy that UB has now introduced. The strategy states the need for the introduction of entrepreneurial skills to prepare students for self-employment in the wake of a shortage of jobs and growing unemployment amongst graduates. When asked the same question, her employer said.

> "*While they are still at school what they can do is to volunteer in organizations. There is no way you can say no to a volunteer. If you volunteer and say I am here to do this for you for free?*" (PE26:209:209).

This is a good indication of the level of creativity of the young graduates. For PG25, being without a job is almost like the end of her career, while the employer, on the other hand, sees opportunities where the graduate cannot see them. The employer speaks about volunteering as a way of getting exposure to the world of work. She says that young people should be willing to do voluntary work - especially while at university. The same spirit of volunteering was echoed by this graduate:

> "*I think as individuals, maybe we should just be willing to come and help when researchers come to school looking for assistants, so that when you finish school...*'
> (PG28:218:218).

It is also possible that she was not talking about volunteering because research assistants would, normally, be paid. However, the sense of initiative is still portrayed in this message. A lack of creativity and initiative among students and graduates was reported in Chapter 4 and here it emerges again from the point of view of the employers. In fact, here it is the same employer who maintains that graduates do not show a sense of initiative and creativity and she demonstrates the same frustration she displayed before:

> "*It needs you to stand up and be counted. That is what the students should do and be seen and heard instead of just sitting down and doing nothing, and you come to work you sit next to a computer and put earphones and you are just listening to music and playing cards*" (PE27:124:124).

The lack of initiative - as this employer (PE27) puts it - starts at university and is later transferred to the world of work. This is similar to the view of the senior academic earlier when he spoke about students who copy in saying that such students take their same attitudes into the workplace. The graduates did not say much about how the university encouraged them, as students, to take the initiative and responsibility for their employability - except in some of the assignments they were given. This is what one graduate said:

> *"I think it is being able to like go out and do this and that, like the research I was doing.*
> *With GIS we had to map some facilities in Gaborone West then go and look out for*
> *those maps and prepare and being able to go out and face people"* (PG28:220:220).

From what was said by this graduate, it seems that going out to collect information and data from offices on their own helped students exercise responsibility and initiative. By using some of the skills learnt in Geographic Information Systems (GIS), it enabled them to gain the skills they needed in GIS. Another graduate - in support of this view - said:

> *"The thing is when you are at UB you do your assignments you do your research that*
> *is it, and making sure you pass after that you have to fend for yourself. That is how it*
> *is"* (PG29:264:264).

According to this graduate, not much was done by lecturers to help them take responsibility for their employability. It was up to them to do their work; make sure they passed; and fend for themselves. What is said here by this graduate may not be a fair statement considering that earlier lectures had indicated that the large number of students made it difficult to pay attention to students' individual work. The same graduate went on to say:

> *"Yes, they are also big but you could see the difference when you are in a class of*
> *around 10-20 students, you could see the lecturers giving you more attention more*
> *willing to help. He was willing even to give us his free time to go and talk about all these*
> *things. But when you are in 20-50 students it becomes a challenge"* (PG29:268:268).

This explanation was also given by a second graduate who was interviewed in conjunction with his colleague. He was of the opinion that large classes were a challenge for lecturers - as indicated earlier by the academics themselves. What emerges, though, suggests that graduates and students do not seem to realize that the mere fact that they have to come to class, do assignments and presentations are ways of training them to take responsibility for their employability. At the same time there is also a revelation of the fact that the university may not be guiding students enough, partly because of the large classes - as indicated. However, some of the graduates do seem to realize that they also have a role to play and should accept the responsibility to ensure that they acquire skills, knowledge and competencies needed in the workplace on their own.

## 5.3 VIEWS ON THE ROLE OF ACADEMICS AND ADMINISTRATORS IN ENSURING EMPLOYABILITY OF ES STUDENTS AND GRADUATES

This section presents different views from all participants on the role of academics and administrators in preparing ES students and graduates for work, based upon students' questionnaire data and interview data. In order to address the research sub-question on the possible roles of higher education in preparing students and graduates for the world of work, this section will be structured as follows: in sub-Section 5.3.1 the views of students on the role of academics and administrators are given; in sub-Section 5.3.2 the views of graduates on the role of academics and administrators are presented; in sub-

Section 5.3.3 the views of academics and administrators on their role are discussed and in sub-Section 5.3.4 the views of employers are also reflected on.

### 5.3.1 First and Fourth Year Students' Views of the Role of Academics in Ensuring Their Employability and Preparing Them Well for Work

The views of first and fourth year students concerning the role of academics and administrators were determined by the type of assistance and support they receive from the department in terms of the teaching methods used to enable them to obtain employability skills.

First students were asked about the role of academics in the department in terms of assisting them to develop skills and competencies needed for the world of work and the majority (59%) agreed that the department did assist them - most of which were among the fourth years (62%). However, a large number (35%) also said that lecturers did not assist them, while only 6% said they were not sure. None of the first year students were among the latter category. A Chi-square test revealed [7] there is a significant relationship between the year of study and the students' views on the assistance they received from academics. Fourth year students have been at the University longer and they are probably focusing more on life after graduation than what happened while at the University. So, their views are likely to be more realistic than those of the first years. If students said that academics did assist them to develop the skills that they needed, they were then asked to rate the different kinds of assistance they received, i.e., how well they were assisted. A Likert scale was used to rate the type of teaching methods used to assist them gain employability skills. The following were the teaching methods that the students were asked to rate:

i)      Internship programmes;
ii)     Group work;
iii)    Class presentations;
iv)    Teaching and learning;
v)     Other.

The teaching methods were fairly well rated across all categories in the sense that the majority of students rated them between "well" to "very well" - 39% and 35%, respectively (see Table A11 in Annexure A).  Further analysis was undertaken to find out which category received the best rating from

---

[7] A Chi-square value of 22.684 with a significance value of less than .05 means that there is a significant relationship between the year of study and the students' views on the assistance they received from academics. Cramer's value of .30 indicates a moderate correlation between the year of study and the students' views.

most students. Each student was asked to rate each method from "very well" to "very poor'. Group work was given the best rating by the majority of students - 33% (see Table 5.4, below).

**Table 5.4: Students'rating of teaching methods for the Departmenet (very well done)**

| Teaching method | N | % |
|---|---|---|
| Internship programmes | 32 | 14.7 |
| Group work | 72 | 33.0 |
| Class presentations | 51 | 23.4 |
| Teaching and learning | 52 | 23.9 |
| Other | 11 | 5.0 |
| **Total responses** | **218** | **100.0** |

Teaching and learning and Class presentations received the next largest number of students and the numbers for each were close. It is not surprising that internship programmes received the least number of responses in the defined categories. In the previous chapter it was indicated that students were not exposed to work placements. This issue was confirmed by th5.4e eight academics and administrators, themselves, who complained about the large, prohibitive numbers of students. One of them said:

> *"Second years I have 350 and for the 3rd years this is right now I have 450 that's a large group and then I have an MSC group of 10 right now and that one is small. The fourth years I have in the 1st semester, those are small, groups:  one is 13 GIS and [the other] 20 on land reclamation. So it becomes difficult like this semester I have two large groups. So, you can imagine the preparation, even marking of tests, compilation of marks so that you can enter the. So, it is quite a challenge"* (PA6:008:008).

The point from this quote is that classes are large and, therefore, it is very difficult to arrange internship for that many students. It is worth noting that the smallest class is a practical subject Geographic Information System (GIS), a course that teaches techniques for analyzing data and students need to use computers. It is the same course that some of the graduates who were interviewed complained about earlier, saying that they did not get enough practice. From this academic it is clear that large numbers of students pose a problem in terms of preparation and, hence, it is not surprising that perhaps group work is the most commonly used method of teaching - according to the ratings from students. Indeed, arranging internship programmes for such large numbers of students may be a challenge as well. This is what one academic said to support the previous statement:

> *"Yes, we had over 300 students this past semester, 300 for internship we put them into District Councils, for example, into areas of making maps, GIS, remote sensing into different areas where they are needed, water you name it. But it wasn't too good. There are issues of relations between industry and the students. You see students need to be understood as students, they are young, they are not like mature experienced etc. and some people want to dump their work on them. So, there are challenges and there are issues of also interpersonal skills which also came out. For some it is too much and they get damaged and now we have to repair [these students] at student center. It is not always positive, you have students who are not behaving well. You also have*

> *personal [issues] and some of them even relations that are not tidy. As a result we are not too sure [about these internships] even industry is not ready to receive us for internship. They don't have any system that has been put in there"* (PA35:056:056).

The despondency in the voice of the academic is very clear; in fact, from what has been said this academic did not think it was worth pursuing the exercise again. Furthermore, the exercise was the first trial of sending so many students out, but it seems that it did not work. Some of the challenges arose from students' behaviour and, perhaps, a lack of supervision as supervising such large numbers of students who are scattered around the country would be difficult. This view was supported by one employer who said they were also not able to take large numbers of students on internship. She said:

> *"Usually we can only accommodate two."* (P1:069:069). *"I know the space and the administrative things that go with it"* (PE1:071:071).

The latter statement confirms the concern of the previous academic (PA35) that he did not think that industry was ready to receive large numbers of students on internship – with, possibly, no system being in place to accommodate such students. When this employer from a government department was advised that two was a small number, considering the numbers of students looking for attachments, she agreed but explained that they had limited space; the administrative arrangements and cost of accommodating interns could be prohibitive; and they simply could not handle larger numbers which would include putting structures in place to supervise the interns. Therefore, the views of this employer could, actually, influence the role of the academics in ensuring the employability of their students and graduates as it implies more work and planning on the part of academics. Some employers did not seem to know what to do with students and what tasks to give them. The following comments came from a graduate in the field:

> *"They do understand the role but it is really not stated how we are supposed to handle these graduates. So it is haphazard. When graduates come you sort of like take them under your wing. But then are they really learning anything? I don't think so"* (PG25:194:194).

This graduate who was employed in a private organization was confirming the fact that organizations were aware of the role of internship but that they did not seem to understand how to handle interns once they were in the organization. Even as a graduate, herself, she could not advise her organization on how to handle students on internship. She believed that because of these challenges students and graduates end up not benefiting from the exercise. Such views have an implication concerning the role of academics in ensuring the employability of their students. The graduate went further saying:

> *"They learn but you find that most of the time we just use them for printing, copying, and small tasks."* (PG25:196:196).

She was referring to graduates on the internship programme organized by government for graduates who did not have jobs. When she was asked why they gave them such menial tasks she said that it was because there was no programme in place to guide them. Such challenges would also occur if the university does not follow up and check what students are doing in the field. It is the same challenge that academics spoke about regarding large numbers of students. The point about students and graduates not being supervised was confirmed by one of the employers from a government department whose view was that graduates did not benefit from this type of internship:

> *""The only benefit they are getting is that they are not in the streets some of them we have had very good ones here who did ES and we wanted to keep her in the department but we couldn't because after two years they have to get out and allow another child to come in.""* (PE1:083:083).

Even at the point where the university is not involved, the department responsible does not supervise graduates and make sure that they are given tasks that would benefit them. As a result, they do not believe that current internship programmes benefit graduates. To sum up: academics, employers and graduates agreed that if an internship programme was well organized and managed it would benefit students, especially while they were at university. These comments explain why internships received the most number of responses from students in terms of which method was "very poorly" done (see Table 5.5, below).

Initially, class presentation was rated second best after group work (see Table 5.4) and under the least rating it, again, collected the second largest number of students which means that it was a method not well executed by lecturers in terms of helping students obtain skills and competencies. The former collected 23% approval while the latter collected 18% of lowest approval.

**Table 5.5: Least rating of teaching methods of academics**

| Teaching Methods | N of Students |
|---|---|
| Internship programmes | 32 |
| Group work | 6 |
| Class presentations | 18 |
| Teaching and learning | 7 |
| Other | 3 |
| **Total responses** | **66** |

The numbers for Internship and class presentations are close, which means there was a slight difference in opinion among students. This could mean also that students are really not satisfied with the way presentations are used to help them gain experience. It could mean there were not enough presentations. Group work has the least number of students in the specific categories because it was the one which was rated the best method by most students.

### 5.3.2 Graduates' Views of the Role of Academics and Employers in Preparing Them for the Workplace

From the point of view of graduates, there was a concerted view regarding whose role it was in ensuring that they were well-prepared to enter the world of work and the responses echoed what the students said. From the 6 graduates interviewed about whose role it was to ensure that students are well prepared for work one graduate thought it was the role of UB alone while another said it was the role of

government. However, the view that it is not just the role of the university to prepare students and graduates but the responsibility of both the UB and industry came from the majority (4) of the graduates that were interviewed. They thought that it should be a partnership and that UB and industry should find ways of working together to ensure the employability of graduates. This is what one of those graduates said:

> *"I think both, because the university yes it would give the basics, like we are in a classroom [the content is] general [because] somebody will go work for a consultancy somebody will go and work for…."* (PG14:150:150). "*The reason I say both is that from the university we go different places the jobs that we are going to do are different even though we did the same course so I think it should be both the university and the employer"* (PG14:152:152).

According to this young graduate, the responsibility lies with both the university and industry to ensure that they are well prepared for work. She is of the opinion that the university does not prepare graduates for any specific job; it provides them with a general knowledge - what she calls the basics - and the rest is expected to be given by the employer. In terms of what some academics said earlier that means they should be trained and educated in such a way that they are able to adapt to any situation.  For that reason, she believes that industry should join in and expose them to different job situations so that they are more aware of the expectations that employers have of them. She went further to explain how that could be achieved:

> *"Ah, I think what the institutions could do like UB, I think when it is school holidays if they could send students to organisations as interns. It would be better for students to grasp what is expected at the workplace unlike graduating without knowing what is expected at the workplace. If they graduate knowing what is expected of them I think it would be better in molding them for work"* (PG14:272:272).

She explained that the partnership would not only be in terms of internships and work placements, but also in curriculum development:

> *"I think the university should liaise with the employers may be try to get a bigger picture of what the employers really want I think doing a little survey on what private companies expect from graduates so that they have a general picture of what really the students are going to do from there. I think they should go and do a bit of study of what employers out there want and give that to students"* (PG14:154:154).

The message, here, is that the university should liaise with industry in order to meet the needs of the employer in the workplace. Furthermore, the sentiment expressed is that graduates are not up to the level that employers expect from them. This view was supported by one senior academic in the department:

> *"Internship should be part of training to get your degree not you are graduated and you are employed on internship for years and years. 1st year 2nd year 3rd year and some of them are beyond internship"* (PA8:185:185).

This quote suggests that internship is important while students are still at university rather than when they have graduated. It is important because government has an internship programme for graduates and the point being made is that internship should be done while students are at university. According

to this academic, the time for internship is between the 1st and 3rd year of university. This is a two pronged response: on one hand, this academic agrees that internship is important and it should be part of the training programme, implying that this is not practiced and, that the current internship programme of graduates - not students - is really not the right practice especially that employers keep these graduates on the programme for a long time instead of employing them on full time basis. They do that because government gives these graduates a small allowance. This is tantamount to exploitation and it implies that they need the graduates but that they are not willing to employ them.  This academic agreed with the above graduate on the fact that employers also have a role to play in preparing students for the world of work. Another academic supported his colleague by saying:

> *"Yes what are they doing except complain and complain. Their role is, there is the level of the Advisory board, and then the level of self-assessment in place to help. It could do with resources, it could do with even if you look at the likes of Debswana and the other big companies, what role are they having in the education? It is only last year that they asked for four of our graduates after we started hassling them here and there. They said two were there and they were good they wanted two more. But it should be on voluntary basis [because] look at what they have in place, corporate social responsibility. Is that part of education to the society? Education being one of Vision 2016 [pillars], how much are they contributing to that? So I think they should also put some kind of structures in place that this will be our contribution to making sure that our academic and teaching in the country is alert, whether it is sponsoring books or producing books locally. Usually we are blank about them we don't know what they want. Other than us asking them to come to the Advisory board and they disappear"* (PA35:158:158).

He agrees with the above graduate on the point that academics do not know what industry or employers really want. He goes further, though, and speaks about how industry complains about their graduates when they are not willing to do anything. This implies that academics are aware that some employers might not be happy with the quality of the graduates that they produce. The views of this graduate on the role of academics are supported by other graduates as well:

> *"It is both because the industry has to know what they want so they have to come together so that the University will be able to prepare us for them"* (PG28:216:216).

The same sentiment expressed here is that the university does not seem to know what employers want. The graduate quoted above went further and introduced the idea that government also needs to play a role in ensuring that graduates are employable:

> *"The other thing is maybe the government should also look at the kinds of people it needs in the country and also work around it to make sure that there are some available jobs, because we were sponsored for archeology and then we are not employed. It doesn't really work maybe only after 10 years that's when they can take us"* (PG28:144:144).

In this graduate's view government sponsors students for different careers without having done research into labour market demands. As a result, when they graduate the labour market is not ready to absorb them because the demand is not yet there. This is the first time there is mention of a concept of a tripartite partnership. This could also explain why many graduates are without jobs (see Chapter

1). The concept of dual responsibility between the university and industry is further explained by what the following graduate has to say:

> *"My take on that is, that both are responsible. It is just that each and every one should do their own part. The University should prepare the student enough. The University cannot do everything but at least they can do something to prepare the student for the work environment but of course the larger bargain will lie with the employer who will then see to it that ok we have got our employee who is not performing, why is he not performing, maybe he needs to go for training"* (PG30:179:179).

What we are also finding, here, is the fact that this partnership does not only have to happen while students are at university. Even when they graduate it is still the responsibility of the employer to ensure that their employees are trained in the work place to the level they demand of them. This is a little complicated because in Chapter 4 it was reported that employers did not want to train graduates on what they perceived they should have been taught at university. They said it was expensive and a waste of time that should be used on the job. Employers will always hold a commercial viewpoint when talking about employability and preparing graduates for the world of work. That view needs to be considered at all times when addressing issues raised by employers.

### 5.3.3 Views of Academics and Administrators on Their Role in Preparing ES Students and Graduates for Work

This sub-section discusses the findings concerning the views of academics and administrators about their role in preparing ES students and graduates for work and ensuring their employability in terms of the changing labour market demands. The findings are from face-to-face, semi-structured interviews (see Chapter 3) that were conducted with six lecturers and two administrators.

When asked the same question that was asked the graduates on whose role or responsibility it is to ensure that ES students and graduates are well prepared for work, academics and administrators were divided on the issue. Two views emerged: those of 3 academics and administrators who did not think it is the responsibility of UB to prepare ES students and graduates for work and those of the other 5 who believed it is the responsibility of UB to prepare ES students and graduate for work. The views are presented in that order.

#### 5.3.3.1 UB has no responsibility to prepare ES students and graduates for work

Three academics and administrators of the eight who were interviewed believe that they have no role at all to play in preparing ES students and graduates for work. This is what one of the academic and administrators said to that effect:

> *"Ahm, ya I think one perhaps has to look at mature economies and what really happens there in mature economies. I will try to answer the question the way you asked it. Strictly speaking the University cannot prepare students for specific jobs simply because in the job market there is variations in what types of skills or the way those skills are used and required. For example, if you are going to graduate a computer scientist yes the computer scientist must be able to work but must be adaptable because he may be working in an engineering*

*environment or he may be working in a health environment, teaching environment. Eh but I think you have to train a student who is adaptable"* (PA11:080:080).

According to this very senior academic and administrator, the university cannot prepare graduates for work because they do not know what jobs the graduates will be doing. So, he believes that it is not their role to prepare students for work but rather that it is the role of the employer. Their role is to ensure that graduates are adaptable to any work environment that they find themselves in by providing them with the required knowledge. He is convinced that it is the responsibility of industry to ensure that their employees can do what they are employed for by means of on-the-job training. The issue here, then, is whether graduates are adaptable - as they claim they should be - and what the meaning of to be adaptable is. He expands his point further by saying:

> *"Yes those are the ICT skills but in any skill let me take an example from the area of geology, you may be trained in skills of geology, you must know how to recognize minerals etc. But a diamond prospecting company will have to orientate you to look for diamonds specifically, eh, which perhaps if you go to the Department of Geological services you will not be required to do that"* (PA11:088:088).

There is a very thin line that emerges between what UB as an academic institution should do and what is considered to be the responsibility of the employer. The point made by this academic, though, is that as academics they can only go to a certain level - beyond which it is the responsibility of the employer to induct the newly recruited graduate into what is expected of them. The immediate use of such a graduate poses the question originally given in the statement of the problem, discussed in Chapter 1.

This academic is supported by other academics (see PA 9 and 10) that were quoted in the previous chapter about training adaptable minds and that it was not their mandate to train individuals for work. This is what one of those academics said*:*

> "*Technicians fit in industry straight away. They will have the actual skills industry requires. That is not our focus and mandate. Our mandate is to create thinkers, people who will come up with new ideas, new products for industry by looking at industry, who can use the science we expose them to, who can use the theories, the conceptual approaches to things and come up with solutions to societal problems or problems of industry"* (PA10:077:077).

It is clear from this academic's response that in his view it is not the responsibility of UB to prepare students and graduates for work. He believes that it is the task of technical colleges to do that while task the task of UB is to produce scholars who are capable of thinking and coming up with theories and solutions to problems in the environment.

### 5.3.3.2 UB and industry's responsibility to prepare ES students and graduates for work

This sub-section gives the views of the other five academics and administrators who believe that it is the role of higher education in conjunction with industry to ensure that graduates are ready for work. They echo the same sentiments as graduates concerning the paired responsibility. A senior academic and administrator said:

*"That is a long standing issue of academic training verses industry training. Sometimes it is fair sometimes it is unfair because industry is so diverse, it changes with time. With us we have to make sure that we produce a quality graduate. I know it is the most contested definition of what a quality graduate is. For us at the University of Botswana we just say someone who is fit for purpose. In other words an adaptable graduate who can come into an environment and learn how that new environment operates because we have incorporated in them life - long learning. That is what we do here and believe in"* (PA35:076:076).

This academic and administrator distinguishes academic training from industrial training, implying that there is a difference. He agrees, however, that it might be unfair not to focus on preparing students for work at times because as a university they need to make sure that students and graduates are "fit for purpose". This is a concept UB uses in its Graduate Employability Strategy of 2010 (UB, 2009) which all the lecturers who were interviewed were not aware of – apart from the two administrators. Although he said that the university should produce graduates that are adaptable, he also goes further to say it might be unfair to them as the UB to follow what industry needs since the landscape there keeps changing. As such he was quick to add that industry also has a role to play and that they need to work together to ensure the employability of these graduates. He went further by saying:

*"So the graduate therefore should be adaptable, trainable in any kind of environment that is what we are really trying to produce. And then industry should also take part and invest somewhat in our graduates. We cannot say as a University for example, in research and sponsoring postgraduate students or anything [industry is contributing]. Industry doesn't have any hand in producing our graduates"* (PA35:078:078).

He maintains that members of industry were not playing their role and, hence, it was unfair of them to complain about the employability of their graduates. This partnership issue was echoed by other academics, graduates and employers - as indicated below. It was supported by other academics and one of them had this to say:

*"I think we should have constant, how should I call it, interaction with employers we shouldn't only meet when planning for the curriculum we should may be meet on a yearly bases or after every two years we touch base with them and discuss what kinds of improvements can be put in place and also in terms of attachments. I think attachments should be a must because that is the only way students can know what is expected of them. For example, If you look at those in education, they go for teaching practice for people to know and practice how [to be] a teacher. So I think we need something similar so that it would be part of the assessment so that whether they are in 3$^{rd}$ year [or] during the long vacation they are attached somewhere and this would form part of their assessment "* (PA13:108:108).

Not only does this academic support the idea of partnership with industry, but she feels that more frequent engagement with industry is necessary to keep up-to-date with the requirements of the workplace. She also believes that such partnerships could be achieved through organized attachments or internships that are assessed so that both students and employers take the programme seriously. She went on to talk about other ways in which the university could integrate employability skills into its teaching and learning:

*"We need, I don't know whether to call a unit or a department or a course that will ensure that a student has had an attachment regardless of what they do [and] whether there is that linkage with industry. [This unit or course would also ensure] whether competency skills in terms of presentation skills or writing skills all those things they need [are taught], where all students will one way or the other go through that. You see that, because if it comes to my own individual course I will prepare a presentation but what about courses where other lectures don't do that. So we need a course that will look at all these things, attachments, writing skills and what have you so that they make sure that students are all rounded but I don't know may be the limiting factor will be resources"* (PA13:090:090).

There is a clear recognition that there might be resistance among some academics on what she views as their role in ensuring that students and graduates are prepared for the world of work. So, in order to make sure that students are not disadvantaged, she suggests a department or a course that all students could take in which employability skills are taught. The skills she gave as an example are some of the 21st century skills graduates are expected to have and which - as an academic - she is aware. A colleague, in support of these views, said:

*"If industry is looking for people who are capable in certain areas, why don't they provide the money to build the laboratories, to provide gadgets for us to train students to make use of them? Why don't they give us the money to have for example, an instrumented drainage basin with established automated data gathering machines at different spots in the field so that we can service them? That is what is done in other countries. In other places someone in industry who has an academic background can come and spend time with us and give lectures"* (PA8:144:144).

The message, here, is that if industry plays the role of a partner, the university will, then, be able to give students the knowledge, skills and competencies they require in the workplace. The challenge this academic acknowledges, though, is that of facilities in terms of equipment which industry could provide if the two collaborate. The other idea or implication that keeps emerging is that at present industry is not playing a role in ensuring that students and graduates are fit for purpose. It is also suggested that the university could employ various means of ensuring that graduates were prepared for the workplace if they received the support it needed from industry. That would involve integrating the skills in the curriculum - as pointed out earlier - or through internship programmes that academics would like employers to be part of. A suggested means is through lectures, where employers are invited to be guest lecturers to talk to students about some aspects of the curriculum. This academic went further to say:

*"Occasionally, it is not a common practice, but they should be able to come and talk to students and sensitize them on what is going on in industry."* (PA8:146:146). *"And this is industry? Industry should be able to sponsor field trips. We go to places, you know what they are doing? I used to take students out, there are some places, we went to Soa Pan where there is salt, ya, they won't allow us to use our cameras, they wouldn't allow us inside the factory. They would say you just want to see the pans, look at the pans and go. Yes that is industry. So the openness in industry is not there"* (PA8:147:147).

This reflects a concern that industry is not cooperating with the university. This academic is saying that besides giving talks members of industry could also sponsor some trips which are meant to expose students to what is happening in the workplace. In summary, academics and administrators were

divided. There was a small number - 3 out of 8 - who were of the opinion that the university has no role in preparing students and graduates for work, but should rather focus on ensuring that they are grounded in the knowledge of the subject to enable them to adapt to any work situation. The majority, however, were of the view that it is the role of UB to prepare students and graduates for work through partnership with industry in various forms, such as internships, curriculum development and guest lectures.

### 5.3.4 Views of Employers on the Role of Academics and Administrators

Finally, this section presents the views of employers on the role of academics and administrators in preparing students and graduates for work. It does not only suggest what academics should be doing to prepare students and graduates for work, but it also gives the views of employers on whose responsibility it is to do that. Some employers maintained that the methods used by the university to integrate employability skills were not effective. Three areas emerged as examples: the lack of equipment or resources for large classes, internship programmes and research.

#### 5.3.4.1 *Lack of equipment for large numbers of students*.

When one of the employers was asked why they needed consultants to do GIS for them when they had graduates who had studied the course, she said:

> *"But they can't use it. Even when we were there it was three [students] to a computer." PE7:192:192: "I think there is a lack of the ability to limit oneself on one to one. I know we used to have presentations but everybody is there to push out numbers they are not able to focus on the quality of what they are producing"* (PE7:228:228).

From what this employer was saying, it is apparent that the methods used to integrate needed skills were not effective. She made reference to facilities and equipment not being sufficient - even at the time she was studying at UB because of large numbers of students. The implication is that sharing computers for a practical course, like GIS, is not effective because different students work at a different pace. They are not given enough time and opportunities to practice and, hence, the view is that graduates cannot use GIS and apply it in the workplace. According to this employer, the same applies to presentations and because of large numbers academics are not able to address the challenges of individual students. This is where industry is asked to render assistance - as explained by an earlier academic. Academics are saying that instead of employers complaining that graduates cannot apply the skills they learnt at university because of the lack of adequate exposure resulting from shortage of equipment, employers should, for example, join in and assist them by providing the necessary equipment to cater for the large student numbers.

### 5.3.4.2 Internship programmes

Another theme that keeps emerging among employers is that of the practicality of the few internship programmes conducted by the university. Both public and private sector employers expressed the same view. This is what an employer from the private sector said:

> *"The other thing is to make it more practical is to try to infuse in the programme the practical ways of using things to solve real life issues where let's say you take a community, they identify a problem within the community that they can solve, like they do with the lawyers. They have the law clinic they represent people at court. When someone leaves that place he is a lawyer because there is practice"* (PE26:192:192).

What can be concluded here is that internship programmes organized by the department are not effective because students are not able to apply environmental issues to real life situations. According to this employer, the lack of ability to apply learned concepts to the real world prevents students from gaining the skills needed in the workplace. The view is that academics should take students out into the real world where the learnt skills can be applied. On the other hand, academics maintain that industry should provide that environment. This was supported by another employer from a government department:

> *"But I think what the institution of higher learning should improve is you know they should attach these people with industries so that they gain a lot of experience on hands because you need to create a balance between theory and practice. It is very, very critical. So what we have realized is you know people come with a lot of theory but when it comes to practice you know, it takes us another time you know, to expose those students to practical work"* (EP27: 048:048).

It is clear that employers would like students to be exposed to the world of work while they are studying. The employer (PE26) from the private sector also suggested that it was not only in industry that students could apply what was learnt in class but that academics could attach them to communities where they could do the same thing. These points confirm the views of the students on the effectiveness of the methods employed by the university to integrate work-based skills. Internships received the lowest rating from the students for this very reason. The same employer illustrates her point further:

> *"Those can partly achieve that. But the university as well not necessarily bringing people to companies, they can partner with communities where now they identify these problems within the community and get students to do that work that will solve those problems. The funding, where will it come from? Just like university lecturers attract research funding, the same route. And they don't even need to go far they don't even have to go outside the country"* (PE26:121:121).

Although not explicitly expressed, the implication is that funding could come from industry. A recurrent theme in this study is that of partnerships and collaboration. The collaboration suggested did not just come from the academics and administrators but also from the graduates, students and employers. By so doing, the responsibility of ensuring that graduates and students are well prepared for work is not only the responsibility of the academics, but also the industry and the community at large. When asked if they were willing to partner with the university and allow students to be attached in their organizations, one employer said:

> *"I think industry should be a collaborator. The industry should actually collaborate in terms of attachments. They should attach students here you know expose them to practical work. There should be a period of time and also collaborate with the institute of higher learning in terms of research"* (PE27: 056:056).

Another employer agreed with the last employer about whether they would take in students for internship and said:

> *"We do. We get students from the UB we get them from the school of Agriculture. We do have them the problem like I am saying we start and before we are mid-way they have to go back. To us having students on internship [is fine] because they are not costly to us we are actually saving. They help us. So to us it would be like they are free. We are happy to receive them the problem is if they are benefiting because we would have already started [a project]. Sometimes they come and they find the project mid-way so we don't think really, in terms of them benefiting, they really do not benefit much because of the time. But we believe that is the way, that is the way we identify the people we later on employ. We do have a number of them especially on the engineering side. They always get their interns back"* (P26:131:131).

The message conveyed here is that these two employers are willing to participate in internships as long someone else is paying the cost of the exercise. This confirms concerns from some of the academics that employers do not to spend money on educating students. However, the other point made was that the time for internship is too short for students to benefit from it. It was suggested that students should be attached but for longer periods - not only for one vacation.

### 5.3.4.3 Research conducted by UB

Research conducted by UB is yet another area where employers believe academics should collaborate and engage with industry for it to be fruitful and benefit both UB and industry. Employers believe this area is not well-implemented in the curriculum to provide students with skills and competencies required in the world of work. The collaboration suggested is not only in terms of attachments, but to direct research conducted at the university so that it has much wider impact. What is still emerging strongly is the suggestion that it is the role of academics to make sure that they contact industry and find partnerships for the research that they undertake with their students. This is what this employer from a government department had to say:

> *"I think there should be a collaborative effort where we talk to each other and come from both ways. UB can say I have students who are keen in researching in the area of waste management. The institute or the industry should be in a position to say you know we are submitting these 4 areas for research and the university should be at liberty to say yes we are going to have two students researching in this area, how can the organization help UB? I think you know a collaborative effort means you mutually work together and you mutually create some form of understanding because you are both the beneficiaries, because the benefit to an institution is if you have a student who has researched extensively on the implication of burying massive carcasses of disease animals. That student can become our employee at a later stage and then he can take the work through"* (PE27:058:058).

What can be seen here is that there is a strong feeling that research conducted by UB needs to be better and more relevant to address real issues to be found in various industries for the benefit of the nation at large.

These are the three areas in which employers thought needed to be improved by academics to make sure that students and graduates obtained employability skills that would prepare them well for work. The view was that although it was the role of academics, the employers acknowledged that they had a role to play as stakeholders and beneficiaries of the programme offered at UB. A feeling of frustration could, definitely, be identified among academics arising from the fact that they were expected to do everything without the support of employers. Examples were given as to how employers could contribute to preparing graduates for work. What has emerged is that employers simply have no role in preparing graduates for the world of work. Views on the role of academics, on the other hand, are divided as some academics believe it is beyond their call of duty, while others see themselves as active role players.

## 5.4 ROLE OF EMPLOYERS IN PREPARING STUDENTS AND GRADUATES FOR WORK

This section discusses the role of employers in preparing students and graduates for the world of work. As with the other role players, given earlier, this section also seeks to clarify whose role it is to prepare students for work from the point of view of employers. Since the views of the academics and administrators and the graduates concerning the role of employers have already been examined, only the views of the students and employers, themselves, will be considered in this section. Thus, this section is structured as follows: in sub-Section 5.4.1 the views of the students on the role of employers are given while in sub-Section 5.4.2 those of the employers on their role in preparing students and graduates for work are presented.

### 5.4.1 Views of First and Fourth Year Students on the Role of Employers in Ensuring Their Employability

The views of both first and fourth year students were collected from 249 students through self-administered questionnaires. Likert scales were used to rate their views on the roles of employers in ensuring their employability. Students were asked whether the role of employers was important in preparing them for the world of work and the majority said it was important (see Table 5.6). Then they were asked to rate five different ways employers could play a role in preparing them for work. These were by means of curriculum development; taking part in teaching; providing opportunities for internships or work placements; providing funding to the institution; and sponsoring a selected number of students. In all the options the majority of students in both sub-groups thought the role of the employers was very important (see Table 5.7).

**Table 5.6: First and fourth years' views on the importance of the role of employers**

| Level of importance | % of students |
|---|---|
| "Unimportant" | 1.7 |
| "Not so important" | 8.1 |
| "Important" | 27.9 |
| "Very important" | 62.3 |
| **Total responses** | **100.0** |

In considering the different ways in which employers could play a role in ensuring the employability of ES students and graduates, most students (82%) were of the opinion that the role of employers was most important in terms of providing opportunities for work placements and/or internships, which was followed by curriculum development (see Table 5.7, below) This is in line with the findings reported earlier from students and graduates that they had no work experience. It is interesting to note that students thought employers had a role to play in curriculum development. It is even more interesting that this was a shared view of both first and fourth year students - 65% and 64%, respectively.

**Table 5.7: Views of first and fourth year students on the roles of employers - considered very important**

| Roles of employers | Year of Study | | | | | |
|---|---|---|---|---|---|---|
| | **1** | | **4** | | **Total** | |
| | **N** | **%** | **N** | **%** | **N** | **%** |
| Curriculum development | 83 | 64.8 | 70 | 64.2 | 153 | 64.6 |
| Preparing students through teaching | 76 | 59.4 | 56 | 51.4 | 132 | 55.7 |
| Internships and work placements | 106 | 82.8 | 89 | 81.7 | 195 | 82.3 |
| Providing funding to institutions | 73 | 57.0 | 54 | 49.5 | 127 | 53.6 |
| Sponsorship of selected students | 84 | 65.6 | 59 | 54.1 | 143 | 60.3 |
| **Total responses** | **128** | **54.0** | **109** | **46.0** | **237** | **100.0** |

Almost all students (237) answered this question which could mean that they considered this issue very important - as indicated above. However, there were very few students - 21 (8%) - who thought the role of employers was least important (see Table 5.8, below).

**Table 5.8: Views of first and fourth years on the roles of employers – considered least important**

| Roles | N of Students |
|---|---|
| Preparing students through teaching | 2 |
| Providing funding to institutions | 9 |
| Sponsoring selected students | 10 |
| **Total responses** | **21** |

The largest number of students (nearly half 10 out of 21) felt that the least important role of employers was to provide sponsorship for selected students. This is not surprising considering the fact that 82% of all the students were on government sponsorship (see Chapter 4). Therefore, they could not see the role of employers from that point of view because government provides scholarships for almost all students who qualify. The next largest number (9 out 21) was those who thought employers' role in providing funding to institutions was of least importance. The two are related in the sense that they are both about funding. Students could not understand that providing funding to institutions could mean better facilities for teaching and learning and more exposure to practical work that would provide work-based skills that they sorely needed.

### 5.4.2 Employers' Views on their Role in Ensuring the Employability of ES Students and Graduates

This sub-section gives the views of six employers on their role in ensuring that ES students and graduates are well prepared for work. When employers were asked whose role or responsibility it was to ensure that students and graduates were prepared for work, this is what one of them said:

> *"We have no role whatsoever. The only role we have is when they come for internship that limited period. And we don't even take responsibility. When someone comes here, when they leave we don't even sit to say "batho" this person came in like this, is there any change? The reason I am saying we don't have any role, we don't prepare them because from there I am not saying from ES I want those back. If you have prepared someone you know now they deliver at this level and they can deliver this quality of work. These people would be ready when they come here, so you want them, you wouldn't want to get someone new. So what I am saying is we are not making any impact"* (PE26:187:187).

What she meant was that, at the time, they had not played any role and not that they did not have a role to play. This quote directly confirms the views of academics and administrators above. This employer would like to see more work done by industry and take responsibility for the students attached to their organizations - even look forward to employing them when they graduate. The same employer went further by saying:

*"The university should equip people with the skills. Research skills for example, when someone comes here having done a thesis I expect them to know how to research."* (PE26: 102:102). *"Yes that I expect them to know. Now with me is to teach them to apply that to the real world. I don't want to start teaching you know this is what you need to do etc. I don't want to do that"* (PE26:104:104).

This statement suggests that the university should not just give learners knowledge, but should teach them to apply that knowledge as well. It also implies that it is the role of UB to prepare students and graduates for work. These are strong words - said in a strong tone. What emerges is that this employer is not saying that they do not want to train graduates or induct them into the workplace. She thinks that training is not even the right word to use in this case because she does not believe that they trained graduates *per se*. What she does not want is to start teaching from scratch as if the graduate is in class or by sending graduates to attend a course - as has been the case to learn things, like writing skills. She is convinced that she can fill the gaps, where applicable, depending on what is expected of the graduates in a particular situation. When asked what their role, as employers, was in preparing students and graduates for work, she said:

*"But if you say what should be happening, then I am saying mentoring students"* (PE26:191:191).

At first she had said they had no role to play because they were never involved, but then she said that if the question was asking what they should be doing, she said that they should be mentoring students not training them - more than what happens in internships where they come for a short time and then leave. She said they should stay and mentor them for about a year. This employer also recommended that industry should be involved in curriculum development:

*"The other one when you talk about curriculum design, industry should take part because like I am saying these things that are taught are divorced from the actual world because when you teach me to prepare a research proposal but I don't know what it takes to deliver it, doesn't make much sense"* (PE26:201:201).

This agrees with what students said earlier and it is critical because the implication is that employers might not be involved in curriculum development. Employer PE27 also maintained that they would like to play a part in designing the curriculum because - as she put it - without their involvement the curriculum ends up with gaps and does not reflect what is happening on the ground. These statements were in agreement with what another employer said:

*"The industry should identify critical areas of research and communicate with institutions of higher learning and say you know we want to understand the anaerobic processes of burying you know, massive numbers of animals during disease outbreak. What anaerobic processes, how long does it take and what gasses are emitted? You know, we should expose the student to those kinds of life scenarios so that you know, they gain a lot of experience that would benefit us in terms of understanding some of the problems that we directly encounter in the country"* (PE27:056:056).

The quote, above, echoes what the former employer said. One also gets the idea that the curriculum at UB does not reflect the needs of industry in terms of preparing graduates for specific areas of need in

the country. Employers appear to be ready and willing to embark on such activities in conjunction with institutions of higher learning. The same employer elaborated further on her point:

> *"I think the most important thing is the university should make an effort of identifying critical environmental issues that are common in the country. That is what would inform that if they are setting up a new programme where to go and whom to advice and whom to consult otherwise you know this country is wide"* (PE27:064:064).

She is also saying that collaboration and this kind of partnership is not a one way issue where only industry identifies areas of research and collaboration - the university also has a role to play. Academics could identify critical environmental issues in terms of the needs of the country which they could then work on with industry and incorporate these into the curriculum to make it more relevant and applicable to the country's needs. The lack of coordination was confirmed by one of the graduates.

> *"I believe some of it most of it is suitable for this industry, in terms of content, the only thing I was really worried about was that there were no practicals everything was new to me when I got here but then I knew everything from the books but when I got here it was just something different. Mostly what we were learning about at school it was mostly in Europe, the Americas but within Africa it was just totally different. When you get out here you find something different. May be you are being taught something about even the landfills at the University they are talking about the landfills in Europe which are different from the ones here. We didn't even visit the landfills"* (PG29:166:166).

The views expressed by this graduate confirm and support what the employer (PE27) said earlier. You can feel the frustration of this graduate in what is said. The view here is that although it was not a waste of time learning some concepts, the lack of application and bringing the issues home - as some of the employers have said - is lacking. It is frustrating for the graduates as well as the employers because, as this graduate says, it is as though everything is new and the knowledge they have learnt is irrelevant. Another employer in support of these views said:

> *"The university should understand the industry exactly how it is done, what is EIA from the point of view of the industry and then see how they can incorporate that into the curriculum so that graduates are fitting their duty, readymade"* (PE31:189:189).

It is explicitly clear from what this employer said that they want graduates who are readymade, "ready to hit the ground running" which seems unrealistic. This employer believes that it is the responsibility of the university to make sure graduates understand what industry requires for them to be fit for purpose. He goes further in saying:

> *"You will be having the students here and get to assess them. They come here and they are lacking in this and that and communicate that to the UB. Get whatever there is to be done incorporate it into the curriculum and see if they can come up with a better graduate because at the end they are graduates they need to be utilised. But then again the industry, consultancy industry is driven by money. It is driven by money so that is why they opt for the ready - made graduates, those who have been in the industry because when you get those you don't have to be training"* (PE31:181:181).

This employer acknowledges that graduates need jobs and that they have to be assisted to be 'fit for purpose'. He also says that because of the nature of industry which is profit driven many employers

would not want to spend time and money "training" graduates. However, he is not absolving them from the process of preparing graduates for work. To confirm that, he said:

> *"I think it should be an effort between the two because they are producing graduates to receive"* (PE31:177:177).

As all the others were saying, this employer also believes that it is not only the role of the university to ensure that graduates are fit for purpose. Therefore, it can be seen that all employers are willing to build capacity while students are still studying. They would like to see results because - as was said earlier - such people might come back and work for the organization. Employers are on the receiving end and they should be interested in ensuring that graduates are ready for work when they come to them as it will minimize the need for retraining on the job. Another employer expressed similar views:

> *"Making the programme more practical it is their role because industry is already existing and it is evolving and we do not have time to take someone on the job training. Industry is different there are some who are willing to train on the job and others like us who want graduates who hit the ground running. It is different for different industries. But Environment Science is a course where you have to hit the ground running it is not where you go in and start relaxing"* (PE7:290:290).

From this employer's point of view, it is the role of the university to ensure that its graduates are suited to the jobs they are going to do – a view that does not agree with that of most graduates and academics who believe that it is the role of both industry and higher education. She feels that industry is evolving and, therefore, the university should always make sure that their curriculum is up-dated by collaborating with industry. This is one employer who would not want to train people on the job. The theme of collaboration is evident among all stakeholders concerned, including students and graduates and there is really no disagreement on what should be done. Perhaps the point is: who should take the initiative to start the collaborative process. As one of the academics said, if the university does not take the initiative, industry cannot be relied on to do so:

> *"If the department doesn't draw them they won't come are you following me, if they don't [draw them] they won't come. But if the department the HOD or whoever takes the initiative and say please come and do this [they will come]. It takes the universities who want to take the initiative [to get industry on board]"* (PA8:269:269).

This senior academic believes that the university should take the initiative as it is the one offering the curriculum. Academics should bring industry on board and involve it in a manner that would benefit the university, the employers and - more importantly - the graduates. For this partnership to succeed, one of the employers took the view that it had to be made obligatory on the part of industry:

> *"The other thing is that somehow it should be made an obligation on the industry to say ah for an organization like us you should have at least this number of internship students every year because sometimes even us when we are busy, these people "baa redia". You say ah I don't have time for interns you continue with your work"* (PE26:147:147).

It agrees with what the academic interviewed earlier said about employers not playing any role in ensuring that students and graduates were well prepared for work. Hence, she took collaboration a step further and suggested that it should be made obligatory or mandatory. In her view, if it was left up to

employers they would not do it because they might feel that interns, for example, came to waste their time as they might not be contributing to the advancement of the organisation. The issue of making partnership obligatory is also reflected in what one of the graduates.

> *"I am also talking about the private sector the university would have to sign, make those agreements with the private sector and government departments. Because at the end of the day if it about me going around scouting for jobs I may not be successful but if it is something that has been agreed by the government and the university it is highly likely that if I want to come for an attachment here then I can be given that opportunity because the government would know that we are obliged to keep the side of our bargain. So I think they need to interact to that level" (PG30:211:211).*

This graduate went further in suggesting that there should be memoranda of understanding, signed by both parties to ensure that such partnerships take place because, if it was not documented it might not work. Although there is an element of blame, employers and most academics and administrators agree that they all have a role to play - even the academics that are of the opinion that they do not produce students for any specific industry but they agree that they need to bring industry on board. They acknowledge that they develop programmes and deliver them, so it is up to them to ensure that the other role players are brought to the table.

## 5.5.    CONCLUSIONS

**T**his chapter addressed the issue of the possible roles of higher education in this case UB and industry in preparing students and graduates for work. The role of students and graduates was also considered. In conclusion, two main observations were made:

i)  *As observed in the review of literature academics were divided on the role of the UB in preparing students and graduates for work (Billet, 2009; Morley, 2001 and Little, 2001).* However most of the academics, students and graduates, and employers were of the view that UB and industry had a dual role in preparing students and graduates for work.  It was agreed among these participants that for the UB and industry to work together there was need for collaboration and partnerships in the form of for example, research, teaching and learning and internships for students (Mason *et al.* 2009; HEFCE (2011). For this collaboration to work, some of the employers and graduates suggested that there needs to be an over-arching policy that obligates industry to form partnerships with institutions of higher learning, not just the UB. Such a policy will have to come from government, to say that for example for industry to get any kind of support from government financial or otherwise that will only be obtained on condition that they are involved and are active in supporting higher education. This involvement may be in the form of taking students for internship programmes, providing funding to students on need base or academic excellence or participating in terms of research. The view is that such partnerships and collaboration must be generated as evidence before they could get funding. These are good ideas which one believes they could be implemented easily provided there is

a buy-in from government. The understanding from this research is that employers are willing to participate in any activities provided there are clear benefits with such partnerships. Since the Ministry of Education and Skills Development is advised by the Botswana Qualifications Authority and Human Resource Development Council (former TEC) regarding matters on higher education, this suggestion should not be difficult to implement. Moreover, industry is organized mainly under the umbrella of Botswana Confederation of Commerce Industry and Manpower (BOCCIM) which works closely with government on issues of how to support industry to grow in this country. Such an organization could be a liaison between government, industry and higher education.

It was also suggested by graduates and employers together with some of the academics interviewed that in order for such partnerships between higher education and industry to work, there must be Memoranda of Agreement (MOA) between industry and higher education as sectors. Such agreements would guide the partnerships and enable them to work based on agreed activities and roles. The BQA already has such demands in its guidelines for MOAs to be in place for example on accreditation and approval of programmes. Therefore, such structures would facilitate partnerships provided they are closely monitored to ensure that institutions and industry adhere to the guidelines. These arrangements will assist institutions of higher learning in forming partnerships and collaborations because from this research, it was apparent that there was also an issue of who initiates the collaboration. Some academics were of the view that if they did not initiate such partnership industry would not come forth. Therefore guidelines will assist institutions to initiate these partnerships because as suggested earlier if left to the industry MOAs may not be signed.

ii) *The second main conclusion that came from this chapter is that graduates and students, themselves, are of the opinion that they have a role to play in ensuring that they acquire the knowledge, skills and competencies required in the world of work.* However with students it was not very clear how committed they are in ensuring that they get the help needed for them to excel in their studies. Most of the first years did not seem to take advantage of the Guidance and Counselling Center either because they were not aware of its existence or they just did not think about making use of it. Perhaps the Department needs to do more in terms of providing guidance to students about the counselling services available to them. This is important because most of the academics and administrators were of the view that most students did not put enough effort in their work.  But then it seems once students are out in the field working as graduates or looking for jobs that is when they realize what it is they need to do to enhance their employability. They had the experience to know what needed to be done. Most of the graduates interviewed were either taking short courses, doing more research, generally reading more to enhance their knowledge which they thought was lacking.

Chapter 5 has looked at the possible roles of higher education and industry in preparing ES students and graduates for work in terms of their roles and those of academics and administrators in ensuring

their employability. The role of employers in preparing students and graduates for the world of work was also examined. In the next chapter, Chapter 6, an attempt will be made to answer the third research question related to employability audits and graduate employability.

# CHAPTER 6

# EMPLOYABILITY AUDITS AND GRADUATE EMPLOYABILITY

## 6.1    INTRODUCTION

After discussing the possible roles of higher education, industry, graduates and students in enhancing their employability, the objective of this chapter is to examine ways in which employability audits - as a quality assurance (QA) mechanism - could be used by higher education to ensure the employability of students and graduates of Environmental Science. This objective will be achieved by answering the research question: **How could employability audits play a role in ensuring the employability of graduates?** This question seeks to first find out if such audits would be appropriate and satisfactory to academics and administrators, graduates and prospective employers; secondly, if these audits are found to be appropriate, the chapter will explain how they could be designed in order to be effective. The roles of students, employers and academics and administrators in such audits will also be examined. Furthermore, this chapter looks at the quality assurance mechanisms employed by the Department of Environmental Science at UB in ensuring that their programme is a quality one that meets the needs and expectations of stakeholders, including the graduates of the programme. Employability audits are limited to ensuring that the objectives of the curriculum are met in terms of making sure that graduates are work-ready and that they meet the needs and expectations of employers.

To address the research sub-question and other related issues, this chapter will be structured as follows: Section 6.2 of the chapter will examine the QA mechanisms employed by the Department of Environmental Science to ensure quality of programmes; Section 6.3 will give the views of the participants on the introduction of employability audits; and Section 6.4 will discuss the views on the roles of the various participants in employability audits.

## 6.2    QA MECHANISMS EMPLOYED BY THE DEPARTMENT OF ENVIRONMENTAL SCIENCE

Quality, as defined in Chapter 2 on the review of the relevant literature, is an important concept concerning issues of production, supply and demand. The objective of this research sub-question is to explore the possible ways employability audits could play a role in ensuring the employability of ES students and graduates. Since employability audits are, currently, not in place, it was necessary to investigate other QA activities employed by the department to ensure quality in the Environmental Science programme and the fitness for purpose of graduates. These activities include practical steps taken by the department to ensure the quality of standards and qualifications awarded by the institution. Any QA mechanisms employed - whether internal or external (see Chapter 2) - are meant to ascertain

whether there are effective ways of ensuring that the diplomas, degrees and qualifications, generally, in Tertiary Education Institutions (TEIs) are of the highest academic standards and that they are, at least, consistent with those given in the TEC Quality Assurance (QA) Manual. Furthermore, where relevant - as in the case of UB - that institutions are exercising their powers as degree awarding bodies in a proper manner.

Therefore, face-to-face interviews with eight academics and administrators in the Department of Environmental Science at UB were conducted, using a semi-structured interview guide (see chapter 3). The focus was only on academics as the objective was to explore what QA mechanisms were employed by the department in ensuring the quality of the programme. The findings were triangulated and verified by quoting some graduates in the field and reviewing documents available in the department. When academics and administrators were asked about QA mechanisms that were used by the department to ensure quality of standards, a number of themes emerged from the interviews. In order to report these findings, this section will be structured as follows: sub-Section 6.2.1 will be a curriculum review as a QA mechanism employed by the department; sub-Section 6.2.2 will discuss the use of external reviewers in curriculum development; sub-Section 6.2.4 will look at bench-marking as a form of QA mechanism; and sub-Section 6.2.5 will report on the establishment of a QA Committee as a QA mechanism.

### 6.2.1    Curriculum Review as a QA Mechanism

From the discussions on quality assurance mechanisms employed in the interviews, four themes emerged and each of the following sub-sections will focus on one theme. This sub-section discusses findings concerning the use of curriculum review as a QA mechanism. The Department of Environmental Science reviews its programme on a regular basis with the help of an advisory board which is specifically constituted to assist the department. This is what one of the academics interviewed said:

> *"We periodically do this curriculum review of our courses and then even within the University as a whole there is a tradition that I have forgotten whether it is every 3 or 5 years there must also be an external review of programmes, in other words, we bring people from outside"* (PA8:055:055).

It is evident that curriculum reviews are employed by the department which are commissioned as a means of ensuring that the content covers areas that are relevant and current to make sure that the programme meets the needs of industry. The curriculum is reviewed every three to five years to bring the programme up-to-date first and foremost with the developments taking place within the discipline, or changes taking place within industry and in the economy at large.  The content is reviewed by bringing together stakeholders who constitute the advisory board as well as external reviewers from outside the country. This view was supported by other academics interviewed that anytime between three to five years the programme has to be reviewed. During the data collection discussion it was stated that another review had just been completed. In order to review the programme an advisory board is invited to make an input. One academic explained the role of the advisory board as follows:

> *"We have what we call the advisory board it doesn't meet often because as you may imagine if you have a curriculum you would like it run through a number of years. We have an advisory board, like in a situation where you would like to revise the curriculum we have the board made up of different stakeholders who absorb our graduates. These are the different ministries and departments, government, parastatals and the private sector. We put together these people, bring them here and discuss with them to tell us how our graduates are doing out there in their work places. Do they think the graduates of ES when they are employed or get into the field are they relevant? Do they know what they are doing? Are they trainable?"* (PA6:036:036).

This means that the advisory board meets only during the curriculum review process which would be once in three years to five years. The board is made up, mainly, of stakeholders who absorb the graduates of the programme. No other academics from elsewhere are included in the Board except those from within the Department. Parastatals are organizations that are run by both government and the private sector and are, normally, partly funded by government and have to adhere to some government policies and procedures, which means that they are not independent of government. The advisory board is not only used to revise the content of the curriculum, but also to obtain the views of stakeholders on the quality and employability of graduates. These views were supported by all other academics who were interviewed - which verified the statements made. In corroborating what has been said this academic and senior member of staff said:

> *"One other thing you should know is that when we have an advisory board, it is a culture I found when I came, it is made up of stakeholders who normally use our product, the government, NGOs and industry so any time there is a curriculum review, they bring people who constitute an advisory board. We give them the proposed review. They look at the proposal and make suggestions and this is one major way of trying to satisfy the market, making sure we are relevant and fortunately the reason I am able to talk confidently about this is that we completed a curriculum review exercise not long ago. Ok in fact we have a new curriculum in place now and we followed whatever I am telling you now based on my experience in the last 2-3 years developing that new curriculum"* (PA7:029:029).

This quotation confirms how the advisory board is constituted, yet five of the six employers interviewed said that they were not aware of this board and that they were never invited to participate. This is despite the fact that some of them deal with areas that are covered in the curriculum. The only government department which confirmed their participation on the advisory board was the Department of Town and Regional Planning (DTRP). This is what a member of the department said:

> *"They are very relevant because we have worked with UB in structuring those programmes, so they really produce for the market not just produce planners. Even the courses they take prepare graduates for the market which is us here"* (PE3:084:084).

The quote gives a good example of a partnership that worked for the benefit of both the ES department and the employer. Amongst those who had not participated in curriculum development, one of the employers said:

> *"I don't know how they write their syllabus, how they decide to come up with the material to teach. I think the syllabus is drawn by UB.  If it is UB they need to go to industry with the draft programme. You know, understand what they need. If for example you are looking for somebody to do with EIA, go to the industry understand what is required for one to qualify to be an EIA assessor"* (PE31:117:117).

According to this employer in the private sector, they are not involved in curriculum development and they are not aware of procedures or guidelines that UB has for programme design and review and that is why the employer is suggesting what is already in place. From what the academics say, they invite non-governmental organisations (NGOs) and industry for curriculum reviews - even the private sector. This employer was not the only one with this view.  In the previous chapter an employer from a government department suggested that UB should collaborate with industry when devising the curriculum. When asked, specifically, if they were members of the advisory board, she said:

*"No, we don't have members sitting in the advisory board"* (PE27:062:062).

This quote confirms the fact that this government department is not represented on the advisory board and is probably not even aware of its existence. The Department of ES offers a programme relevant to this stakeholder, like the programme in planning, which the department uses to offer support for the DTRP, except that the latter stakeholder is not represented on the advisory board – despite the fact that they absorb some of the graduates from the department. The issue may be that not all stakeholders can be members of the advisory board. Some of the graduates thought the system used for reviewing programmes was not working because they still feel less equipped to do the jobs for which they are employed. One of the graduates said:

*"It is not enough because we still see it happening so it means there is something they are not doing right or there is something that needs to be improved there"* (PG14:162:162).

What this graduate is saying is that if UB invites industry to provide an input when designing the curriculum, then that process is not working because there seems to be no change in the curriculum. She then suggested that the process needed to be improved or implemented differently. That is the message that is emerging. One alternative would be to 'force' the board to meet more often and to include other companies that have, previously, not been invited which could mean new membership biennially or annually. The following was a suggestion from one of the academics:

*"We are informed by the industry itself like I said when we design our curriculum we formed an advisory board made up of different people so those are the people who tell us but of course. The market keeps on changing. Like I was suggesting earlier maybe we need to touch base with industry more regularly than we are doing now because the demand changes over time"* (PA13: 132:132).

Here is an academic who agrees with her colleagues on participation on the advisory board for curriculum development, but she then suggests that, perhaps, they need the board to meet more often - more than once in three to five years. This view of not meeting often enough and, perhaps, not accessing everybody was supported by a very senior academic and administrator:

*"But I think on another aspect one could say perhaps we have not reached out to everybody. There are still organizations who are left out either from our own limitations we have not reached them or engaged them.  And perhaps even the frequency is not enough because this takes place at the point of programme review which takes place every 5 years or so. So the frequency is not enough. So one perhaps would like now to*

> *think about making this more frequent reaching out to more people organizing workshops things like that, which are organized around those issues where everybody now will have a chance to be informed*" (PA11:014:014).

The important point here is that the University is not reaching out to some of its stakeholders - an issue acknowledged by some of the academics and administrators. It is also clear that the efforts made by the university in collaborating with stakeholders are not enough. The view is that more could be done, such as organizing workshops - not necessarily for programme review, but to conduct a dialogue with industry and discuss issues concerning the quality of programmes and of graduates.

From the document analysis, it can be seen that the guidelines for the programme approval process, namely, the Procedures for UB Programme Approval, do not provide sufficient guidelines in terms of types and number of stakeholders to be consulted. What is stated is that departments that wish to revise or add courses or programmes should consult with stakeholders (UB, 2012). In addition, it is not stated how often revisions are to be done and whether they should be after three or five years. This is a major omission because such a document should give that kind of guidance, especially as there seems to be confusion around that subject. However, the document provides sufficient guidance on the processes to be followed when making minor or major amendments or when introducing new programmes. What is striking in these guidelines, though, is that when making revisions that are considered to be minor to the programme or course, including additions, deletions or changes meant to meet the demands of the discipline, the advisory board is not consulted (UB, 2012). That means that stakeholders are not consulted. It is only when major revisions are made or when introducing new programmes or courses that the advisory board must be consulted. Major revisions include additions, deletions or changes to course title and content.

As indicated, improvements in the curriculum review processes are guided by the views expressed by some of the employers that industry is changing rapidly - for example, in terms of technology which affects the work done in the environment. This statement was supported by another employer from the private sector (PE 7) who earlier said that industry was evolving all the time and suggested that UB should make an effort to accelerate 'catch-up'. As suggested by some of the participants, these changes would require more frequent meetings with stakeholders because meeting only once in five years - as it is the case now - may hardly be sufficient.

One of the weaknesses identified in the advisory board was that students were not represented. In fact, from what was said by this academic it was not the advisory board that students were supposed to be part of, but rather the department's board. Students are members of the department's board, but they are not invited to attend meetings. Furthermore, the guidelines for programme approval do not state whether students should be members or not as the document makes no mention to that effect. This might explain why academics do not feel compelled to include students in their board. As one academic said:

> *"They are supposed to but it is a practice that somehow we have not implemented"* (PA10:063:063). *"We could invite them but they would not come and identifying those that should come was also a problem because we are supposed to get a representative for both the postgraduate programmes and undergraduate programmes. But it is something that we really need to revive"* (PA10:065:065).

This quotation reveals the inconsistencies and weaknesses in the system. On the one hand it is said that students do not turn up when invited to meetings and, on the other, it is said that this is a practice that has not been implemented. Clearly, there are inconsistencies in the responses from participants which could mean that, actually, students are simply not invited. If they are, then they do not attend which results in their being excluded completely.

### 6.2.2 The Use of External Reviewers in Curriculum Development

Another theme that emerged from the data was the use of external reviewers. These are experts from outside the country, invited by the department to review their programme in order to make sure that it compares well with international standards. A senior academic supported this by saying:

> *"The other thing we did was take about 3 reviewers, senior people from outside in Africa and outside Africa. Two people, one came from Nigeria and the other from Ghana who are really good in ES."* (PA9:071:071). *"So those two came and we got their opinion on what is being done in other universities and they also move around different universities and they are experienced. So we ask them are we at par with other universities or something and they really appreciated this. So that is what we have been doing and the process goes on up to Senate"* (PA9:073:073).

From what was said, these are peers who are brought in from around the world to share experiences and knowledge on curriculum development which is, then, incorporated into the curriculum. These external reviewers and peers guide the department by providing feedback on the curriculum that is being developed or reviewed. This process brings an international perspective to the programme as a means of quality control which is critical for credit transfers and the internationalisation of the programme. One academic interpreted this process as a form of an internal audit, using external reviewers:

> *"The peer reviewers are required in fact to make it a point that they talk to the students about the programmes. This is actually an audit. They look at all the programmes, the curricula and the marks and interview lecturers as well."* (PA10:067:067).

According to this academic, when these reviewers visit the institution they do not confine themselves to the programme only. They assess all the facilities that go with it, including the delivery and management of the programme and they interview staff and students as a way of triangulating what they see on paper like what happens in a typical audit or accreditation process. In that way, the review team obtains a holistic picture of the programme - how it is designed, delivered and managed. According to these academics and administrators, it is a good QA mechanism that ensures the quality of standards and degrees.

### 6.2.3    Benchmarking as a Form of QA Mechanism

Benchmarking is yet another theme that emerged from interviews. The process of having peer reviewers is also perceived as benchmarking with some of the best universities in the world. In the last review both reviewers came from Africa. Benchmarking is not only about going to other places, but having colleagues and peers visit your institution. This type of benchmarking was confirmed by an academic who said:

> *"You see of course the needs of the country are key and a major consideration but we are also an academic discipline so we need to also ensure that we are on the frontier of knowledge in ES. So we benchmark ourselves with the best programmes in the developed world. So, that too influences our design of courses"* (PA10:049:049).

According to this quotation, benchmarking goes beyond merely getting experts and peers to review the programme during a cycle of programme review. It seems that it is a continuous process where the university constantly engages with academics worldwide to inform themselves about what is happening in *academia* in other parts of the world. That would probably also involve having local staff members visit other countries to see for themselves how the quality of programmes is managed elsewhere.  A senior academic and administrator supported the views of his colleagues:

> "O*f course in designing programmes we also try to benchmark with other programmes"* (PA11:010:010).

Thus, benchmarking is used in curriculum development to ensure currency and comparability with the rest of the world. Earlier, two academics in the department said that their programme was one of the best in the world. The reason that academics say that their programme is one of the best in the world is, probably, because they have travelled around the world and compared their programme with those of other countries. They also said that they engaged with industry, which ensured the quality and currency of their programme. If, indeed, from what these academics have said they believe their programme is one of the best in the world, then the challenges they have may be, partly, in the programme's implementation. In Chapter 5 it was seen that some of the graduates were not happy with the programme and its currency as they were of the opinion that the programme and some of the courses were not relevant in the labour market.

### 6.2.4    Establishment of a QA Committee as QA Mechanism

A theme that also emerged in terms of ensuring the quality of the programme was the use of the QA Committee which is headed by a senior academic. This committee is responsible for general QA issues within the department and, about this subject, one senior academic said:

> *"Ya, quality I think it has been recognised that it needs to be attended to and I think some years ago there have been QA measures for instance, assessment. This is really focused at the departmental level where there is a QA Committee which ensures that for instance, assessment and programme delivery adhere to the quality expected. For instance there is moderation and observance of regulations during exams. So those kinds of QA mechanisms are in place and as a faculty we expect regular reports from departments like in this faculty at least once in a semester there is a report accompanying the performance of the students that there has been QA."* (PA11:100:100).

The above quotation is important in that it does not just confirm the existence of the QA Committee and its functions, but also the fact that the department is aware of their limitations in ensuring the quality of their programme and their degrees. The academics are aware that they need to attend to these issues in a much more organized and consistent manner. The QA Committee, therefore, was set up to coordinate QA matters within the department and report to the faculty on progress and challenges which include assessment, teaching and learning. Another academic supported the mandate of the QA Committee by saying:

> "*and then you also say may be doing your tests, you are doing your exams and so on, you know for these when you are writing the exam questions, I may write them as a lecturer but there is a departmental board that looks at the questions. There is techniques, there is the human and the physical environment and then you bring your questions to this board that looks through to check if really they are of good standard*" (PA35:040:040).

The quotation confirms the duties of the QA Committee and the fact that it reports to the department's board. The departmental board discusses quality assurance issues and considers recommendations emanating from the QA Committee. Its role is to approve recommendations from this committee and report to the Academic Board and suggest the adoption of these at the Faculty Board meetings. The monitoring of assessment, including examinations, is also meant to ensure consistency in the level of difficulty of the examinations and that academics cover the necessary content during the course of the year. This is why the leadership of the QA Committee is assigned to a senior academic. This academic (PA35) goes further to say:

> "*There are those who are leading it about four* of them*. But then in terms of say may be you have a coordinator of physical exams, a coordinator of human* environmental issues *and then you have 4 who are in QA so you have that cascading and each member knows that they have to ask questions of quality*" (PA35:044:044).

This is triangulation and confirmation of the existence of the QA Committee and that it is headed by a senior academic who may have some QA experience to guide the team. To triangulate the functions of the QA Committee and its membership, documents were reviewed as another data collection method. As such, it was discovered that this committee was established with guidelines from the Academic Quality Management Policy (AQMP) which came into effect in 2003 (UB. 2003).This is a university policy document that is meant to be applied across all faculties and academic centers, including both professional and support staff. It is a document that outlines the strategy of managing quality within the university and the composition of Quality Assurance Committees that operate at departmental level. According to this document, students should participate - where possible - on quality assurance committees and teams, but it was observed and it was evident - as reported earlier - that students have not participated in these activities within the department. One of the critical objectives of the AQMP is to ensure that graduates obtain the skills and knowledge required and valued by stakeholders through the implementation of academic programmes (UB, 2003). This statement was made in 2003 and ten years down the line it seems that the Department of Environmental Science has not met that objective. As reported earlier, students are not exposed to workplace experience that would assist them to develop the required skills. The other point to note is that it seems that the objective of ensuring that graduates

attain skills and knowledge does not mean the acquisition of competencies needed in the workplace - the AQMP only talks about skills and knowledge.

## 6.3    A GENERAL OVERVIEW OF EMPLOYABILITY AUDITS

This section of the thesis discusses the views of various stakeholders who were interviewed on introducing employability audits at UB; how they could be implemented; and their roles in ensuring the success of such audits. What emerged from the interviews was that employability was an unfamiliar concept among participants, graduates and employers alike. That meant that participants, including academics, had no understanding of the concept of employability audits. Therefore, during the interviews some time was spent on explaining the concept before engaging participants in seeking their views on implementation. As discussed earlier employability audits are the types of audits that focus on monitoring and identifying the extent to which institutions engage in activities that enhance the employability of students and graduates at programme and central levels (Harvey, 2005). Such activities focus on ensuring that students are exposed to work situations and acquire knowledge skills and competencies required for the world of work (see Chapter 2).   Employability audits are limited to ensuring that the objectives of the curriculum are met in terms of making sure that graduates are work-ready and that they meet the needs and expectations of employers. In sub-Section 6.3.1 the views of participants in support of the introduction of employability audits will be given; and in sub-Section 6.3.2 arguments against the introduction of employability audits will be presented.

### 6.3.1    Views in Support of Employability Audits at UB

This sub-section gives the views of participants who supported the introduction and implementation of employability audits at UB. In supporting the idea, participants made suggestions as to what should be done to ensure the success of such audits.

One academic who was interviewed was of the opinion that for employability audits to be accepted in the system they would have to be supported by the leadership of the institution:

> *"We don't have anything like that and if we were to do that now most departments would fail because we don't do it. It is a lot of things in any system* [and] *we depend on the people running the system. If you have the right people up there who see this as a real issue this kind of thing can come in"* (PA8:271:271).

This senior academic confirms the fact that no employability audits were implemented at UB at institutional and departmental level. He also suggests that if top level management perceived employability audits as critical in ensuring that they meet their goals of graduate employability, it would be much easier to introduce and implement them successfully. This means that there is need for a 'buy in' from higher levels of authority. As a matter of fact, there should be less resistance to the introduction of employability audits because UB has a Graduate Employability Strategy (GES) which was approved\ by Senate in 2010 (UB, 2009). The establishment of this strategy was the result of a first destination study that UB did on some of their graduates in 2007 and 2008. The aim of the study was to assess the

employment rate of UB graduates with bachelor degrees a year after graduation. UB management, however, decided that data collected a year after graduation may be misleading, but useful information was obtained that identified the extent of employment and unemployment of new graduates (UB, 2010). UB management decided that longitudinal studies should be conducted to offset that challenge.

The first destination study revealed that from the 2008 programmes, 45.2% of the graduates were in full employment; 11.8% were in part-time employment; 30.2% were unemployed; and the remaining 13% was not accounted for.  The study also revealed that the majority of unemployed graduates - 46.6% - were from the Faculties of Humanities, followed by Social Sciences with 46.4%, Business with 39.6% and Science with 23.9%. This data confirms the findings from the data obtained from graduates who were interviewed in this research and who were agitated by the fact that the Humanities - as a programme of study - was no longer needed in the labour market. For that reason, they were convinced that the programme should be discontinued.  From the recommendations made by the first destination study, UB's members of management decided that they needed a strategy that would inform all departments on how to achieve graduate employability. The aims of the GES, among others, were to raise graduation levels of employment in areas, such as the Humanities and the Social Sciences which had very low rates of employment; to conduct annual graduate destination surveys; and to separate careers from counselling services and extend careers into a careers and employability service with a job placement center. The latter was still not in place when this research was conducted. The key to the Graduate Employability Strategy is the Policy on Teaching and Learning which was approved in 2008, following the study on graduate employability. The policy identified eleven key attributes that graduates should possess on leaving the university and which were to be incorporated into all programmes delivered at UB in order to achieve graduate employability. These key attributes are similar with those identified earlier by Binkley et al., (2010). They are the following:

- Information and communication technology and skills;
- Self- directed life-long learning skills;
- Problem solving skills;
- Communication skills;
- Entrepreneurial skills and employability skills;
- Organisational and teamwork skills;
- Research skills and information literacy ;
- Social responsibility and leadership skills;
- Interpersonal skills;
- Cross-cultural fluency; and
- Accountability and ethical standards.

Most of these skills were included in the questionnaire administered to students to identify those that they had or that they thought were critical in the workplace. The results were given in Chapter 4. Interesting to note as well is that these skills form part of the 21st Century Skills identified in Chapter 2.

Furthermore, during the interviews the graduates, employers and academics were asked to identify which skills were critical and which skills graduates possessed or lacked. However, from the interviews conducted with UB staff members, it was clear that the department had not started implementing the Graduate Employability Strategy. As reported earlier, some academics thought that the integration of such skills should not be left to individuals to implement but, rather, that they should be delivered in general education courses, such as communication. This means that there is a realization that if left to individual lecturers to impart the skills and competencies needed in the workplace, the Graduate Employability Strategy might fail. One senior academic and administrator said:

> *"And I think as academic institutions we can have some kind of accredited courses which students or postgraduate or graduates can run into, where you design programmes and you accredit them. Just like for teaching you get Post-Graduate Diploma in Teaching so that you can impart your chemistry, environmental science effectively. There are different accreditation and qualification bodies that can accredit these"* (PA35:170:170).

This supports the view that courses on employability skills or workplace skills should be introduced that can be accredited instead of integrating them into already existing curricula and which students could take to obtain some skills and with which they could be awarded certificates. They could then use the certificates to show what skills they had from accredited courses. Another academic supported his colleague by saying that before introducing employability audits there was need for proper planning which included informing stakeholders concerned well in advance in order to obtain their support. He said:

> *"It requires a lot of running around. People in industry are very busy they are very time conscious and so to get them to come it will cost money and one thing I have noticed eh, many of these companies budget ahead. So you can't jump on them in the middle of the year and say come and spend so much money. So that is why I say the initiative in this requires [academics and administrators] to sit down in UB and plan ahead so that these people can put it in their budget for the next year. If that is not done it will not work. It will not work you wouldn't get industry to come because these are some of the things we have experienced elsewhere"* (PA8: 273:273).

What emerges here is not just the need for proper planning and consultation, but also the need for budgeting well in advance for such activities - at all levels. This is a critical point because employability development opportunities and activities require a budget for travelling and subsistence, for example, for students and staff members who will be monitoring students on site. If industry is going to engage with students in this manner, students may also want to be paid for the work done and employers would need to budget for that too. Thus, according to this academic, the need for proper planning cannot be underrated.

Another point that emerged, which is related to the success of employability audits, was that the industry landscape in Botswana needed to expand to create more employment opportunities for students to be attached to the workplace. A senior academic said:

> *"That can be done in a number of areas where our graduates can get absorbed including self-employment. That could be done. But I am just [laughter] wondering*

*because the reality out there is the economy is down and eh when it is down who is failing, is it the private sector or is it the university?"* (PA35:166:166).

The point made by this academic is extremely important. According to this quote, as much as employability is not about employment, the fact that the economy does not seem to be growing at the same rate as graduates are produced means that it would be very difficult to absorb all students into internship programmes; some will simply not find a place to practice because of the shrinking market. If that were to happen, then UB would not achieve its objectives of graduate employability which ultimately affects industry as well and the implication is that UB would have failed. This point of view was supported by some graduates who also felt that there were insufficient industries to absorb the student numbers UB was producing. This is what one of them said:

> *"There are not enough industries but the university can also train students not just for jobs but put it in their minds that it is not only being employed that you can do after university, encourage them to go into self-employment"* (PG14:292:292).

Therefore, the suggestion from this graduate is that UB should not focus on training and educating students for employment, but should be encouraging students to be self-employed which could also be achieved through internship programmes. Introducing entrepreneurial skills - as indicated earlier - in the Teaching and Learning Policy would cultivate the values of self-employment. Moreover, this is one of the aims of the Graduate Employability Strategy to increase the numbers of graduates in self-employment. Nevertheless, some participants agreed that the benefits of employability audits far outweighed the challenges. Another graduate - in support of her colleagues - said:

> *"No it is a good idea, actually. It is a good idea because you always want to know where you stand"* (PG25:278:278).

This graduate believes that employability audits are a good idea because they give the graduates and the university the knowledge of where they stand in terms of the needs and expectations of the workplace. She was also convinced that for the audits to work they should be part of government policy:

> *"No, it just becomes a policy"* (PG25:280:280).

Here she is answering the question as to how such audits could be introduced without overwhelming the institution. She suggests that such audits are so important that a policy should be introduced that would ensure that all stakeholders involved, including industry, should participate. As noted earlier, UB already has a policy on Quality Assurance Management which includes employability.

All six employers who were interviewed supported the introduction of employability audits. One of them said:

> *"They would be beneficial because they would reduce the time to train. They would reduce too much training so it helps the industry. It reduces that headache of having to train someone, it will help even our productivity it would go up. You get a graduate and he pushes our productivity up rather than having to do too much training"* (PE31:215:215).

This employer is of the opinion that such audits would be beneficial to them because they would cut down the cost of re-training graduates for fitness for purpose. Graduates would come prepared for work and, hence, improve productivity in the workplace. Employers were of the view that time was a resource that was scarce and they would certainly not want to spend time training graduates when they should be contributing to productivity. Another employer - in support of this view - echoed the same sentiments:

> *"It would help very much because then you would know that those who are seeking employment have gone through the rigorous process of the curriculum and you know that what you are getting is what you want. You don't now have to start retraining them. You know that what you see is what you get"* (PE7:369:369).

The issue of re-training is reiterated and this employer who is from the private sector supports the idea that graduates who have gone through such training would find employment much easier and the employer would also be more comfortable working with such graduates because they would have had a hand in preparing them for the world of work.  More importantly, employers believe there would be no need to re-train graduates, something which employers did not want to do - as reported in previous chapters.

### 6.3.2 Views against the Introduction of Employability Audits

There were a few participants who were not in favour of the introduction of employability audits and this sub-section gives the views of the academics who were not comfortable with the idea of employability audits to prepare ES students and graduates for work.  It must also be stressed that only a few academics were not happy with the idea. No employers and graduates supported this view. A handful number of academics were skeptical about the idea of employability audits, partly because they thought that this would overburden the department. One of them said:

> *"We do not produce, as I told you when I write a book I do not write it for a specific audience, so like when we produce graduates, it is about the skill and how this graduate can impress the employer. What I was telling you, people will be over burdened with teaching and research. I think if you put everything to the department it will not be very effective because people also want relaxation time so that they can think about their future research or read some of the new documents that are coming up. But I think it is a job for an administrator or something I think"* (PA9:127:127).

A couple of issues emerge from this quotation by a senior academic: Firstly, he believes that the university does not produce graduates for any specific industry; all that matters is that they have the right skills and knowledge - a point that has been mentioned before. The issue here, though, is that students feel that they need an understanding of the workplace and, hence, a place where they can obtain hands-on experience needed in the workplace. Whatever skills they are taught, students and graduates are of the opinion that they should get some practical experience of what they have learnt in order to become competent in performing those skills. If they are to impress their employers, students and graduates feel that, perhaps, they should have practiced what they are going to do in the field. The second point to emerge here is that if employability audits are left to the department to implement, then they would not work because academics are already overburdened with work. This quote, therefore, suggests that for employability audits to succeed they would have to act as administrators to coordinate

the activity which implies that some of them would not be willing to coordinate employability development activities.

A similar view was expressed by another academic who argued that they had some kind of audit where external reviewers came to assess facilities and the content of the programmes:

> *"Yes, not in terms of how we produce people for x industry or x institution. They are looking at whether we are offering what is expected of ES. Are we on the frontier with remote sensing techniques? Are we on the frontier with GIS? Are we abreast with developments in EIA? Are we in the frontier with theory in various areas of ES? That is what an audit should be at the university level. It should not be linked to work. Those kinds of audits are for the polytechnic."* (PA10:177:177).

This academic strongly believes that there is a distinction between a polytechnic and a university in that universities do not focus on preparing graduates for work. Like the other academics, he believes that they do not produce graduates for any particular industry. Therefore, in his view an audit should focus on curriculum and resources. When asked if employability audits would not succeed if introduced, he said:

> *"Not an audit that is linked to work readiness."* PA10:181.181. *"May be later when there is closer interaction between departments and potential players with internships and so forth, we can start probably addressing the deficiencies pointed out in the way may we deliver like remote sensing, GIS etc. But at the moment may be South Africa may have gone further because it has a bigger industry than we do"* (PA10:187:187).

He is contradicting his own views as on the one hand, in the first sentence in the above quote, he says that employability audits are not meant for a university but a polytechnic and, on the other hand, he says that they could consider those later on when there was a better partnership with industry. Also, he does not think that the department will welcome such audits as long as they are linked to work. Like his colleague, he does not think that the industry base is large enough to accommodate all the students they have - unlike South Africa or other more developed economies. These views explain why some of the academics suggested that courses should be introduced which could be accredited and that would focus on employability skills because, if left to individual academics, the strategy might fail.

Another very senior academic and administrator contradicted the views of the above two academics:

> *"[Yes] we would have to have resources and plan to have them. To me [yes] we should have them. I think in a way we are going to be forced to have them with this funding model which is going to be implemented because, that will immediately force people to enroll [students] in a planned way and graduate students in a planned way. It is an aspect which we don't yet have where we know what we input [in terms of quality] of students coming in and what output is going to be targeted. Targeted in such a way that it works because there is going to be funding which if you have not planned properly you are not going to do very well, only those people who have planned properly are going to be successful. [Now there is] more than one university. UB has been the only university [now] even private universities we are [all] more or less going to be forced to go that way. So if we have been neglecting it we are not going to neglect it anymore"* (PA11:100:100).

This is an important quotation because it directly contradicts the previous views presented by the two colleagues and it includes an idea which has not been discussed before, i.e., the issue of funding model which the TEC is currently working on to implement in the near future. This academic is of the opinion that with the introduction of a funding model institutions would no longer ignore the issue of graduate employability because that might be one of the criteria for funding public and, perhaps, even private institutions in the near future. Private institutions are, currently, not funded by government but they get a quota in the form of students on government scholarships. If this academic is right, then what it would mean is that government would not sponsor students in institutions that do not have a good record of graduate employability. The other emerging concern is that of competition from other institutions - both public and private. He believes that with the massification of institutions competition, for students, becomes tight and forces them to put in place strategies to attract more students, like employability strategies for their students. The perception is that the days are gone when UB was the dominant and only public institution that attracted most students which means UB no longer enjoys the monopoly in the market. Institutions have to work harder to attract students and produce the best graduates who are fit for purpose. What is also important to note with this quotation is that this is the same academic who in Chapter 5 said that the UB cannot prepare students for work. Yet here he supports the idea of employability audits and sees the need for having such.

Although there were a few academics who were against such audits, the most– namely, six out of eight academics and administrators, six employers and all six graduates who were interviewed supported them and believed that they would go a long way in ensuring that their graduates were fit for purpose and work-ready. Graduates and employers supported the idea because they could see the benefits, in spite of the challenges. One could discern that the latter believed that the benefits of employability audits far outweighed the challenges of implementing them.

## 6.4 ROLES IN EMPLOYABILITY AUDITS

In the previous chapter it was concluded that UB and employers would like to collaborate and work together to improve the quality of graduates in terms of their employability. This section looks at feedback from the same participants on what they perceived their roles to be if employability audits were to be introduced as a form of collaboration and a QA mechanism. This section starts by examining the role of the TEC in sub-Section 6.4.1; sub-Section 6.4.2 looks at the role of employers in employability audits; and sub-Section 6.4.3 explores the role of the University of Botswana.

### 6.4.1 The Role of the TEC in Implementing Employability Audits

The role of the TEC, as a regulatory body, will be discussed in terms of what emerged from the interviews with all the participants.

Two major roles emerged and, therefore, this sub-section will be structured according to the roles that emerged.

### 6.4.1.1  The TEC as an overseer

From the interviews conducted, it emerged that there was need to have a coordinator or facilitator to create a link between industry and UB. One of the academics interviewed suggested that the TEC should play that role and facilitate interaction to ensure that the stakeholders concerned worked together:

> *"Yes, I think TEC is an overseer. Like right now there may be queries about our graduates and issues of employability and nobody is telling us that. We are hearing that from the media. I think TEC should take that responsibility and give us feedback. And even go to the employers and ask them what they are saying. They are the link. Even in terms of quality TEC should come in and see the type of graduates we are producing and how they could be improved"* (PA6:105:105).

This academic perceived the role of the TEC in employability audits and quality assurance, in general, to be that of an overseer, like a chief administrator who provides guidance and information to assist institutions in obtaining feedback on the employability of their graduates and the quality of their programmes. This academic thought that the TEC should collect feedback for them on the employability of their graduates. One would have thought that UB, itself, would have strategies in place to elicit that feedback through mechanisms, such as tracer studies. One of the findings from the interviews with the academics in the department was that no tracer studies had been conducted since their establishment. A senior academic who was interviewed said:

> *"No we haven't done the tracer project I mean a deliberate tracer project, but as I said we are aware that our graduates are in key institutions. You find the majority [of them] in those key institutions. They are doing well. Initially they may be shaky but in mind they are able to rise very fast. The Acting Director of DEA [Department of Environmental Affairs] is our former graduate. The supply and demand is not our concern because we are a public institution. If we were a private institution we would be more market oriented"* (PA10:159:159).

The DEA, quoted, is from the Department of Environmental Affairs.  However, what emerges here is that of the few graduates that academics might have had contact with, they believe that their graduates are employable. Furthermore, the comment that if UB were a private institution it would be more concerned about supply and demand issues in the labour market. What it means is that UB would produce graduates without due diligence of what the country and the economy needs. As long as government continues to sponsor students in various fields, academics will continue to produce those graduates. The lack of tracer studies was confirmed by one of the graduates interviewed:

> *"Yes, they should follow their graduates, find out where they are. You know I finish from University but eh, nobody calls me where are you? Are you working? How is the job? How did we prepare you for that? That it is even far from happening so that is why I am saying it is a university that is just concerned about, ok, [we have] taken out so many graduates, 5000 graduates. What then happens to the graduates?"* (PG30:223:223).

This graduate, who completed studying five years prior to this study, expresses the concern that the university had not yet contacted him to find out how he was performing in the workplace. He believes that it was the responsibility of UB as an academic institution that produced graduates for the market to find out how its products were performing – not, necessarily, by calling them because that would not be

feasible.  The message was that no follow-up was being done. He went further to stress that it seems that UB was only concerned with the issue of quantity and not quality - a suggestion which also emerged from some of the employers who were interviewed.

Nonetheless, the view of the academic that the TEC should be an overseer and facilitator is one that was supported by other academics as well:

> *"They should have a unit there which would also liaise with industry and be linking universities to industry."* PA8:283:283. *"Yes assisting [Students] because there are some who are not aware and they can do that and facilitating things and making sure that the government passes the right policies that encourage the public to invest in universities.  Let them know they can endow prizes like encouraging Debswana to give a prize for the best graduate in mining technology or whatever it is. We certainly need more awards and more prizes to encourage students"* (PA8:285:285).

This academic believes that the role of the TEC is to link the university with industry by facilitating communication between them. He also introduces the issue of ensuring that there is some kind of commitment from industry in terms of offering various prizes for students who would, ultimately, join the industry. These prizes could be linked to employability audits where they were awarded to the best performing students. The TEC already has an office of QA that could play a role in linking industry and institutions. However, there were other academics that had contradictory views:

> *"The role of TEC is to ensure that we remain true to our mission, vision, goals and [the government]. If we are going to arrange such audits it would be on the basis of that. If you want [you can] come down to the Departmental level to make sure we are doing ES the way, you know, it is being done in other places offering similar programmes"* (PA10:189:189).

This is the same academic who did not support the idea of preparing students for work. He is of the opinion that whatever the TEC and UB engage in should be focused on what he considers as their core business, i.e., teaching and learning and ensuring that programmes are of a quality that is comparable to other institutions elsewhere. However, one of the mission statements of UB as a whole is "to improve economic and social development by high impact engagement with business, the professions, government and civil society" (UB, 2008, p. 5).  The mission statement of the Department of Environmental Science is to advance academic excellence and the human resource capacity of the nation of Botswana and the international community in Environmental Science and Management (UB, 2008). The two mission statements are related: one talks about improving economic and social development and the other talks about the advancement of human resource capacity. There can be no economic development without a competent human resource capacity. The more important point is that the UB mission statement includes some engagement with society, in the form of business and industry. This means that the university recognizes that it cannot not operate in isolation; it must enter into partnerships to produce a human resource capacity which is suitable for the country's economy and for the world at large. Without providing an alternative, one may conclude that this academic seems to be going against the department's own vision and mission and that of the university.

The views of this academic were not supported by his colleague who, also, supported the view that UB should produce graduates fit for purpose in terms of employability. He thought that engagement with industry was critical and that the TEC could play a liaison role:

> *"TEC is doing very well, actually, but what I think personally is to come up with these linkages or to build up these linkages with industry and also you see make a survey, what is the industry requiring, what is the requirement and how are we going and what is our projection in terms of spending in terms of the GDP (Gross Domestic Product)"* (PA9:147:147).

GDP stands for Gross Domestic Product. Like another academic, he is of the view that the TEC is doing well in terms ensuring quality in institutions. However, he also believes that the TEC can be the link between industry and the university. His reference to GDP suggests that he believes that as an academic institution the university also has a role to play in ensuring that the country is productive. In addition, he feels that the TEC should be engaged in surveys in which they find out what industry needs and advice tertiary institutions, accordingly. This study is aimed at achieving precisely that, which means that this study is timely in addressing current local and global issues and proves its relevance.

Another senior academic and administrator supported the idea of the TEC playing the role of facilitator and overseer:

> *"I think TEC will have to place requirements to the institutions and say this is what we require of you as institutions. But also perhaps TEC will also take advice from institutions and say this is what we can provide. So there has to be engagement and how TEC and institutions are going to work together. But TEC is extremely important to facilitate and coordinate the whole tertiary education"* (PA11:108:108).

In addition to being a facilitator, this academic is of the opinion that the TEC could also come up with some guidelines on how institutions could partner with industry. More importantly, what is suggested here is that the TEC should come up with standards that will guide institutions in terms of attaining employability for their graduates. These guidelines could be in the form of a policy that was suggested earlier by one participant. This is critical, considering that there are individuals who do not support the idea of engaging with industry to ensure the employability of graduates. It is important because the TEC also plays the role of advisor to government in terms of tertiary education. The idea of establishing a policy was supported by some employers. One of them said:

> *"TEC can enforce that by making it a requirement. If you are an institution and you expect to attract students in an organization and you have not demonstrated that, then know that other institutions will get all the students. So they can enforce it that way"* (PE26:237:237).

This employer sees the role of the TEC as a regulatory body that enforces policy and standards. It is not surprising that employers support this idea because they would be the beneficiaries of any system that is put in place to ensure that graduates are fit for purpose. As mentioned earlier by one of the employers, these kinds of audits would reduce the costs of retraining graduates. The view that the TEC

should play the role of a facilitator and overseer was also supported by the graduates who were interviewed. This is what one of them said:

> *"I think they should make sure that the audit is undertaken in a fair, transparent and objective manner so that the university does not cook the results. They must make sure that whatever is being produced is of, you know, the true picture of what is happening. So as a regulatory body the TEC should make sure that the audit is transparent and objective as much as possible"* (PG30:260:260).

This graduate introduces a point of view that has not been discussed previously, i.e., the issue of fairness and legitimacy. He believes that UB might, perhaps, create an image that is not true to obtain more students or funding because of the close competition that has now emerged in the tertiary education landscape. The issue of the massification of institutions was also initiated earlier by one academic when he said that employability might become one of the criteria used by sponsors and students in applying to institutions. The graduate, quoted above, feels that it would, therefore, be prudent on the part of the TEC to closely monitor how employability audits are carried out. Evidence would have to be produced of any employability development activities to support claims of such engagement.

However, it must be noted that there is very little, or even no, competition for ES graduates in the market because currently UB is the only institution that produces these graduates. This was confirmed by one of the academics:

> *"I wouldn't know or wouldn't know of any, the BAC [Botswana Accountancy College] may be able to compare that with the faculty of accounting here at UB so I don't know. The coming BIUST [Botswana International University of Science and Technology] is the one that looks like it is going to offer courses that are similar to ours, but as for the existing ones I have not come across any"* (PA13:130:130).

The BAC is a public institution which specializes in accounting and business programmes which means that the current UB graduates of ES have very little competition for jobs from graduates of ES coming from other local institutions. There were only two other ES graduates from South Africa that one of the private companies had employed which was discussed in Chapter 5. Any type of competition that was mentioned in the interviews was from students, in general, as the number of institutions increases. The only threat that was established - as indicated in the previous chapters - is that of availability of jobs for ES graduates. The local supply of ES graduates seems to outweigh the market demands and the availability of jobs. This finding partly addresses the third research sub-question: **How does the massification of tertiary institutions affect the employability of graduates of Environmental Science in Botswana?** The objective of this sub-question was to explore how graduates of ES from other institutions outside the country affect the employability of UB ES graduates and the work they do. It has been determined that for now there may not be much competition from graduates coming from outside UB until the Botswana International University of Science and Technology (BUIST) is operational.

### 6.4.1.2  The TEC as a quality assessor

One of the roles of the TEC concerning employability audits that emerged from interviews was that of assessing quality standards in institutions. One of the employers said:

> *"I think they are doing a good job of it now by ensuring that the standards and quality of the courses are at par with international standards. I think that is something that should continue. They need to strengthen the quality assessment of the courses in line with government and private sector not only with the institution but with industry as well"* (PE7:359:359).

This employer is saying that the TEC is doing well in the area of ensuring that quality standards prevailed at tertiary institutions, but that there is room for more work to be done in ensuring that local standards are comparable to international ones. What emerges is also the fact that the TEC needs to work harder to ensure that the quality of graduates meets the demands and expectations of industry and government as potential employers. It could mean that she is not happy with the current crop of ES graduates from UB and that more could be done to improve the employability of the graduates. She perceives such an audit as an opportunity for collaboration to be established between industry, government and UB in order to improve the quality of ES graduates. She went further to say:

> *"Yes, they should be like a tripartite system. Everybody comes to the table and say we do the quality assessment, you are the employer and you are the imparter of knowledge and how does the industry benefit from this partnership and we take it from there"* (PE7:363:363).

This quote suggests that unless there is this tripartite system where all stakeholders concerned come together and assess quality standards at UB, the goal of achieving the employability of graduates may be nothing but a mirage. Employability audits are meant to achieve the employability of graduates but what is not being addressed here is the role of the graduates. The tripartite system does not include the students and the graduates - an issue that this study seeks to investigate.

The idea of the TEC playing the role of a quality assessor was supported by graduates as well. This is what one of them said:

> *"I think it can help to make sure that what they are doing at the attachment is [related to their fields of study] at the University"* (PG28:236:236).

It is a very important statement which could be interpreted to mean that graduates are aware that when students are sent on internship programmes, it is not always the case that the work they are given by employers is relevant to their programmes of study. This confirms some of the statements made by academics in the previous chapter that some of their students were turned into security guards or worked as messengers, printing and photocopying documents. Therefore, this quote could be recommending that the TEC should ensure that students are given roles or assignments relevant to their areas of study which would empower them for the workplace. As quoted, this might require the TEC again to establish some guidelines for employers to make sure that there is a synergy between

the academics and the world of work.  Other graduates interviewed had similar views. One of them said:

> *"We think TEC should also revisit these institutions look into the material they give to the student, what the employers want and what the institutions are offering and make them change their programme because Humanities is a problem"* (PG29:297:297).

These views are important because what has emerged is that graduates are concerned about the quality and relevance of the programmes of study, especially in the Humanities - as indicated in Chapter 5. They believe that the TEC is not doing much about it.

 The other issue that emerges from the previous quotation is that the TEC is not playing its advisory role in terms of the needs of the labour market and the economy as a whole. This graduate maintains that students are forced to enroll for programmes they do not want, like Humanities, for which - she believes - there is no demand in the labour market. This is so mainly because of the government sponsorship they get. She also blames UB, but at the same time she is saying that the TEC is not advising government as they should. Students on government scholarships are told by the sponsor what programmes they should take at UB. As was noted in Chapter 5, the majority of students were on government scholarships and their areas of study were determined by the sponsor, not UB. What is being suggested as well is that UB might not have the capacity to absorb students in the areas they are interested in, so they channel them into other areas which are not in demand and, hence, the availability of space in those programmes. It may also have to do with the kinds of grades students bring from secondary schools - as indicated earlier - and what programmes they qualify for as *per* UB requirements. This is an important issue which could, perhaps, be addressed by employability audits. If students cannot find attachments or work placements in a particular field, that could be an indication that either the market is saturated or that there is no demand for that programme. Furthermore, this is an issue that might also require some other form of intervention which is beyond employability audits.

One senior academic felt that the TEC as a quality assessor should also look at the conditions of service of academics for employability audits to work:

> *"Ok so those kinds of things I think they can help and also look at the quality and say that if we are going to achieve this kind of quality the salaries of lecturers [should be looked into as]  these are [some of] the incentives. I will give an example, I was an external examiner in Swaziland but learnt that other people don't pay well. You come to the Prof [level] they were more than P10000.00 in a month more than Professors in Botswana. Botswana is still a better [financier] in everything and the standards of living are good but in spite of that you see why people are going to Namibia even to South Africa. What they do in South Africa they made a rule that about 50% should come from outside"* (PA9:147:147).

A couple of issues are embedded in this quotation. One of them is the issue of incentives for academics to be able to achieve the quality of programmes and graduates required of them which means that the remuneration package at UB is not competitive and results in some academics leaving for greener pastures. The other point that emerges is that UB should recruit a complement of expatriates that would be acceptable. This means there could be a feeling among some local academics that either they do

not embrace expatriates or that for employability audits to succeed there is need to have contributions from everybody, including expatriates who may have experience with such audits from elsewhere. Some of these issues are ones that the TEC should be able to handle and advise government, accordingly.

### 6.4.2 The Role of Employers in Employability Audits

In Chapter 5 the roles of employers, academics, students and graduates were discussed in terms of how they could facilitate the preparation of graduates and students for the world of work. Similar views were expressed when it came to their roles in employability audits. Employers, academics and graduates, alike, expressed the need for collaboration to ensure the success of employability audits. Some of them stressed the need for a tripartite system where major role players come to the table and discuss issues of quality at tertiary institutions. This section reports the views of participants on how employers, in particular, could participate in ensuring the success of employability audits. Three specific views emerged:

#### 6.4.2.1 Employers' need to understand ES graduates

Some of the academics interviewed were of the opinion that employers are not fair to their graduates and that their expectations are beyond what graduates could deliver. For that reason, they strongly maintained that employers need to understand the qualifications of the UB ES graduates to be able to assign relevant tasks to them. This is what one of them said:

> "The employer like we said before, the employer needs to understand where the graduates are coming from what type of degree we are offering. Wildlife department should not expect a graduate who is a wildlife biologist that is impossible. They should not expect a graduate from here to be a meteorologist in one day. They have graduates who are not specialists but who are trainable. If we take people from agriculture who come here and they are soil surveyors how many courses do they take from here in soil science, may be 4. A soil surveyor can be someone who has a degree in soil science, soil chemistry and biology. It's a whole degree specializing in soil science. So employers must understand that our graduates are not specialists" (PA6:103:103).

This issue was discussed in the previous chapters. However, in terms of employability audits this academic suggests that it is the role of employers to understand what they want and who they would want to accept for internship. It also means that even during internship employers need to understand the graduates they are dealing with. In terms of employability audits it means that employers would be involved in training students in workplace requirements and expectations so that when they employed graduates, they get ones who would be ready for work. More importantly, employers could also contribute to the preparation of students for work by identifying gaps that the university could fill. One of the employers expressed a view similar to that of the academic:

> "I think the role of industry is similar to that of UB. I would assume the industry should have its own monitoring if it is monitoring, they get those graduates, they identify the areas and gaps, etc. communicate to the university" (PE31:211:211).

The monitoring of graduates involves understanding what it is graduates can do and link up with UB to give feedback in terms of what industry requires. This employer believes that they should contribute by identifying the skills needed in the workplace and communicate that to UB. It means that they are not just going to accept graduates from UB the way they are - as the academic is saying. They will play a monitoring role and assist UB in identifying gaps during internships which can then be rectified while the students are at university. He went further to say:

> *"Yes. Because in the end I believe it is the responsibility of the two parties. You are responsible for producing the graduate, the other party is the beneficiary they should be explaining that this is what we want. This is the product we want and communicate that to the other party. If there is a problem with the product, fix it. There should be a relationship"* (PE31:219:219).

This quotation emphasizes the need for employers to understand the graduates they are dealing with and to collaborate with UB in ensuring that a better product, that meets the needs and expectations of the workplace, is realized. As the above quote suggests, this is a two way process because academics need to understand what the employer wants and, then, produce the types of graduates needed in the workplace in partnership with industry.

### 6.4.2.2 Employers as collaborators

As already indicated above, collaboration is one of the areas identified as critical in the success of employability audits. Collaboration implies working together to achieve set goals and objectives by establishing partnerships. Employers, academics and graduates, alike, expressed the view that industry needed to collaborate with the University for employability audits to be effective. It is not only UB that should collaborate with industry, but industry should also reach out to UB. One employer expresses the following view:

> *"Yes what we can do is to assist and liaise with the university and say our industry is evolving these are the issues we think the institution should look at when the curriculum is being reviewed. I think that should be done on a yearly basis to say these are the areas we think in the next 5 to 10 years will be needed or how can you adapt or change the existing curriculum so that 5-10 years we will have graduates in this area who can be employable in that industry"* (PE7:357:357).

This employer is convinced that they can assist in improving the employability of graduates by reaching out to the university and by working together because, ultimately, they are the beneficiaries and consumers of the final product. Liaising with UB would assist in identifying gaps and weaknesses which could assist the university in designing courses that would benefit industry, graduates and the country as a whole. Another point raised is that employability audits should be carried out on an annual basis. However, it must be pointed out that academics might not be comfortable with this in terms of issues of staffing within the department and the amount of work they already alluded to and, therefore, they might say that it is not practical. At the same time a couple of academics suggested engaging a coordinator who would focus on employability audits. This is a decision the Department would have to make considering the amount of work involved. Such audits should not be viewed as a burden but a means to improving the quality of graduates. The feedback from the audits could be incorporated into minor

programme reviews that are conducted by the department - without waiting for the five year cycle of programme reviews. Another employer, in support of this, said:

> *"Recently, there was a requirement and my Managing Director had to run around looking for all the engineers he had trained and mentored. It was a World Bank requirement and you know that for you to be successful they should see the demonstration of this responsibility on your part as the industry. So if we can have something like that as well knowing that if you don't do this and do it well, it is going to affect us in getting business somehow. That other person who has done this has an urge over me. We know this is something we have to take seriously"* (PE26:235:235).

This employer is suggesting that they would participate in employability audits only if there was some benefit attached to it. She believes that this can be achieved by making employability audits obligatory and a requirement for future investment. It seems that if there are no conditions for becoming involved in employability audits, then the whole idea might collapse. It is the same view that a senior academic expressed earlier that if employability development activities undertaken by institutions were linked to funding, then institutions would take them seriously. The same interpretation may be given here for employers who engage in employability audits. Another academic said earlier that it is like a carrot and whatever they do they have to be rewarded for it. This could also be interpreted to mean that industry is too busy to make time for such an activity, unless they receive some benefit from it. For them to be collaborators will depend on what there is in it for them. Another employer from a government department supported the views expressed and said:

> *"I think the industry should identify areas where students can be involved. I think this is very important. Like research, you know, like to participate in pilot projects, participate in demonstrations because technology is advancing and we need people to adapt it to our own environment. That is when the students can come in"* (PE27:122:122).

This employer supports the idea of collaboration. For her, as with the other employers, what is critical is identifying areas of mutual benefit where students can participate. She does not look at this audit as just putting students in jobs, but also exposing them to research which is critical for the industry, UB and the country as a whole. This view of collaboration was supported by the graduates as well. One graduate maintained that it was easier for UB to work with industry if the latter took the initiative and approached the university:

> *"Yes I think the industry also should, may be go to the university and offer places for internships. That would be easier like asking for let's say 4 students that they can train. If it is the industry actually coming forward it becomes easier"* (PG14:286:286).

She is making specific reference to the provision of slots for internship or attachments where students are attached to an industry for a specific period of time. In her opinion industry should come forward and offer places for internship because employability audits would require those slots. It means that without the cooperation of the industry these audits cannot be done and that is why she believes it would be much better if industry came forward and offered such places. Where there is dialogue between UB and industry it would be easier to make arrangements and form partnerships. Another graduate supported the idea of collaboration by saying:

> *"The industry would involve the private sector and government. Their role would be to [give feedback] because they really know what they want out of these graduates. So it would be sort of using them like a yard stick to say this is the quality of graduates we expect from this institution, private and public"* (PG25:276:276).

According to this graduate, members of industry should be role players and collaborators because they are the ones who employ the product of UB. Another point is that if they accept interns in their workplaces, it would provide them with an opportunity to advice on what UB should do to improve the employability of their graduates as the employers would have had first-hand experience with the graduates which would facilitate an informed kind of input on their part. This is a view that was supported by all the participants who were interviewed, including academics and employers.

### 6.4.2.3  Industry to adopt an open-door policy

Concerning the secrecy that seems to surround industries and organizations, one academic recommended that industry should not just be collaborators, but that they should open their doors and allow the public to come and see what they are doing. This is what he said:

> *"Most of the industries I know like to hide information, industry should be more open [to share information]. They are not open and for this kind of thing, it will not work"* (PA8:287:287).

This is an important point as this academic believes that for employability audits to work members of industry need to open their doors, share information and allow students to come into their workplaces. The point is that otherwise it would not be possible to place students in any workplace environment. He went further to say:

> *"They will not allow people to come in. One of the issues in this internship [is that] ok, there are industries when you send students there those students don't go beyond the reception. Ha they will not allow them to go beyond the reception'* (PA8:289:289).

He continued by explaining how industry was closed. Perhaps this explains why - when students are sent to workplaces as interns - they give them the work of messengers and security guards - as cited in the earlier chapters. The view is that students cannot learn if industry does not expose them to what they need to know. As it has already been pointed out, this issue may require some kind of awareness or policy that would compel employers to comply. A graduate in a government department supported this academic on the view of an open policy:

> *"The role of the employer would be to open doors for the auditors because in some departments you are going to find that they are not open. The government has got an open policy but you find that in some instances accessibility even within government is an issue. So they should make sure they open doors, create time.  We are always running up and down and saying there is no time we are busy. We should create time"* (PG30:258:258).

It is interesting that he - like the academic - maintains that industry, which includes government departments, does not want to share information and that they are often also inaccessible. Accessibility has a connotation of openness and being available to work with other people and it is also related to

creating time to participate in such audits. This could imply that the issue of openness is a real challenge in the workplace and is the reason why one of the academics said earlier there was a need for planning such audits and informing industry in advance on what might be coming. Another academic made a similar point in support of his colleague:

> "So ya obviously industry will have a role, they will have data and they will bring what they want to the table. And then the University will see what they can provide" (PA11:106:106).

This point returns to industry as a team player and collaborator, sharing information that will assist UB to review programmes in a manner that would benefit all stakeholders. This kind of partnership requires openness from the industry and from UB. Bringing issues to the table means being open to discussion and the sharing of ideas on issues that really matter.

### 6.4.3 The Role of UB in Employability Audits

Despite the fact that there were a few academics who were of the view that employability was outside the scope of academics, some of them perceived employability audits as a means of achieving their goal concerning graduate employability. Since the audits would be conducted by the university as an internal and external quality assurance mechanism, it is important to understand how they perceive their role. It is also essential to understand what other stakeholders, such as employers and graduates, believe the role of UB should be. Two main roles of UB in employability audits emerged:

#### 6.4.3.1 UB as a market surveyor

A number of ideas emerged concerning the role of the university. Graduates and employers who were interviewed were of the view that UB produces graduates without due diligence to the needs of the market. One employer made this observation:

> "And, eh, I don't know how to say this one. UB isn't it they are producing these graduates, I don't know how we can monitor that. Sometimes there is an oversupply [because] they produce these graduates but then there is no market for them" (PE31:219:219).

This employer perceives employability audits as an opportunity for UB to conduct a market survey so that it can identify what the needs of the labour market are. This may include the programmes, themselves, and the skills, knowledge and competencies needed in the workplace. Two of the graduates supported the idea of UB doing a market survey and this is what one of them said:

> "The first thing is to identify the market what the market is like, meaning places of work, who absorbs these graduates, and sort of tailor make their programme towards the employers" (PG25:276:276).

This graduate confirms the need for UB to go out and identify what the market wants so that it may prepare graduates well for work. By engaging in employability audits UB will be better positioned to

assess labour market needs. The mere fact that it will be looking for placements for its students, that activity will indicate where they are most needed.

Five academics and administrators confirmed the point that UB produces graduates without a market survey in terms of supply and demand.  This is what one of them said:

> *"I don't think anybody really sits down and talks about demand and supply. I doubt if anybody does that"* (PA8:165:165).

The observations of employers and graduates are confirmed by this academics who says that supply and demand of graduates is not something they look at when admitting students into UB that is a public institution, determined by government that is the main sponsor of most students. This issue was confirmed by another of the academics when they were asked whether they considered labour supply and demand when they designed programmes:

> *"No we don't because that is not our duty. That is probably more of a responsibility of government. We would only take into account the needs of industry not supply and demand. You see we are not in control of admission. The supply of your students comes from the sponsor. We have no control of what proportion of what comes to us apart from the ceilings we set ourselves on our courses and those ceilings  are not determined by the demand but by the facilities and the ability to provide a conducive environment for teaching"* (PA10:157:157).

He considers it to be the responsibility of government to determine the needs of the market in terms of the supply of, and demand for, graduates. As a public institution, UB accepts students who are sponsored by government to enroll in its various programmes. Even when the university sets ceilings in terms of numbers it takes, depending on the availability of resources, those ceilings are not always observed by government. When government sends more students, the department has no choice but to accept those students - as previously indicated - at the expense of the quality of the programme in terms of providing a conducive environment.

### 6.4.3.2  UB as a collaborator

It has been said, previously, that collaboration is a two way process. As much as it was reported that industry should collaborate with UB, UB should also collaborate with industry. That means they should collaborate with industry because this is a necessity for the audits to be successful. An employer had this to say:

> *"Participation in industry related work, attachments not just for the sake of attachments but where people are given tasks that they have to accomplish and they have to successfully accomplish. Until you have successfully accomplished then you are not ready"* (PE26:229:229).

It is recommended that UB should go out to identify industries where they can place their students for internships and that the students should be assessed after completing tasks they are given. According to this employer, if a student was given a research project, he/she should complete the task before going back to class for him/her to be assessed meaningfully. The view of this employer is that without

completing tasks students may not learn enough to apply such experiences in another situation. The same employer was of the opinion that internships cannot be just for the three month vacation period. They should be longer - up to a year. This means that either students would come back the next vacation or that internships for a year should be established as part of the programme of study. This employer from a private sector went further to explain her point:

> *"You see they have these long vacations every year and if they were to take for each of these three months for the 4 years. The good thing is it would be starting at the beginning year one"* (PE26:233:233).

She recommends that internships for employability audits should run for the whole programme until students are ready to graduate. She believes that in that way students will gain the necessary skills and competencies needed in the workplace. It suggests the involvement of the sponsor as in the tripartite system that was mentioned earlier. Meanwhile academics said they tried to engage industry through internship programmes but that it did not work. This is what one of them had to say:

> *"Yes very much because we have been trying like I said earlier we sort of burnt our fingers"* (PA35:176:176).

This senior academic was answering the question as to whether employability audits would be welcomed in the department. He said they would, except that they had tried placing students in various industries but it did not work. This issue was discussed earlier when it was suggested that students were not treated well and, also, that students did not behave appropriately. The department appeared to have been in a quandary and they did not know what to do anymore. This academic was supported by a colleague who was also of the view that such audits would work for UB provided there was proper planning - as indicated earlier:

> *"They exist in other institutions. It is not like we will be inventing a new wheel. So knowing what students need would actually help in providing the learning environment better for them. But as I say it is a strategy. I think as a Faculty we are working towards that"* (PA11:112:112).

It seems that all the stakeholders were in agreement as to what needed to be done. Graduates, employers and academics alike agreed that they all needed to collaborate in order to help their graduates. What also emerges here is that some academics are aware that such audits are conducted by other institutions elsewhere in the world. It is possible from these findings to conclude that employability audits may be supported by more academics and administrators within the department, mainly because UB already has a graduate employability strategy in place that must be implemented. This senior academic had the following to add:

> *"It means that the University should go out and look at partnerships, collaborations, workshops, because to tell you the truth even the industry doesn't know what the University can do for them and the University doesn't know what they can do for the industry. So there needs to be that engagement to fix that"* (PA11:106:106).

He elaborated and expanded on the point that as an institution of learning UB would need to collaborate and conduct workshops for stakeholders so that they could all come to the table and discuss relevant

issues of mutual benefit. The issue of industry not knowing what UB could do for them and *vice versa* emerges again despite the boards that were put in place precisely for that purpose. It is interesting to note that UB seems to be aware that there is something wrong with their graduates that needs to be rectified. This confirms the need for employability audits for institutions which will enable them to rectify any mistakes they are making and to be in a position to know and understand what each of the participants wants and what they can do to help one another. It is even more encouraging to hear this coming from a senior academic and administrator

### 6.4.4 The Role of Students in Employability Audits

The role of students in enhancing their own employability is critical because this is a gap identified in the review of the literature in this study. Often, the focus is on other role players, such as academics and employers, and ignoring the most important player, the student. This section, therefore, focuses on how students could be involved in enhancing their employability and in participating in employability audits to facilitate them. The views expressed are as follows:

#### 6.4.4.1 Students as collaborators

One academic who was interviewed said that often students are not consulted on issues that concern them. He appreciated the fact that he was asked to contribute concerning the role of students in such audits. He said:

> *"Unfortunately, students are always consulted last. The voice of the student needs to be heard and heard loud"* (PA11:110:110).

This quotation suggests that the views of the students should be considered and taken seriously. As collaborators, students should also be consulted on how these audits could help them and what their contributions should be. He further said that their role could assist the process of employability audits by identifying their needs:

> *"Students can help the institution by actually telling what their needs are instead of perhaps their needs not being addressed. Help in making their learning easier and learn better, like for example students having laptops. It is not like we will be inventing a new wheel. So knowing what the students need would actually help in providing a better learning environment for them. But as I say it is a strategy. I think as a Faculty we are working towards that"* (PA11:112:112).

The strategy that this senior academic is referring to is the Strategy for Excellence which articulates the skills and competencies that graduates need in the modern workplace environment. From document analysis, it is seen that this strategy - which is for the entire university - was introduced in 2008 (UB, 2008). It identifies key focus areas which include providing relevant and high quality programmes, strengthening engagement and improving student experience. The goal of the first key area is to offer programmes that will equip learners with the knowledge, skills and attributes for work, life and citizenship. This strategy is linked to the Teaching and Learning Policy, discussed earlier, that stipulates which skills should be taught to the learners. However, none of these mention competencies. The second key focus area is about strengthening engagement and one of the goals is to improve

opportunities for better employment and economic improvement among graduates. This can be achieved, partly, through engagement with industry and by establishing partnership that ensure that graduates meet the demands of the workplace. On one hand, one of the key indicators for this strategy is to increase the number of students on internship programmes and, on the other hand, because of the challenges the Department of Environmental Science faces in terms of internships, it is already giving up on this task. The challenges include:

- Not receiving enough support from industry in terms of absorbing students;
- Students being given chores that have nothing to do with the programme of study, such as being security guards; and
- Personal and discipline related issues where students feel they are not well treated by staff members and staff also saying that students are rude and ill-disciplined.

For these reasons the department is of the view that this programme is not working and it is very reluctant to continue with it. Moreover, it takes a lot of the academics' time and if it is not going to bear fruit there is very little incentive to continue with it.

One of the key result areas for improving student experience is mainly to empower them for success through innovation and by implementing changes to meet students' needs (UB, 2008). This is precisely the reason that academics quote this strategy; they say that students need to be empowered in such a way that they can lead successful and competitive lives and be competitive so that they are able to compete with other graduates elsewhere in the world. Therefore, from the point of view of academics and administrators it is important that they collaborate with students and get them involved in employability audits so that they may have a say in what they would like to see happening.

UB has identified a number of risks in achieving the strategy and some of them have already been highlighted in this study, such as a lack of staff to maintain quality standards. It was mentioned earlier that there is a high staff attrition rate in the Department of Environmental Science. The other risks identified include a lack of physical and digital learning resources and the lack of interest from the academic staff in delivering engagement activities – risks which this study has identified and discussed earlier. The mitigating factor mentioned here from the strategy is to provide incentives in the form of rewards for staff through the Performance Management System (PMS) - also mentioned by a senior academic, but whether or not it would work remains to be seen.

Another academic, in support of consulting with students, said:

> "Eh, I think in one of the statutory I have mentioned is to have a friendlier or more facilitative environment for students. So in that we are looking at advisement such that now we have an advisement system such that at departmental levels we have people deployed who will be responsible to advise students and who students will feel free to go to for programmes, careers and to a certain extent their welfare" (PA11:110:110).

It appears that academics - or better still the university - should provide a conducive environment in which students can achieve their potential and be empowered. In order to achieve that UB has introduced a system whereby each student has an advisor to advise them on their personal and academic needs. This system could facilitate employability audits in the sense that students could discuss what they wanted to do and how to go about it with their advisors. Here collaboration is extended to students as well.

### 6.4.4.2  Students as assertive individuals

Being assertive could be used synonymously with aggressiveness where students go out and get what they want to achieve. This view is seen as a key attribute students must have for them to play a meaningful role in employability audits. One employer said that students should be go-getters and that they should not just sit back and rely on what they are provided with:

> *"First and foremost I think they shouldn't rely too much on what they are being given. They need to apply themselves. It is not just about coming to class. They need to apply what they are doing. The only way to me they can apply [what they learnt] is by being practical."* PE7:365:365. *"How do you make that practical? They should look for opportunities for themselves too"* (PE7:367:367).

According to this quotation, in terms of employability audits students could identify industries or departments and organizations where they could be attached. They should not wait for UB to find them. If UB is not doing anything about it - as it has been the case so far, according to what has been reported, then students should go out and find those work placements for themselves. They could, then, come back and inform UB so that the department could facilitate the actual placements. The university might not be aware of some of the industries or organizations that students are aware of. Some of the graduates on government internship programme are already doing that - they are proactive in the sense that they find work placements for themselves and request the government department to send them there. In agreement with this employer another employer, also from a private sector, said:

> *"So the role of students just when they start is to identify those corporations or organizations or employers or whoever. They help the institution because you know your interests better than the institution"* (PE26:239:239).

Identifying opportunities and organizations where students could go seems to be the main idea emerging from the interviews on how students could play a role in employability audits which requires graduates to be assertive. A graduate who was interviewed supported the views of the employers and academics in saying:

> *"I think students also can also go to relevant workplaces where they can be employed after work, look for internships rather than wait for someone else to do that for them"* (PG14:284:284).

This would make employability audits much easier to implement than if students sat back and waited for UB to do everything for them.

### *6.4.4.3 Students as innovators*

Assertiveness and innovation go together. One employer suggested that students should be innovative and go beyond the norm which has connotations of assertiveness. He said:

> *"I think students should be innovative, you know explore the different environmental systems and play a major role in empowering themselves. Students should know that you know joining the corporate world is a challenge in that you know the more we educate everybody the more there is going to be a challenge in getting jobs in the corporate world"* (PE27:124:124).

One of the main ideas presented here is that of innovation and self-empowerment. This employer is not saying that students should be empowered but that they could also empower themselves by looking for opportunities in areas where others have not gone. The other main point to emerge is that of competition; in her view students should be competitive if they are to survive the corporate world where many graduates seem to want to go. This is a critical point in the sense that it also has an element of discipline and adopting personal and individual attributes that would make students succeed in the world of work. In complementing what this employer is saying, a senior academic made a similar point when he gave an example of how students could be innovative:

> *"If we had a student union [the kind you find] in America [where] student government is very powerful, [there] you know they engage in business and in some universities, the guest house and the hotels that the university uses for people that come in is owned by the student government. When I went to Michigan in 1975 with my family, we stayed at one hotel close to the university, it was owned by the student government. The bus transportation in the university in Iowa and other places is owned by the student government and the drivers are students they are employed"* (PA8:293:293).

These are examples of employability development opportunities (see Chapter 2) that students could be engaged in that would provide them with knowledge, skills and competencies for work and self-employment. The universities provide the central support students need and they could ask students to record the experiences learnt which could be used as reference points for future employment. By engaging in such activities, students gain work experience, for example, in running a transport system or a hotel. These activities could be connected to the courses or programmes they are taking at the university and these employability development opportunities could be part of the employability audits that the institution could site as evidence of how they have empowered students. This is central because all audits are evidence-based (see Chapter 2). Any claims made by the institution should be verified with concrete evidence of what they have done, but until the activities are verified they remain nothing but mere claims.

Context could also be a factor in the sense that the universities are, normally, substantial ones with a large student and staff population and visitors that make their business viable. There could also be a factor of social culture where students have the upbringing and training in terms of independence from an early age which could also play a very important role in their success. If they have the up-bringing that encouraged them from childhood to be independent and not to rely on their parents and government

to provide scholarships and stipends, then that could also explain why such students are entrepreneurial. In that sense this academic believes that students need to be empowered:

> *"We should empower students not to be so dependent. That is the problem in Africa they are so dependent we give them this, we don't give them that. Make them responsible let's have real student government"* (PA8:297:297).

The issue of the social and cultural influence is precisely what this academic is articulating in the above quotation. He is of the opinion that in an African social context the up- bringing of young people does not encourage them to be independent from an early age. They are, normally, given everything on a silver platter - so much so, that student bodies go on strikes like those that the country has seen at UB when students do not get what they expect or want. This is what he said to that effect:

> *"They are not free, we don't empower them and they don't shoulder responsibility. Ya most of the time they mismanage funds they cause trouble strikes and all those things but then each student government is a limited liability operation , they have their own accounts, their own businesses and so on until we get to that stage, these things will not work"* (PA8:301:301).

The view here is that such up-bringing and training does not instill personal and individual attributes that would make graduates and learners successful in life. This academic concludes by saying that unless the Batswana change their attitudes as a society and community of learning, these employability audits might not work. Students should also have a sense of responsibility for their own employability; they cannot rely on other people all the time to do everything for them. The university should provide an enabling environment in which students can develop attributes needed for the workplace. These views were supported by other academics, employers and graduates.

## 6.5    CONCLUSION

In closing the chapter, there are two points to make as concluding remarks from the interviews:

i)    *The idea of introducing employability audits was welcomed by some of the participants who were interviewed.* All the ES graduates, employers and six academics and administrators interviewed supported the idea of employability audits as a way forward in enhancing graduate employability - which is in line with the UB Graduate Employability Strategy. This strategy links well with the Teaching and Learning Strategy of the UB (see sub-section 6.3.1) because this strategy focuses on how the employability strategy can be implemented in the classroom. Therefore the Employability Strategy may be viewed as part of the Teaching and Learning Strategy. The attributes listed in the Teaching and Learning Strategy can be achieved to a great extent by implementing employability audits as previously suggested by Harvey (2001, 2005) and Harvery and Newton (2004) Cooperation and engagement with industry is key to the success of these audits – as revealed by graduates, employers and academics, alike.

ii)    In terms of roles in employability audits, it is suggested that the TEC (currently known as the HRDC) and the BQA play the role of facilitator and quality assurer and oversee the

implementation of employability audits. In order to do so it would be prudent on the part of the TEC/HRDC to come up with tools that will facilitate this process in order for employability audits to be successful. These could be in the form of guidelines as is the case with institutional audits. Some participants especially academics went further to suggest that the TEC/HRDC should give institutions feedback on the employability of their graduates. That means as a regulator they should be doing research to determine how institutions are performing to inform the institutions themselves and the stakeholders at large. That is in fact the role of audits in general especially if based on research as earlier suggested by Harvey and Newton (2004), and it would be appropriate for the regulator to do that. Stakeholders including prospective students and parents deserve to know how various institutions are performing to enable them to make proper choices of where to enrol. Such audits would assist in collecting such information. However over and above that, institutions should also be doing tracer studies to determine how their graduates are performing in the world of work so as to make improvements where necessary. In any case quality audits are meant for continuous improvement.

Concerning the roles of the rest of the participants namely; students, academics and administrators, and employers all these participants agreed on one thing, that they must all play the role of collaborators, to facilitate the implementation of employability audits. Employers and the UB need to work together in terms of engaging in employability development activities such as internships or work placements that will assist students gain knowledge, skills and competencies needed in the world of work. For such collaboration to happen it means employers must be open to engage and discuss with institutions and allow students to come into their places of work. At the moment employers are perceived as being closed up with no easy access to information about their places of work. Likewise, the UB must be a collaborator and market surveyor in order to educate students who are fit for purpose. Currently it does not seem like that is happening hence the view from some of the graduates that they have qualifications that seem not relevant to the needs of the country. Engaging in employability audits would enable the UB to work more with industry as such they will get to know and understand better what is happening in the labour market to inform their programme development and delivery. Issues of supply and demand would also be taken into consideration especially if students cannot be placed on internship due to lack of demand for certain types of qualifications.

It was interesting to learn that students must also be collaborators and get to participate in activities that affect their lives and careers. Their voices must be heard. If students are involved in employability audits and the UB also engages in tracer studies, the UB would be able to determine if their graduating students meet the requirements according to their Strategy of Excellence which stipulates the skills and competencies graduates from the UB must have. Students can also measure their employability levels from various employability development activities available and give feedback on how they perform and how their

competencies could be enhanced. For students to participate effectively in issues that affect them they need to develop assertiveness and be innovative. Employability audits will help students develop these attributes because hopefully they will be exposed to work environment and interacting with a number of people in different areas in the world of work. They need to be innovative as well to create an environment for themselves in which they can develop the knowledge, skills and competencies required without waiting for the UB to do that. They can establish businesses on campus as pointed out in which they can practice where possible without going out to the industry. Already the Student Representative Council (SRC) runs a student tuck shop on campus. If properly managed this could expand into a bigger business venture where profits could be channelled into establishing other businesses such as guest houses that were mentioned in the study which the UB could use to accommodate their visitors. Examples given of students developing hotels and transport systems while in school are encouraging examples. These business ventures provide a conducive environment and opportunity for students to learn and enhance their knowledge, skill and competencies. These are the kinds of activities the audit will be looking at to assess how students are being supported to enhance their employability skills. However students would need financial support to start such activities. That may be a challenge unless again supported by the UB and industry.

There is very little doubt that if well organised employability audits will certainly make a difference to the lives and experience students get while studying. More importantly such audits are likely to result in graduates that are well prepared for the world of work. Chapter 6 has discussed employability audits and graduate employability in terms of QA mechanisms used by the Department of Environmental Science; a general overview of employability audits; and the roles played by various stakeholders in these audits. The next and final chapter, Chapter 7, will consolidate the findings and discuss them in relation to the main research question and the problem statement. This chapter will also draw conclusions and make recommendations.

# CHAPTER 7

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 7.1    INTRODUCTION

The quality of higher education in relation to the employability of graduates has been debated world-wide, including in Botswana, for some years now (TE Policy, 2008; Cosser, 2009; AfriQan, 2009; Quintini, 2011; Elizabeth & Clarke, 2009).  Several definitions of employability are available (see Chapter 2) but in this study the definition adopted is from Yorke (2004). He defines employability as

> "*A set of achievements - skills, understanding and attributes – that make graduates more likely to gain employment and be successful in their chosen occupations – which benefits themselves, the workforce, the community and the economy* (Yorke, 2004, p. 410).

There is a pressure on higher education to educate graduates who are employable; who can make a meaningful contribution to the advancement of the countries' economies; and who will advance in their careers. The pressure comes from all sides: government, the civil society, industry, parents and graduates (see Chapters 1 & 2). In Botswana, for example, employers are generally concerned about the immediate use of the graduates they employ and the need to provide further on-the-job training to make them more employable and work-ready (TE Policy, 2008). The concerns expressed in the policy document, however, were not based on a comprehensive study on the issue to establish the exact causes of the lack of employability of graduates and what the expectations of employers are.  These concerns were based on observations made from a small consultative study conducted in 2005 by the then Tertiary Education Council, a Regulatory Body established to coordinate higher education and overseer the quality of these institutions.

Furthermore, whereas on the one hand there is pressure for tertiary institutions to produce graduates who are competent, innovative and, generally, fit for purpose in the workplace, on the other hand the review of literature revealed that there are academics who believe that it is not their role to train students for employability and work-readiness but, rather, to provide education for the general development and well-being of individuals (Billet, 2009; Morley, 2001 and Knight, 2001). These contrasting demands on tertiary education have created a dilemma and a challenge for achieving the employability of graduates in Botswana as well. Although the population is fairly small - about 2 million - the country has a high rate of unemployment, mainly because of a small economy and an equally small labour market (NDP10, 2009). According to the 2005/06 Labour Force Survey (LFS), 17.5% of the economically active population was unemployed and 5.5% of these were graduates with degrees. Having graduates who are unemployable in the wake of unemployment in the country adds more challenges for the government.

Although the issue of employability is a widely debated and researched topic world-wide, in Botswana not enough research has been done in this area. In addition it is not clear which knowledge, skills and competencies graduates lack and what it is employers are looking for. In particular gaps were identified in the review of literature where either the issues on employability were addressed from the point of view of academics, employers or graduates but not comprehensively from all aspects within the same context and research (see Chapter 2). There were gaps identified also in terms of the contributions students and graduates could make in enhancing their own employability and how employability of graduates could be enhanced using employability audits in the context of Botswana. This study attempts to address those gaps by focusing on Environmental Science as a case study.

It was within this context that this research was undertaken, the aim of which is threefold. Firstly, it is the aim of this research to explore and describe the situation on the ground concerning the employability of Environmental Science (ES) graduates in Botswana in order to provide evidence that will either confirm or refute claims that in Botswana graduates, in general, are not employable. Secondly is the aim of this study to clarify and understand the roles of higher education and industry in enhancing the employability of graduates. Thirdly, it is the aim of this study to investigate whether employability audits in tertiary institutions could be used as a quality assurance mechanism that would enhance the employability of graduates in Botswana. The graduates that the study focuses on are Environmental Science graduate at Bachelor's Degree level. This research, therefore, has explored the employability skills of Environmental Science students at undergraduate level while at university and of those who are already in the field. ES graduates are schooled in the Department of Environmental Science within the Faculty of Science at the University of Botswana (UB). Currently, UB is the only University in Botswana that offers Environmental Science programme and graduating about 300-400 students a year. However, more ES graduates, in future, will be schooled at the International University of Science and Technology (BIUST) but those will focus more on engineering science professions, such as Environmental Engineering. There are two public universities in Botswana and two private ones. The other tertiary institutions (about 38) are colleges of education and nursing sciences that produce graduates at diploma level.

The purpose of this chapter is to present a summary of the study and its findings and draw conclusions from the research. Reflections on the research methodology and the conceptual framework, conclusions and recommendations emanating from the findings will also be presented. In order to discuss all these, this chapter is structured as follows: Section 7.2 gives an account of the study from the research question to research design followed by Section 7.3, a summary of the research findings and the drawn. In Section 7.4 reflections and a discussion of the findings are presented and in Section 7.5 recommendations from the research are made.

## 7.2    SUMMARY OF THE RESEARCH

This section introduces the main research question and its sub-questions. It also gives a summary of the development of the research question and how it was addressed in terms of research design and analysis. This section is developed in two sub-sections: sub-Section 7.2.1 contains the main research question and sub-questions; sub-Section 7.2.2 provides a summary of the research methodology and design.

### 7.2.1    Main Research Question and Summary of Sub-questions

In order to address the issues identified in the introduction, the main research question was phrased in a way that captures the main issues: **How can industry, higher education and employability audits contribute to ensuring that Environmental Science students and graduates are employable?** In addressing the main research question several sub-questions were developed (see Chapter 2 and 3) that would answer the various aspects encapsulated in the main question. These were as follows:

- **Sub-question 1:** *To what extent do students and graduates of the Environmental Science degree programme from the University of Botswana have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana?*
- **Sub-question 2:** *What are the possible roles of industry and higher education in preparing students and graduates for the world of work?*
- **Sub-question 3:** *How does massification of tertiary institutions affect the employability of graduates of Environmental Science in Botswana?*
- **Sub-question 4:** *How, and to what extent, could employability audits in higher education play a role in ensuring the employability of ES graduates?*

These research sub-questions investigated the issue of employability of ES graduates from the views of students, graduates, academics and administrators, and employers with the aim of understanding what is happening on the ground in terms of the work situation for ES graduates and how the teaching and learning process within the ES programme is aimed at enabling graduating students for work. These research questions illuminated the issues on the ground and provided opportunities that could be utilised by higher education, industry, students and graduates, the regulatory body and government in tackling the issue of employability of graduates.

This study was guided by the concept of employability as defined above. The models this study used to draw up the conceptual framework originated mainly from three sources: that of the employability process model by Forrier and Sels (see Figure 2.1), the quality assurance model intended for graduate employability development by Harvey (see Figure 2.5), and the conceptual framework of employability-influencing factors for universities by Hennemann and Liefner (see Figure 2.6). All these models and how they influence the conceptual framework for this study (see Figure 2.7) are reflected upon in detail in section 7.4 of this chapter.

### 7.2.2   Summary of Research Design and Methodology

This sub-section discusses the research design and methodology which was adopted and it briefly outlines the processes followed in conducting the research to arrive at the findings reported in Chapters 4 to 6.

Although the issue of employability may cut across various disciplines in order to fully understand and appreciate the problem in the context of Botswana, an exploratory and descriptive type of single case study research design was chosen in which a mixed-methods research approach was applied using questionnaire, and interview data collection methods. The single case study design focused on only one programme of study, that is, Environmental Science programme at undergraduate level offered by the Department of Environmental Science within the Faculty of Science at the University of Botswana. It was important to focus on one programme in order to have a deeper understanding of issues of employability of graduates. Semi-structured, face-to-face interviews with six graduates, eight academics and administrators at UB and six employers were conducted. The participants interviewed were selected by means of non-random sampling methods, such as snowballing and purposive sampling. Issues that were addressed were: employability skills that ES graduates need; roles of participants in ensuring that ES graduates are fit for purpose; and introducing employability audits as a means quality assurance mechanism that institutions and the regulator can use to enhance the employability of ES graduates.  The interview schedule for academics and administrators at UB in the Faculty of Science and the Department of Environmental Science sought to gather data on questions related to policy and vision of the department and of the university as a whole as far as employability and quality of graduates was concerned.

The questionnaire instrument was used to collect data that addressed two research sub-question: *To what extent do students and graduates of the ES programme from the University of Botswana have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana?,* and *What are the possible roles of industry and higher education in preparing students and graduates for the world of work?* Stratified random sampling was used to select the two sub-groups of first and fourth year ES students, i.e., 130 first year students and 119 fourth year students, respectively. Within the fourth year sub-group, some of the students were sampled in a selective and targeted manner so that a few BSc students would be included in the study because although the programme is embedded within the Faculty of Science, the majority of students enrolled in the programme are from the Faculty of Humanities. This selection was done by looking at the different courses offered and the lecturers who taught these classes were purposefully sampled and approached to request permission for their students to participate in the study. Other fourth year students were chosen, depending on whether or not the lecturers were willing to sacrifice time with their classes as data collection was done during an examination period.

The research process started with designing questionnaires and the semi-structured interview schedules which were piloted and approved by the supervisor and the Ethics Committee before they

were administered (see Figure 3.4 in Chapter 3). The research method for collecting data that was chosen was Pragmatic Sequential Mixed-Methods (Mertens, 2005), whereby initially interviews with academics and administrators at UB would be followed by administering questionnaires to first year and fourth year students for triangulation. This was to be followed by interviews with employers and graduates, interchangeably. When data collection started there were challenges that made it impossible to follow this sequence. There were times when academics were not available for interviews and the academic year was coming to an end. That strategy had to be abandoned and the focus was switched to distributing questionnaires before students started their examinations. As a result, interviews with academics, industry and graduates happened after collecting questionnaire data. However, the data collected from students helped to construct and sharpen the focus of the interviews with academics and graduates - so nothing was really lost. This process also provided for triangulation of answers obtained from questionnaires with interviews conducted afterwards irrespective of the sequence of data collection. Interviews were conducted as and when participants were available. Some participants did not honour initial appointments set which meant moving on to the next available participant before going back to rescheduled appointments (see Chapter 3).    In the end everybody who had agreed to participate in the study was interviewed. All the interviews were recorded on tape and transcribed by the researcher. Exact words of the interviewees were captured and, where relevant, cited as such.

All questionnaire data that was collected was coded and analysed using the SPSS software. Descriptive statistics included measures of central tendency and frequencies and also involved bivariate analysis, drawing comparisons and relationships between two variables from the two samples, i.e., first and fourth year sub-groups Chi-square tests were applied for statistical inferences which were also used to compare the different categories. Correlations were analysed between the two samples (see Chapter 4 for more details). Since there were many variables, analysis also involved data reduction using factor analysis.

After the transcription of interview data, the data was coded with the assistance of Atlas.ti software and thematic content analysis was used to analyse the interview data (see Chapter 3).

## 7.3    SUMMARY OF RESEARCH FINDINGS

This section gives a summary of the research findings - as presented in Chapters 4 to 6. The summary of findings will be discussed in terms of the research sub-questions that are meant to address the main research question which is: ***How do industry, higher education and employability audits contribute to ensuring that Environmental Science students and graduates are employable?***

The objectives of the main research question and its sub-questions are explained in Chapter 1 and 6. Although the main research question focuses on the roles that industry, higher education and employability audits play in ensuring that ES students and graduates are fit for purpose, the

perspectives of students and graduates is also important and are included in the research. Therefore, students and graduates were asked how they contributed to ensuring that they were employable. The role of students and graduates was a gap identified in the review of literature and, hence, its inclusion in all the research sub-questions. This section gives a summary of the findings for each research sub-question in the following sub-sections: sub-Section 7.3.1 sets out the knowledge, skills and competencies of ES students and graduates ; sub-Section 7.3.2 examines the roles industry, higher education, students and graduates; sub-Section 7.3.3 assesses the effect of massification of tertiary institutions on the employability of ES graduates; and, finally, sub-Section 7.3.4 suggests the possible role of employability audits in ensuring employability of graduates .

### 7.3.1 *The Extent of the Knowledge, Skills and Competencies ES students and graduates have for employability*

The first research sub-question addressed is: *To what extent do students and graduates of Environmental Science degree programme from the UB have the necessary knowledge, skills and competencies needed to ensure their employability in Botswana*. The findings for this sub-question are reported in Chapter 4 and are summarised here.

It is the view of most participants, i.e., the 240 ES students, six ES graduates and six employers that in general the knowledge ES graduates have may not be sufficient for the world of work, but the academics disagreed. It seems that this lack of adequate knowledge has affected graduates' skills and competencies to do the jobs they are assigned to in the work place. Students mention as an important reason for this, the great variation in studying ES as students may choose a single major, double major or major-minor and minor-major in ES depending on the Faculty in which they are registered and the number of credits they can obtain (See Section 4.) Students that can do a single major in ES are the only science students who take courses only from Environmental Science. A double major, on the other hand, is having ES as a major plus another programme, such as English as a major. A major-minor is when a student takes ES as a major together with another programme, such as English or Business from another faculty. A minor-major is when ES is the minor.

The curriculum document for ES which was reviewed in 2010 indicated that the curriculum had to change and be repackaged, taking into account various careers that students could access and that it also should be aligned with current regional and international trends in the field. The curriculum document clearly stipulates that courses aimed at certain career areas, such as Management of Natural Resources, can only be chosen by single major students only. The remaining students, who are the majority, and are mainly from the Humanities, cannot prepare for these career areas. These are the students, it seems, that employers are not happy about. Reversely, ES graduates indicated that they lacked certain subject-based skills, such as Geographical Information Systems (GIS) skills needed to analyse maps on land use. These are the skills that are being taught at greater depth in courses such as Management of Natural Resources meant for science students.

All the graduates who were interviewed acknowledged the fact that most of the skills they had were learnt on-the-job. On the other hand a conclusion from the student questionnaire is that most students seem to be confident that they have the identified skills, including proficiency in English and presentation skills.  It is possible that they over-rated themselves or they did not quite understand the meaning of employability. Another interpretation may be that since students have not been exposed to the world of work through internships, they are really not aware of their employability.

On one hand the six out of eight academics and administrators who were interviewed seemed to agree with the views of some of the students because they also argued that their graduates had the necessary skills required in the workplace.  On the other hand all six employers who were interviewed agreed with the graduates as they were also not happy with the skills and competencies  ES graduates brought to the field and, hence, the outcry concerning the spending of time and money to re-training them. Graduates do not seem to have some of the skills they claimed that they have, such as writing and research skills, which poses – according to the employers - a problem in the workplace. Employers expressed frustration with ES graduates because of the money needed to be spent on retraining graduates on skills that (according to the graduates and employers) they should have learnt at university.

These findings are supported by observations made by Maharasoa and Driekie (2001), Harvey and Bowers-Brown (2003), and Kouwenhoven (2009) see Chapter 2. The latter makes a distinction between "core competencies" which he argues can either be domain related or generic. He argues that core competencies are those that are appropriate and needed to complete a key occupational task at a superior level such as the GIS skills mentioned above. As is, according to ES graduates and employers, it seems they do not have core competencies that enable them to perform their work at a high level, so much so that other people have to be contracted to do their jobs and that is not acceptable. On one hand Gibbons-Wood & Lange (2000), argue that the development of generic competencies or core skills is the responsibility of the employer and not higher education and that a lack of core competencies or "core skills" among employees or graduates is an indication of weak in-house training from the employer. On the other hand Hennemann and Liefner (2010) suggested a model (see Figure 2.6) from which the conceptual framework for this research was derived, which was premised on the insufficient preparation of students for jobs in many domains, such as Geography (the focus of their research).

Hennemann and Liefner (2010) maintain that there seems to be a lack of clarity to students and to their prospective employers in competencies Geography graduates have acquired hence the need for the universities to strengthen in particular the position of geography graduates in the labour market. It seems these are the very issues affecting ES graduates in Botswana. It appeared from the student questionnaires that almost half of them said they were either employable or that they were not sure. Reasons given for lack of employability were, mainly, related to a lack of work experience and not enough subject knowledge and content. They also said that the knowledge they gained was mostly

theoretical without the practical exposure needed to enable them to apply the knowledge and skills that they had learnt.

Similar views were expressed by the six graduates in the field. Three of the six graduates said doing ES did not make them more employable because they were not well prepared for work. The other three said they were employable because of the work experience they were exposed to while at the UB.
The views on employability of ES graduates expressed above were also supported by employers. However academics were of a different opinion. All eight academics and administrators who were interviewed face to face said that their graduates were employable, based on two main reasons that they advanced. Firstly, they thought that their graduates were employed in large numbers when, in fact, no tracer studies had been conducted. Secondly, academics and administrators believe that the qualification they offer is a good one and that it is in demand within the country. Five academics also argued that the Department does not produce specialists and, hence, the argument advanced that employers need to understand the types of graduates they are receiving and how to get the best out of them.

The views of students and graduates concerning their lack of employability which is associated, partly, with the lack of work experience and subject content, seem to have captured issues that have been made by other researchers who undertook similar studies. Their views confirm observations made by Maharasoa and Driekie (2001) in South Africa which showed that the students they interviewed said that employability was one of the main reasons influencing their choice of programme of study. Mason and Cramer (2009), who define employability in terms 'work–readiness', found in research a positive relationship between the structured work experience of students and their securing graduate jobs within six months after graduation. They suggest that nowadays employers will always seek work-experience before employing fresh graduates and that this is ranked first in their recruitment criteria. In fact all the graduates interviewed expressed the same views that work-experience is what is needed and that the UB did not prepare them well because they were never exposed to internships during their study. While that may be the case, an observation was made by Yorke (2004) that it would be wrong to suggest and have the impression that work experience - or even experience at university - would be sufficient to produce the characteristics required for employability. He maintains that having work experience, for example, does not in itself guarantee attributes needed to enhance employability. However there is no doubt such an experience would help enhance employability of graduates.

From the views presented by academics and employers, there is a clear tug-of-war kind of situation where, on the one hand, academics say that their graduates are employable while, on the other hand, employers say ES graduates are not employable which requires them to provide further on-the-job training. The demands made by employers may not be fair and justified as far as the academics and administrators at UB are concerned, but there is a need for the two parties to come to some understanding of what is expected of ES graduates. This therefore means there is dire need for

collaboration and communication between academics, students and employers to clarify the issues of graduate employability which are revealed in this study.

### 7.3.2 Possible Roles of Higher Education and Industry in Ensuring the Employability of ES Students and Graduates

The second research sub-question addressed is: ***What are the possible roles of industry and higher education in preparing students and graduates for the world of work***? The findings for this sub-question are reported in Chapter 5 and are summarised here.

From the review of the literature and the findings from the interviews with employers and academics and administrators at UB, it seems that there is a division among academics on whose role it is to prepare students and graduates for work and ensuring that graduates are fit for purpose. From a review of the literature some academics agreed that higher education had a role to play while others felt that it was the role of industry to prepare graduates for work, depending on what it was they were employed to do. However, the relative balance of the roles of all the players is not clear. Thus, it is one of the objectives of this research to consolidate the findings and contribute new knowledge on the views of whose role it is to ensure that ES graduates and students are employable and ready for work in the context of Botswana. This sub-section will be structured such that an integrated view of all the participants, including students and graduates, is presented.

In order to determine the role played by UB in preparing ES students and graduates for work, first and fourth year students were asked in the questionnaire to rate the teaching methods employed by lecturers in the department in terms of their effectiveness in enhancing employability and whether or not they believed the university assisted them. The department received a fairly good rating from the majority (59%) of first and fourth year students in terms of assisting them develop skills and competencies needed for the world of work (see Chapter 6). This finding is consistent with the fact that almost half of these students said they were employable while the other half said they were not sure. In terms of the effectiveness of the teaching methods employed, the department was given a good rating as well, ranging between "well" and "very well" - 39% and 35%, respectively.  Group work got the best rating from the majority of students (33%) while internship received the least number of responses in the best category because students had already indicated that there were no internships in the department. This rating confirmed the views of academics and administrators, students and ES graduates, that the classes were too big to enrol them for internships resulting in the lack of work readiness that was expressed by students and graduates.

When asked to rate the importance of the role of employers in preparing them for work, the majority (62%) of the students saw the role of employers as very important. Students were asked to rate the role of employers in five different categories: curriculum development; taking part in teaching; providing opportunities for internships or work placements; providing funding to the institution; and sponsoring a

selected number of students. The roles that students felt were most important were providing opportunities for work placements and/or internships (83%) followed by curriculum development (65%). This finding correlates well with, and confirms, the fact that students had earlier indicated that they needed workplace skills (see Chapter 5). Those students who were of the view that the role of employers was not important was quite a small number - only 21 students - and almost half of this group thought sponsoring selected students was least important. The other 9 out of 21 believed that the role of employers in providing funding to institutions was also least important. This is not surprising considering that 82% of students were on government sponsorship. This is a revelation of the fact providing sponsorships to students may not encourage innovation in terms of seeking funding for themselves from other sources. It may also encourage a dependency syndrome.

From the graduates there was a consistent response on whose role it was in making sure that they were well prepared to enter the world of work. Similar views as those expressed by students emerged because some (five) of the graduates made it clear that it was the responsibility of both the academics and employers to ensure that they were well prepared for work. For these graduates the role of UB was to prepare them for work by giving them the knowledge, skills and competencies required in the work place, while employers should - through internships - allow them to practice and gain experience on what was expected in the workplace. They said all this should be done while they were at university - not when they had finished, which is what government is doing with the current graduate internship programme under the Ministry of Labour and Home Affairs and, hence, the view that UB should liaise with employers or industry to arrange for such internships.

On the one hand academics and administrators were divided on whose responsibility it is to ensure that students are ready for work. For some the university cannot prepare graduates for work because they do not know what jobs graduates will be doing. For these, three of the eight academics and administrators felt that it is not their role to prepare students for work but the role of the employer because they do not train ES students and graduates for specific jobs and, hence, the distinction made by academics and administrators between academic training and industry training. Their view is that it is the responsibility of industry to ensure that their employees can do what they were employed to do through on-the-job training. This is a critical finding because from the review of the literature there were clear-cut disagreements amongst academics concerning the role of higher education (Billet, 2009; Morley, 2001 and Little, 2001). These researchers also questioned the role of higher education in preparing graduates for work. However, this view is not likely to be long-lived because the other five academics and administrators interviewed thought that there is need for a partnership between them and industry and that they must work together to produce ES graduates that are employable. These academics believe that this can only be achieved through partnerships with industry, such as internship programmes, guest lecturers and making finance available to buy the necessary equipment needed to train graduates while at university.

On the other hand from the interviews with employers it emerged that employers like graduates were of the view that the methods used by UB to integrate workplace skills were not working and that more needed to be done to expose students to the practical aspects and application of the theory that they had learnt.  The view of the employers was that graduates came to work with very little or no knowledge of the workplace demands and, more importantly, how to apply theory to practice and, therefore, the second issue concerning internship programmes. All six employers who were interviewed recommended that UB should attach students to their organizations for practical workplace exposure. This, they said, was critical so that when graduates joined the work force they had basic workplace skills. The biggest issue among employers was that of having to retrain graduates on content that they believed graduates should have learnt at university. They said it was expensive and diverted attention from productivity to training which they could not afford to do, especially as entrepreneurs.

With respect to the roles played by students and graduates in enhancing their employability, one of the first questions asked to first year students was whether they had consulted the career and guidance services for assistance or guidance. In this regard the focus was on determining what students did on their own to seek help when needed and also to investigate the guidance that the department offered students when they were in need of help. The majority (75%) of first year students out of a total of 130 said they had not consulted the career and guidance services. Some of the reasons given were either that they had never thought of it or they had no time. Others said they had never heard of it. In general, first year students did not seem to have any significant need to consult the career and guidance services on regular basis (see Chapter 5). The majority (88%) of fourth year students knew about the Guidance and Career Centre, which could mean that they might have consulted the Center or because they had been at the university for longer. This could also be interpreted to mean that with maturity students' attitudes changed and they took more responsibility for their academic work and for their own well-being.

Furthermore, when both first and fourth year students were asked if they would stay longer at university until an appropriate job for their qualification was available, more first year students (60%) than fourth year students were willing to stay longer to improve their qualifications (see Chapter 5). For those who said they would not stay at university for longer, the main reason given by the majority of first and fourth years- including those who were not sure - was that there would never be right jobs for them. That means they would rather take any job in order to gain experience that is much needed in the world of work. These are the very graduates who according to Thijssen (2000) if jobs are scarce may be willing to take up any job irrespective of whether it matches their qualifications or not to avoid unemployment. He said this scenario typically leads to qualification mismatch which may consequently lead to skills mismatch. This type of qualification mismatch was one reason why employers find that graduates may not be fit for purpose. The above are some of the personal and individual factors that Hennemann and Leifner (2010) and Forrier and Sels (2003) talked about that may affect individuals and how they perform at the University and later in the workplace. Taking initiative and making the right decisions are some of the attributes that build an employable graduate.

Graduates were asked what role they, themselves, played while at University and in the workplace in ensuring that they acquired employability skills, the themes that emerged were: **research, creativity and initiatives**, such as enrolling in short courses that they paid for themselves and looking for internship opportunities where the university did nothing to help them. In addition, almost all the graduates interviewed were willing to move to other locations where job opportunities were available - irrespective of the geographical location. This finding is similar to observations made by Forrier and Sels (2003) who maintain the importance of individual's **willingness to maintain and enhance one's movement capital** by identifying opportunities in the workplace that can enhance their employability. Thus some students and all graduates who were interviewed realize that they also have a role to play and a responsibility in ensuring that they acquire the knowledge, skills and competencies needed in the workplace. This knowledge fills the gap identified in the review of literature concerning the role of students and graduates in enhancing their employability.

Employers and all other participants agreed on the fact that UB and industry needed to establish partnerships and collaboration in areas, such as research, curriculum development and internship programmes. There was also agreement between employers and academics and administrators that they all have a role to play in preparing students and graduates for work. The question that remains to be answered is: To what extent and degree will industry participate considering all the issues raised? That question can only be answered through the collaboration of UB and industry.

### 7.3.3    Massification of Tertiary Institutions and Employability of ES Graduates

This sub-section is a summary of the findings related to Sub-question 3 which reads: ***How does the massification of tertiary institutions affect the employability of graduates of Environmental Science?*** Tertiary institutions are multiplying at a fast rate locally and internationally, resulting in a large number of graduates competing for jobs.  Although, at the moment, there is only one institution, UB, in Botswana that produces Environmental Science graduates, the objective of this sub-question was to investigate whether the massification of tertiary institutions elsewhere has resulted in many ES graduates from outside Botswana that are employed locally and if there were, how did it impact on the employability of ES graduates in terms of the nature of work they do and the roles they play at work. From the findings of Sub-question 1, it became apparent that very few companies employ ES graduates from elsewhere.  From interviews with employers and ES graduates a large number of the ES graduates found in the market are graduates from UB. Thus, the massification of tertiary institutions outside Botswana and the resulting increased number of ES graduate from elsewhere is not an issue and it did not come up during the interviews - even when the question was posed to ES graduates, employers and academics and administrators. None of these suggested that there was any challenge. The impact, therefore, is negligible - if any. However, one employer who had such graduates was impressed by the performance of these graduates at work compared to those who had graduated from UB. According to this employer, these graduates - some of whom came from South Africa - seemed more knowledgeable on issues of Environmental Science (see Chapter 4).

In conclusion, the more important observation from this research is that it seems that the employability of graduates of Environmental Science is affected mainly by the level of their knowledge, skills and competencies which has very little to do with competition from ES graduates coming from outside the country. The roles they play - as indicated in Chapters 4 and 5 - are a result of a lack of employability skills and the competition they experience from the numbers of ES graduates coming from the University of Botswana. The impact emanates from the great number of ES graduates generated by UB and not from outside Botswana. Perhaps, further research could be done on the supply and demand of ES graduates for the Botswana market, in particular the need for ES graduates from the Faculty of Humanities. These are some of the graduates who expressed serious concern about the need for such graduates in the country.

### 7.3.4   The Role of Employability Audits in Ensuring Fitness for Purpose of Graduates

This sub-section summarises the findings related to the fourth and last research sub-question - presented in Chapter 6 - which reads: ***How could employability audits play a role in ensuring the employability of graduates?*** Since employability audits, as a quality assurance mechanism, have not yet been introduced at UB, the objective of this sub-question was to find out what the views of the participants were on the possibility of introducing employability audits and how they could be implemented effectively. In so doing, it was necessary to examine other quality assurance mechanisms employed by the department in ensuring, first and foremost, that the ES programme on offer is of quality and comparable to similar programmes offered elsewhere. This section of the chapter will first give a brief summary of the findings concerning internal quality assurance (QA) mechanisms employed by the Department of Environmental Science in ensuring quality of the programme on offer. The section will then summarise the views of participants on how employability audits, as a QA mechanism, could be implemented by the university.

Employability audits are a form of QA mechanism that focus on monitoring and identifying the extent to which institutions engage in activities that enhance the employability of students and graduates at programme level (see Chapter 2). In the absence of employability audits the Department of Environmental Science has other QA mechanisms to ensure that the programme on offer is a quality one that meets its goals and objectives. Academics and administrators were the focus in providing answers because the objective of the research sub-question was to explore internal QA mechanisms put in place by the department in ensuring the quality of the programme. The findings were triangulated and verified by quoting some of the graduates in the field and by reviewing documents available in the department. From the interviews with staff, four themes emerged: curriculum reviews, the use of external reviewers, benchmarking in curriculum development and the QA Committee which oversees quality related issues within the department (see Chapter 6). All these methods according to the academics and administrators interviewed are effective in producing a quality programme. However employers and some graduates were of the view that the curriculum did not meet the requirements of the workplace. The interpretation of this finding is that the curriculum document, itself, may be well intended, but on implementation it may prove a serious challenge.

The Netherlands Institute for Curriculum Development (SLO) (2009) presents a widely accepted view that distinguishes three levels of curriculum appearances: the intended, implemented and attained curriculum. The intended curriculum incorporates the vision of the department and where it would like to see its students going. During the implementation stage some of these intentions may not be achieved - either because of the way the curriculum is interpreted by lecturers or simply because of challenges in staffing - as has already been highlighted. Thus, it may not be possible to achieve the intended goals of the curriculum and that vision. Furthermore the QA mechanisms used are not without challenges such as the frequency of the Academic Board meetings, the non-participation of students and representation of stakeholders. A detailed description of these and what can be done to improve internal quality assurance can be found in Chapter 6.  This research has revealed what the Department of ES is doing to enhance the quality of its programme and the challenges it meets in achieving that goal. This is important considering that very little is known by the Regulatory body in terms of how quality of programmes is managed in public tertiary institutions. A lot of work was done in private institutions in terms of accreditation of programmes, however the same was not extended to public institutions.

Having addressed the general issues of quality assurance within the department, it is important to summarise the views of participants in terms of their perceptions of the introduction and implementation of employability audits within the Department of Environmental Science. It is an overview of their thoughts about how such audits could be introduced and whether they support the idea or not. Although not all participants knew about the concept of employability audits, after providing an explanation of the concept and the intended goal some  of the participants - namely, all six employers, six graduates and six out of eight academics and administrators, supported the idea. They felt that such audits would go a long way to achieve the goal of attaining employable graduates which is enshrined in the UB Graduate Employability Strategy of 2010. Those who were in support of the idea made the following comments:

i)      *Comments on the idea of employability audits.*

- There needs to be a 'buy-in' among the leadership of UB for such audits to succeed. At this point this should not be an issue because UB introduced a Graduate Employability Strategy in 2010, which is yet to be implemented (see Chapter 6). From the interviews conducted with the academics and administrators in the Department of Environmental Science it was evident that they had not started implementing the strategy. Worth noting here is that almost all academics had not heard about the Graduate Employability Strategy.

- There would need to be proper consultation and planning for budgetary purposes because employability audits would involve funds from employers and the university.

- Employability audits should not just focus on preparing students for acquiring jobs, but they should also encourage students to become self-employed.

### ii) Other comments:

- Courses on employability skills should be introduced by the UB that could be accredited either by a professional body or by regulatory body to offer identified skills that were needed in the workplace, such as communication. The view of some academics was that, left to individual lecturers, these skills would not be integrated into the curriculum because of time constraints and large classes.
- The country, as a whole, would need to create more opportunities for internships by creating jobs that could absorb more students on internship. The concern was that, currently, the country does not have a capacity in terms of industry to absorb the number of students that UB has for internship purposes.

However, there were two academics who were not in support of employability audits that focused on preparing students for work. Their views were that they did not produce graduates for specific industries or jobs as indicated earlier; they graduated students with competencies to fit in any graduate job. In fact this is what employability audit is trying to achieve. One academic believed that there were not enough industries in Botswana to absorb students for internships - unlike South Africa for example. While that may be the case the belief by some of the administrators is that institutions may not have a choice but would have to embrace graduate employability audits because they may become a government policy and therefore a necessary condition and criteria for funding tertiary institutions. As stated earlier, there is a danger in linking funding with quality. Kis (2005) argues that if funding is linked to QA that will undermine improvement as the main focus and, instead, the focus will be on compliance. She argues that if that were to happen, institutions are likely to hide problems and focus on strategies to 'outwit' the external assessor in order to receive the funding they need. In that case, QA will provide the incentive to comply and not encourage activities meant for improvement purposes. Already the comment made by this academic interviewed implies that people may have no choice but comply. However, there are those, like Stensaker (2003), who argue that accountability is not necessarily a bad thing and a result of external quality assurance. His argument is that accountability might be inherent when academics and administrators are accountable to government, their main financier, and do things, accordingly, to comply with set requirements. Whatever the case may be, the point here is to avoid the culture of compliance and to rather encourage a culture of continuous improvement.

All in all, some of the participants supported the idea of employability audits in that they would go a long way to enhance the employability of ES students and graduates.

### 7.3.5 Roles of Participants in Employability Audits

After discussing the overview on employability audits and how various participants perceive them, in this sub-section the possible roles of participants interviewed that is, ES graduates, employers and academics and administrators, in employability audits in the context of Botswana are summarised.

The roles of employers, academics, students and graduates in preparing ES graduates and students for the world of work have been discussed earlier. Collaboration between UB and industry was emphasized stressing that together they could engage in research, internships programmes, mentoring of students by industry and take part in curriculum reviews and development. Similar views were expressed when it comes to their roles in employability audits. Employers, academics and graduates, alike, expressed the need for collaboration and partnerships to ensure the success of employability audits. Some spoke about the need for a tripartite system where major role-players, including higher education, industry and government, come together to discuss issues of quality at tertiary institutions. The role of the TEC as a regulatory body was also emphasised mainly as that of an overseer and facilitator. Of particular interest to this research is the role of students and what they could do to improve their employability. A number of suggestions came up that proposed the types of activities students could undertake at the UB to enhance their employability through audits. For example, students could start small guest houses and transport systems which employ students. These are examples of employability development opportunities - as indicated in the conceptual framework - where students could be engaged to gain knowledge, skills and competencies for work and self-employment. The university provides the central support system with embedded attribute development activities that students need, including work experience where academics and employers are asked to record experience provided and gained by students (see Figure 2.7 in Chapter 2). These activities would require students to be proactive, innovative, and take responsibility of their learning and employability.

In the end there was a realization and appreciation that with employability audits ES graduates could be empowered and their employability could be enhanced. Although there were few academics who believed that audits of this nature were not meant for an academic institution, such as UB, some of them accepted the need for such audits in order to achieve the goals and objectives enshrined in the Graduate Employability Strategy for the entire university. Employers and graduates, alike, welcomed the idea as well as the fact that employers would have to be part of this process for its success. The TEC, as a regulatory body, has a major role to play in guiding and facilitating the process.

## 7.4    REFLECTIONS AND DISCUSSION

This section begins with a reflection on the research design used in the study with a view to assessing its effectiveness. It goes further to discuss the research sub-questions in terms of whether they were adequately addressed in order to answer the main research question. A reflection on the conceptual framework used to guide the research is also given. Furthermore the section examines the findings and conclusions in comparison with what is done elsewhere. The contributions made by this study to scientific knowledge will be presented as well. The structure of the section is such that in sub-Section 7.4.1 thoughts about the research approach used are presented and in sub-Section 7.4.2 a reflection on the conceptual framework is given while in 7.4.3 reflections and conclusions on findings and their contribution to scientific knowledge are given.

### 7.4.1 Reflections on the Research Design and Approach

As stated earlier the primary design for this research was an exploratory and descriptive single case study of the Environmental Science programme offered by the Department of Environmental Science within the Faculty of Science at the University of Botswana. ES was chosen because it is a multi-disciplinary programme that graduates people who could be employed in different areas of Environmental Science. This could pose a problem in preparing ES graduates who are fit for purpose. This challenge was also identified by Hennemann and Liefner (2010) in their study of Geography students.

Reflecting on the choice of the research design, this was the best approach to take considering the number of fields of study offered at the university. In order to carry out a comprehensive study of a contemporary concern (Yin, 2009) on the employability of graduates in Botswana, the exploratory and descriptive single case study approach enabled an in-depth investigation of issues related to the employability of ES students and graduates. Thus it was critical to focus on, and select, one programme of study (Merriam, 1998, 2009; Yin, 2009). Whilst the case study approach does not allow for statistical generalization (Merriam and Yin,) it is possible to have analytical generalisation (Yin, 2009) which helped in understanding the theory of employability (see Chapter 1). Analytical generalizability means that these findings could be applied (with a high probability) to other programmes of study offered by the University of Botswana and elsewhere. The issues discussed - although specific to Environmental Science - are cross-cutting ones. Issues on the quality of programmes and graduates and how to manage them in terms of employability audits could easily be applied across the board. This is particularly true at UB with the development of a policy on graduate employability.

Furthermore, when reflecting on the methodology used for data collection in this study, the case study design allowed for multiple use of data collection methods (Merriam 1998, 2009). As a result, both quantitative and qualitative methods were used to collect data (see Figure 7.1 below).
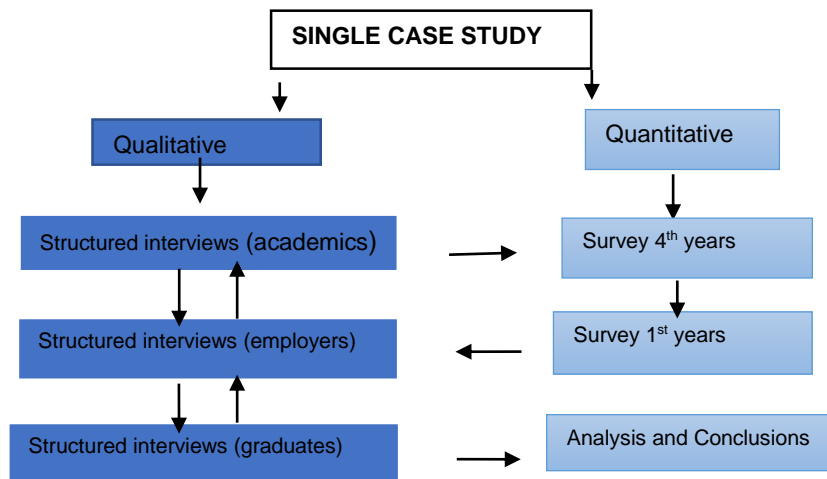
(Adapted from Johnson & Onwuegbuzie, 2004)

**Figure 7.1: Mixed model research design**

The use of both methods was a pragmatic approach which was appropriate because of the research sub-questions to be addressed and the number of participants who were involved – hence, the pragmatic-sequential paradigm for this study which called for decisions to be made on the best methods for collecting data without restrictions (Johnson & Onwuegbuzie, 2004). The use of face-to-face, semi-structured interviews in order to get a deeper insight into, and first-hand experience of, issues concerning employability of ES graduates was the best approach (see Chapter 2). Interviewing ES graduates, employers, academics and administrators face-to-face facilitated triangulation and probing which produced very rich data. Although some of the themes and sub-topics were identified prior to the research, the semi-structured interview schedule allowed other themes and subtopics to emerge and develop through the interviews which were further investigated. One could also read the emotions from the tones of their voices and from their facial expressions which would not have been evident through the administration of questionnaires.

The sampling of the interviewees was done using, mostly, purposive sampling to target participants with the right information. Maximum variation sampling was used for trustworthiness where the range of experiences of a phenomenon is achieved through the variability of the selected sample (Maykut & Morehouse, 1994). In terms of academics and administrators, sampling was purposive and, at times, it was snowballing whereby some academics would tell you who to talk to depending on how cooperative they thought the person would be. This worked well and eight academics and administrators were interviewed which was adequate sampling because saturation point was reached by the time the eight participant was interviewed. No new information was obtained at that point. The same was done with ES graduates and employers. Purposive sampling and snowballing were used to help the researcher identify where the graduates were; this proved very helpful and saved a great deal of time looking for ES graduates. All qualitative interview data was analysed using Atlas.ti which facilitated the identification of themes that emerged.

The survey of 249 first and fourth year students out of about 400 students provided an efficient method of involving a larger sample which would have been almost impossible using face-to-face interviews. Focus group discussions would also have made it difficult to obtain such a large sample. First year ES students were identified through simple random sampling within the only two available classes at that level. This was easier because the coordinators of these sub-groups released their classes and within those classes simple random sampling was performed. The same principle was applied to the fourth year sub-group. Some lecturers refused to release their classes because of the pressure of examinations. In such cases through purposive sampling and snowballing, lecturers who were willing to release their classes to participate in the study were approached. This however did not result in any bias because those classes were the same year of study sub-group and within those classes simple random sampling was still applied.

The quantitative data that was collected was analysed using various methods. Statistical analyses, such as frequencies, cross-tabulations and correlations between the two sub-groups, were analysed in order to make comparisons that could not have been achieved through interviews. At the same time, short answer questions were recorded by students which were, then, extracted and analysed using Atlas.ti in order to easily identify themes that were emerging. This produced rich discoveries and deepened the findings and understanding for the study.

One of the challenges of using multiple methods for this research was that, it was time consuming and more expensive. Instead of focusing energy on understanding and mastering one research methodology, the researcher had to spend more time learning and mastering two different methods (see Chapter 3). However these methods resulted in a study that was more complex but with much in-depth and rich in data from the different perspectives. Descriptive analysis combined with statistical analysis produced evidence and an audit trail that is credible hopefully, for the reader. More importantly the use of mixed-method helped address the main research question and covered all aspects of the Conceptual Framework in Figure 2.7, Chapter 2.

### 7.4.2    Reflections on Conceptual Framework

In this sub-section a reflection on the conceptual framework used for the study is given. This study was driven and guided by the concept of employability which was explained in detail in Chapter 2 and the findings from the literature review resulting in the conceptual framework for the study.

The theory of employability, used here, is informed by the concept of quality of graduates. In this study quality is defined as 'fitness for purpose' (Hoyle, 2012; Westerheijden, 2005) which is associated with employability of graduates in terms of the knowledge, skills and competencies (KSC) that they possess and that enable them to fit into, and progress in, the work place (see Chapter 2). In fact it is the issue of fitness for purpose of graduates that is debated much upon in the review of literature in particular whose role it is to ensure that graduates meet the minimum expectations and needs of customers

(Griesel & Parker, 2009; Pauw *et al.*, 2008; Cosser, 2010; Qunitini, 2011). These issues guided this study and the conceptual framework which focused on identifying the knowledge, skills and competencies needed by 21st century graduates (Binkley *et. al.*, 2013) and the roles of ensuring that graduates are fit for purpose. In his definition of employability Yorke (2004) also includes attributes that graduates need for the world of work. A number of these attributes were identified in the research from what employers said they wanted, such as being innovative, ability to work without supervision and communication skills. The conceptual framework for this study also identifies factors affecting employability - as found in the review of the literature – such as the availability of jobs in the labour market, the personal and individual factors of ES graduates and ways that employability can be enhanced by all stakeholders, specifically industry and higher education - including students and graduates.

One of the models that informed the conceptual framework for this study was designed by Hennemann and Liefner (2010) and focused on employability of Geography graduates in Germany (see Figure 2.6). Their model is even more relevant for this research because of the connection they make with basic education. In their model they indicate that students do not enter university as empty vessels, but that universities inherited people with some level of knowledge, skills and competencies. Hence, although this study did not measure the knowledge, skills and competencies of students and graduates, views of participants were sought on the levels of their knowledge, skills and competencies. Hennemann and Liefner's model shows that at different periods of time students possess certain types of knowledge, skills and competencies - all of which can be measured. These assets could, then, be enhanced and developed further at university level. Hennemann and Liefner (2010) label this component in their model "capacity", which means that students are capacitated in order to enhance their employability (see Chapter 2). Unlike Harvey's model, discussed below, which focuses on employability development opportunities, this model goes further and breaks down external factors that affect employability and includes personal and individual circumstances that may affect performance at work

Hence the conceptual framework for this research (see Figure 2.7) suggests that employability may also be influenced by individual and personal characteristics and the social and cultural context in which graduates grew up - as indicated in the framework. These issues emerged clearly in the findings and they are discussed in section below. The framework also links higher education, the labour market, students and graduates as main role-players in ensuring that ES graduates obtain the knowledge, skills and competencies needed in the workplace. From the review of the literature it was evident that there was disparity among academics and researchers on whose role it was to ensure that graduates were well prepared for the world of work (Boden & Nedeva, 2010; Morley, 2001; Little, 2001; Holmes, 2001). As a result a research sub-question was developed that addresses the role of ensuring that ES graduates are well prepared for work (Sub-question 2). As indicated in the summary of findings, it was evident that academics and administrators at UB were also divided on whose role it was to prepare graduates for work.

Employability audits are presented in the framework as a quality assurance mechanism and a possible way of ensuring employability. From the review of the literature it is clear that employability is a life-long process of learning (Forrie and Sels, 2003; Yorke, 2006; Mason and Cramer, 2009) where one matures with time in a specific job or profession (see Chapter 2). This scenario was revealed and confirmed by graduates in the field who were still working on improving their employability. This idea was developed further in the conceptual framework to include elements related to how students - while at university - could be assisted to reach **favourable** employability levels that would make them fit for purpose and be able to compete well in the world of work. The idea of assisting students to achieve employability while at university was borrowed from Harvey (2005) and the Higher Education Funding Council for Wales (2011). The latter pioneered the idea of employability audits. Thus Harvey's model of employability makes reference to employability development opportunities embedded in the curriculum at university level that enhance graduate employability but does not include the concept of employability audits (see Figure 2.6). These ideas guided the conceptual framework for this study which resulted with the inclusion of the quality assurance aspect in the form of employability audits that other models did not have. Activities, such as internship programmes and guest lecturers from industry, were recommended in the research some are developed and implemented by the university - in this case UB - and through specific content in the curriculum directed towards enhancing employability, such as communication and presentation skills. UB, as shown in Figure 2.7, provides the central support system and records all the experiences that students have gained and these would form part of the audit. The idea of employability development activities resonates very well with the fact that graduates, in general, in Botswana are deemed unemployable. Therefore a sub-research question was designed to solicit information that would address this component. Since UB did not use employability audits, the questions asked were meant to solicit views on whether participants consider such audits a good idea and how they could be introduced and implemented at UB. This aspect of the framework addressed Sub-question 4.

In his model Harvey stressed the fact that there might be extra-curricular activities that students engaged in that could enhance their employability skills, such as clubs, associations and work experience that students may have while studying. Some of the ES graduates interviewed engaged in these activities while at the UB. The model also suggested other elements in terms of external factors affecting employability, such as the availability of jobs in the labour market, social factors and individual and personal factors from the employability process model by Forrie and Sels (2003) that was also used to inform the conceptual framework for this study. Clubs and Associations to which students belong and work experience that they might have had are examples of some of the individual factors that could influence employability. All these aspects were incorporated into the study by asking ES graduates questions that focused on their input in ensuring their employability. The study revealed that it is not every student, however, who would join an environmental club or work while studying. Therefore, the researchers, quoted above, suggest that employability goes beyond the point of being employed and having positive attributes and competencies presumed relevant to the job and related to labour market issues. However, this study is focused more on identifying the gap in the ES programme and how these

could be filled and ensure that ES graduates have the necessary knowledge, skills and competencies required for them to perform well in the world of work.

It was from these three models (see sub-section 7.2.1) that the conceptual framework for this study was developed and designed. The findings showed that the conceptual framework was relevant and adequate for conducting this study. There were no new models that were found as a result of the findings, hence no need to change the conceptual framework initially intended for this study. The framework takes into consideration the various elements that were addressed in these models and adapted these to meet the needs of this study. The main element that was missing in the 3 models was the quality assurance aspect presented as employability audits - a very important component needed for the enhancement of, and ensuring, graduate employability. None of the models talked about the need to ensure that employability development activities for example, that a university might put in place to enhance employability of students and graduates are indeed being done. Not only that, but that employability of graduates is indeed enhanced by engaging in these activities. This study fills that gap. Other factors, such as the culture in which one was brought up and attitudes were also included as other external factors that could affect the employability of graduates. The latter became evident in the findings concerning in particular students' attitudes reported about not taking their work seriously and cheating. In addition, the conceptual framework linked labour market demands with curriculum development as a factor that influenced what is taught in higher education. This conceptual framework helped in understanding the challenges facing ES graduates and the University of Botswana in its attempt to educate graduates that are employable.

### 7.4.3    Conclusions and their Contribution to Scientific Knowledge

The conclusions and discussion presented in this section are reflections on the outcomes and conclusions from this study in relation to the overall research question. In the discussion comparisons are made with similar studies conducted elsewhere. When reflecting on the outcomes of this study, this section will address the contribution made to scientific knowledge.

***Main conclusions***

Six major conclusions may be drawn from the empirical evidence provided in this research.

1. *ES graduates have some knowledge of the environment and its management but do not possess the skills and competencies required for work. Furthermore the level of knowledge they have does not meet the needs and requirements of employers and the workplace.*

The research revealed that ES graduates believe that they do not have adequate and appropriate knowledge, skills and competencies needed for the world of work such as GIS and Environmental Impact Assessment (EIA), seeing how they perform in the workplace (see Chapter 5). They do have some knowledge, but it is limited and affects their skills and their competencies for the work they have to do. In that respect, single major students, i.e., those who take Environmental Science as a single

major are better prepared for the world of work than those who take ES as a minor or major combined with major or minor courses from other programmes of study, such as those from the Faculty of Humanities. The curriculum document and evidence provided by academics and administrators and ES graduates, states that single major students are offered courses that prepare them for certain career paths, such as Management of Natural Resources, Geo-Spatial Information Systems for Environmental Science and Environmental Hazards and Disaster Management.  Other students who take Environmental Science as a minor with a major from another programme, like those from the Faculty of Humanities, are not prepared for the same career lines. The majority of students from the Faculty of Humanities are meant to go into the field of teaching, but some of them do not like many other professions. It seems these are the ES graduates who end up as environmental scientists and with whom employers do not seem to be happy. Like other graduates from Social Science who take environmental science as a minor, they do not get enough content in any of the knowledge areas in order to be prepared for designated career lines. Academics and administrators do not seem to be aware of some of these issues because they believe that their graduates have the knowledge, skills and competencies needed for the world of work.

This conclusion echoes the views presented by Hennemann and Liefner (2010) who maintain that there seems to be a lack of clarity about the competencies of Geography graduates in Germany might have acquired for themselves and for their prospective employers and, hence, the need to address what the universities can do, in general, to strengthen the position of Geography graduates in the labour market. This statement implies that it is not clear which careers Geography graduates are prepared for – perhaps, indicating the need for specialization. Hence, the focus of their model is on the acquisition of knowledge in the cognitive domain in relation to higher education learning processes, basic education and special work experience which graduates might have obtained while at university. Acquiring knowledge and work experience would inadvertently enhance the skills and competencies of graduates. The latter view was also supported by Mason and Cramer (2009) and Yorke (2004).

2. *ES graduates are not immediately employable without further on the job training due to largely a lack of adequate knowledge, skills and core competencies, and exposure to the world of work.*

From the findings in this research and the review of literature, employability is a result of a combination of several factors such as knowledge, skills and competencies that graduates acquire and work experience that they are exposed to. It was mentioned earlier (see Chapter 2) that as the gap between vocational and academic education narrows (Stern & Wagner, 1999; Hager & Hyland, 2003), the gap between "classical" discipline knowledge and the know-how needed for a new job is also narrowing (Kouwenhoven, 2009). As a result, institutions of higher learning are moving closer to industry to work together - so that they may know what is required from graduates and how they can measure their quality in order to prepare graduates well for work. In this study like all the other participants who were

interviewed, the academics gave their views that their graduates are employable while employers and ES graduates and some students gave a contrary view (see Chapter 5). Thus, any claims made by academics in this instance must be verified. Academics believe that the university educates in the discipline and, possibly, for the profession - but not for specific jobs - while employers are looking for people for specific jobs. This has resulted in a discrepancy in views between these groups of respondents. As a result, graduate destination studies may have to be conducted to obtain a true picture of how UB graduates perform in their first jobs. Furthermore employability - is not about employment rates as defined earlier. Having met a few of ES graduates employed in various sectors of the economy and using that partly to say that ES are employable, in itself, does not show that academics and administrators have a comprehensive understanding of the concept of employability. Watts (2006) maintains that it is problematic and restrictive to look at employability in terms of immediate employment rates because of changes in labour market demands and how these can affect the employability of graduates. He argues that the focus should be on the possession of personal attributes which help graduates land themselves 'graduate jobs'. Others, such as Hennemann and Liefner (2010) and Hatfield (2007) define employability in terms of the competencies that graduates have that enable them to perform well in the workplace. The emphasis should not be on employment rates but, rather, on the qualities of graduates in respect of their employability skills. Harvey (2000) and Rooney *et al.* (2006) also warn against linking employability with employment rates which could be used to obtain more funding from government, for example, in public institutions in Botswana. Their argument is that this would put undue pressure on institutions and, so, a clear distinction between employment rates and employability must be made.  It must be noted that although employability is not employment, it would be very difficult to disassociate the two. Graduates and governments, alike, would like to see higher education make a meaningful contribution to reduced graduate unemployment rates in the context of Botswana. Perhaps, the more important point to focus on is the dangers of linking funding to employability (see Chapter 2).

What comes to mind here is a comment made by Jayaprakash (2007) about what is happening in India with graduate employability when he said that graduates have qualifications, but on the ground they cannot perform their duties as expected. The same challenge seems to be facing ES graduates in Botswana. The graduates have the qualifications, but on the ground their employers are not happy and neither are the graduates. Environmental Science is a wider field of study than Geography and, as such, much more prone to the problems identified by Hennemann and Liefner (2010) concerning what these graduates can do with their qualifications and the competencies they are supposed to have. It is for this reason that the ES programme of study was chosen as a case study for this research. It is evident also that the Department of Environmental Science faces a challenge, particularly with students from other faculties - not just the Humanities but Social Science and Business as well. This situation and predicament is discussed in Chapters 4 and 5, indicating that the department admitted that it would like to change by introducing programmes that are more differentiated and career-focused - not only for single major students, as is now the case, but for all their students. There would also be a need to define more appropriately the qualifications it offers and the purpose of the qualifications in terms of

profession or job demands that they are expected to meet for students to fit in well within the labour market (Hennmann and Liefner, 2010; Mason and Cramer, 2009; Yorke, 2004 and Harvey and Bowers-Brown, 2003). Therefore, in the views of the authors quoted fitness for purpose concerns graduates getting the right jobs in terms of their qualifications and fields of study. The failure of individual graduates to secure employment within their qualification range or the under-utilisation of graduate level skills, learnt during the course of their study, may lead to a mismatch which would lead to a lack of employability of graduates. Clearly, that seems to be the case with ES graduates - especially those who did course combinations that do not seem to fit their work environment. Their employers have already indicated that they do not perform well as *per* their needs and the expectations of the job market and the world of work without further on the job training.

Therefore, the Department of Environmental Science should also come to some understanding of the competencies needed in the labour market; more work needs to be done in terms of a needs analysis to avoid a situation where it produces graduates who are not needed. Although some of the academics and administrators said that it is not UB's responsibility, as a public institution, to do a labour supply and demand needs analysis, evidence from this study shows that if it does not, UB may eventually be overtaken by other institutions that are more focused in terms of meeting the needs and demands of the market and the country as a whole. Exposing students to the workplace in the form of internships is one way of collecting information of what is need in the labour market. Mason and Crammer (2009) suggest that, nowadays, employers will always look at work experience before employing fresh graduates as this is highly ranked in their recruitment criteria. In fact, all the ES graduates who were interviewed expressed the same view: that work experience is what is needed and that UB did not prepare them well because they were never exposed to internships during their studies. While that may be the case, it is important to note that new graduates need some time in the workplace to learn and understand what is required of them and how much time they are given to adjust is important. From the findings presented employers are willing to give the necessary in-house training to help graduates adjust to the workplace. For them to do that effectively, employers also need to sufficiently reflect and understand the general aims and goals of higher education to be able to appreciate the graduates they get. Perhaps by having that reflection and understanding this might take care of the fact that they do not seem to want to provide training that they believe should have been done at the university (see Chapter 4 and 5). How much time is the right amount of time for graduates to settle in seems to be a major issue because employers expect graduates to hit the ground running on day one. This is not fair to new graduates and to institutions because it puts undue pressure on them and creates an impression that they are not well-prepared, while that may not be the case. One academic said that graduates should be given 6 months, but are employers willing to accept that? From this study it seems they are not.

Although graduate employability is a global issue (Cosser, 2009; Maharasoa and Driekie, 2001) in South Africa, (Salefi-Asfahami (2010) in Middle East and North African (MENA) countries, in Germany (Hennemann and Liefner, 2010) and in the UK (Gibbons-Wood & Lange, 2000; York, 2004, 2006;

Boden & Nevada, 2010), some causes may be local. Thus, the contributions made by this study are based on a context of the study which is unique. This study has contributed to explaining the causes of a lack of employability of ES graduates in Botswana. Although the findings from a case study cannot be generalised, the findings can be applied to other fields of study because the issues raised are cross-cutting and permeate different fields of study. The issue of competencies in Geography students raised by Hennemann and Liefner (2010) in Germany applies to Environmental Science graduates in Botswana. Thus, the study has contributed to clarifying the issue of graduate employability in the context of Botswana by doing a descriptive analysis of the Environmental Science programme to reach a better understanding of the issue of graduate employability. What employers want - as opposed to what higher education produces - has been made clear contributing to new knowledge in this area. It is evident from the study that the lack of workplace skills, partly, explains the reluctance on the part of employers to use graduates, immediately, in Botswana and the reluctance to further train them.

3. *Higher education must go beyond providing education for the general development and well-being of individuals. It must also incorporate employability of graduating students.*

In this study employers, most academics and administrators, ES students and graduates agree that higher education must incorporate employability in their curriculum in order to prepare students well for work. Furthermore they all agree that they also have a role to play in ensuring that ES graduates are well prepared for the world of work. As a result although there is an element of blame between employers and UB, ultimately one of the main conclusions from this study which answers research sub-question 2, is that employers, academics and administrators and graduates agree that through collaboration and partnership with industry, UB, employers and students could participate in preparing ES graduates for work, mainly through curriculum development, internship programmes, research, guest lecturers, mentoring of students and funding. Fortunately, this study has revealed that there is a thin line between the views of the academics who maintain that their role is not to prepare students for work and those who believe it is their role and that they should engage with employers to ensure that ES graduate are fit for purpose. This was one of the observations made from the review of literature that there is a disagreement among academics as to whose role it is to prepare graduates for work readiness (Morley, 2001 and Knight, 2001; Mason & Crammer 2009; Boden & Nedeva 2010). It is evident from this research that for all the areas identified to be addressed such as internship, collaboration is key and should come from both UB and industry. Currently, because there is very little collaboration, industry plays virtually no role in preparing ES graduates for work - except through curriculum development, hence, the gaps identified among graduates. Based on the findings of this study and the evidence provided by the review of literature, the researcher has reached the conclusion that higher education should go beyond providing education for the general development and well-being of individuals and incorporate knowledge and skills, including workplace skills and competencies and 21st century skills, that would enable graduate to transit well into the world of work.

In studies conducted by Maharasoa and Driekie (2001); Aamodt and Havnes (2008); Nunez and Livanos (2009); Salefi-Asfahami, (2010) and HEFCE (2011) graduates are more likely to be more employable with the required employability skills if institutions work more closely with employers - especially during a programme review. They argue further that the best universities in the world are building links with businesses, both to maximise innovation and promote growth and to make sure graduates exit their institutions well equipped to excel in the world of work. Two models were suggested by this study on how that partnership can be achieved (see Chapter 2). In addition to mounting partnerships with industry, the UB could enhance employability of graduates by using appropriate teaching methods, such as group work, presentation, and internships, to inculcate employability skills. Although, at present, the department engages industry in curriculum review and development, it was realized that that needed to be strengthened because employers are still not happy with output in terms of the quality of ES graduates.

The challenges of the curriculum review and development processes might explain why industry and employers are still not satisfied with the UB graduates as well as the fact that not all stakeholders are represented. In fact as observed by Mulder and te Brake (1990), consultations meant for the review of curricula which they call "curriculum conferences" can be very complex and perhaps an unsatisfactory way of developing and reviewing curriculum. Their view is that meetings such as those of the Academic Board that the Department of Environmental Sciences uses for curriculum development and review, are made up of several stakeholders who may have conflicting philosophies of education and different levels of understanding of subject matter. Yet they come together to decide on the quality of the programme. As much as it is not possible to satisfy everybody and for all industries to be members of the advisory board of the Department of Environmental Science, it is important that the university has representatives from the different sectors or types of industries that are relevant to the programmes being offered. A department like Waste Management and Pollution Control could be a significant contributor considering that UB offers some courses in Waste Management. This department is not represented on the advisory board. It is also evident that it has become necessary to review membership of the board more regularly and for it to meet more often - as suggested by some academics and administrators - as a way of spreading membership. Currently, the advisory board meets only once in four to five years when the programme is being reviewed which does not allow for enough interaction and consultation with members.

Another challenge that was identified is that students are not involved in the curriculum review process which is a serious gap within the QA system. According to the Academic Quality Management Policy (AQMP) and The Quality Assurance Agency (2008) in the United Kingdom, students should participate in QA activities within the department and yet it was revealed that the department does not involve them. The Quality Assurance Agency (QAA) in the United Kingdom also encourages higher education institutions to include students in preparing action plans that address recommendations either from institutional reviews or, as in this case, from the advisory board or - better still - include them on the board, itself, as a way of addressing some of the challenges within the programme and give students a

voice concerning issues that affect them directly. This is important considering that employers are of the view that academics are not doing enough to prepare ES graduates for work. UB also holds industry accountable for not doing enough in terms of supporting higher education in its efforts to prepare graduates for work. Gibbons-Wood & Lange (2000), for example, argue that according to Siemens in Germany the development of generic competencies or core skills is the responsibility of the employer and that a lack of core competencies or "core skills" among employees or graduates is an indication of weak in-house training by the employer. In-house training was identified as one way employers could bring newly recruited graduates up to the level of skills expected of them. Thus, the company believes that employers must understand that it takes time and some coaching and mentoring for graduates to learn these skills. Furthermore, Siemens maintains that employers need to be patient and willing to train newly recruited graduates because core competencies related to work tasks and other procedures and can be learnt, mostly, in the work place and not in the classroom.

However, Gibbons-Wood and Lange (2000) were quick to point out that companies cannot be expected to operate like educational institutions, nor do they have the resources to do that. Higher education must play its role and play it well – hence, the refusal of employers in this study to engage in the training of graduates on what they considered should have been done by higher education in the classroom. This is where the critical question is; what knowledge, skills and competencies should be taught in the classroom and what should be learned in the workplace? This issue would require further research as there seems to be a tug-of-war between academics and industry concerning this.  It is also appropriate to acknowledge that Siemens is a large company that may have the budget to do that type of training. In the context of Botswana this type of training exists, mainly, in government departments and not in private companies because - as indicated - it is not sustainable, hence, the establishment of the Training Levy administered by the Botswana Training Authority whereby companies have to register and meet certain criteria to benefit from the levy.

As concluded earlier that all participants have a role to play in ensuring the employability of graduates, this also includes students and graduates. The role of students and graduates identified in this study was, basically, to make sure that they are involved in, and committed to, activities meant to assist them achieve employability. These activities include participating in research to gain more knowledge; being creative and taking initiatives, like enrolling in short courses - in the case of graduates; and looking for opportunities for internship where the university does not seem to be helpful.  Thus, as individuals, students and graduates need to take responsibility for their learning and employability. This finding confirms the observation made by Forrier and Sels (2003) about the importance of personal and individual factors in enhancing employability. As pointed out earlier, this research was keen to establish what it is that students and graduates could do to enhance their employability. In their observations Forrier and Sels stress the importance of individuals' willingness to maintain and enhance their movement capital by identifying opportunities in the workplace because, in the case of graduates, that can enhance their employability. According to the authors, the concept of movement capital is about the graduates' willingness to manoeuvre the workplace and move within the same company or other

companies in seeking better opportunities. That was evident in this study in the case of ES graduates. All six graduates who were interviewed were willing to move to any location in the country in pursuit of better job opportunities. A number of them had already moved from one job to the other. At the same time, there are graduates who - according to Thijssen (2000) - if jobs are scarce they may be willing to take up any job irrespective of whether or not it matches their qualifications to avoid unemployment. He said this scenario, typically, leads to a qualification mismatch which may, consequently, lead to a skills mismatch which consequently leads to lack of employability.

The contribution that this study has made to the scientific body of knowledge regarding the roles various groups can play in preparing graduates for work, is to explain, in detail, the present roles of higher education, industry and the individual student and graduate within the context of Botswana. More importantly, the study has produced concrete results and evidence that clarify the views of all three major role players, employers, graduates, academics and administrators, which was lacking in the review of the literature. The views of academics or employers were found in the literature but not all at the same time within the same study whereas those concerning the role of students were omitted (see chapter 2). More importantly, the study has revealed that some students do not seem to realise that they have a role to play in making sure that they gain employability skills that are needed in the workplace. However, it seems that once they leave the university system all ES graduates who were interviewed did some part-time studies to enhance their employability. Of interest to note is the importance of personal and individual factors - identified in the conceptual framework - that affect the employability of graduates. Cultural and social background also plays a role in the attitudes seen among students and graduates, alike. This study went further to demonstrate that the group that is against the involvement of higher education in preparing graduates is made up, predominantly, of academics. Employers, together with students and graduates, were of the opinion that industry and higher education both had a role to play. Furthermore, this study has revealed that only a small percentage of the academics interviewed were of the view that it is not the role of higher education to prepare students for work. More importantly, the line that separates the two groups is a very thin one. The arguments put forward by these academics were, eventually, overruled by the same individuals when they pointed out that the Graduate Employability Strategy for the entire university promoted the same ideas that they were against. Furthermore, the Teaching and Learning Strategy which applied in all departments across the university advocated the same values. It, specifically, identifies key skills that graduates should have in order to transit well into the world of work. These are 21$^{st}$ Century Skills identified by Binkley *et al.* (2010). Among these are the following:

- Self-directed, life-long learning skills;
- Problem-solving skills;
- Communication skills; and
- Entrepreneurial skills and employability skills (see Chapter 6).

The above mentioned are employability skills and they can be obtained, partly, through engagement with industry. For academics to say that they do not prepare students and graduates for work is contradicting the university's very own policies. It could mean that the views of the academics are not in line with those of the university and that they do not support the idea of graduate employability. The researcher believes that this attitude will be short-lived and outlived by the Graduate Employability Strategy.

4. *Massification of tertiary institutions in Botswana and increasing numbers of ES graduates from outside the country did not affect the employability of ES graduates locally.*

When the sub-question addressing this point was developed it was apparent that the massification of institutions in Botswana that offer Environmental Science was not an issue. The question was asked from the point of view of how the growing numbers of graduates from elsewhere might affect the employability of ES graduates locally in terms of the nature of work they do and the roles that graduates play at work. From this research as predicted massification was not an issue among participants, graduates, employers and academics and administrators, alike. The lack of employability of ES graduates in Botswana is partly a result of competition for jobs from the numbers of ES graduates produced at the UB and not from elsewhere.

There were a few employers who employed ES graduates from elsewhere, especially from South African universities. Even then, the view was that in comparison ES graduates from UB were, comparatively, not performing badly. Thus, the contribution made by this study in this respect was to reveal that there is not much competition for jobs from ES graduates who studied outside Botswana. The employability of ES graduates was affected, mainly, by the level of knowledge, skills and competencies they gained from their programme of study. The study revealed that the challenges in employability of these graduates was created by competition from within, i.e., from ES graduates produced by UB. The large number of ES graduates, especially from Humanities, poses the greatest challenge for fitness for purpose and roles they played at work (see Chapter 4 and 5).

The fact that government used to be the main employer and that this is no longer the case has created a huge gap in the labour market. The need for a detailed needs analysis on the part of UB is critical in order to determine the areas of need within the labour market. Graduates of ES from Humanities for example believe that this qualification is no longer in demand. This was confirmed by the fact that it was mostly these graduates that could not be placed for internship by the Department of Internship and remained on the waiting list for longer. The issues of supply and demand become critical as institutions grow in numbers. The Botswana International University of Science and Technology (BIUST) is also emerging which means that the UB may need to re-focus their ES programme to prepare graduates who can specialise in specific areas of environmental management. The high rates of unemployment in Botswana especially among the youth as noted earlier and shortage of jobs means that there is increasing and pressing need to prepare graduates for self-employment as well (see Chapter 1 and 2).

5. *All the participants except a few academics were of the view employability audits would greatly enhance the employability not only of ES graduates but all other graduates in Botswana. Therefore they should be introduced in the tertiary education system of Botswana as a quality assurance mechanism.*

The conclusion drawn from this study was that once the concept was understood and appreciated all the participants - except a few academics - thought that such audits would be appropriated and provided they are well implemented would help fulfil the objectives of the Graduate Employability Strategy for UB. The conclusion from this study regarding sub-question 4 is that the concept of employability audits is a new one in Botswana which became evident during the interviews because graduates, employers, academics and administrators at UB had no knowledge of the concept. The concept had to be explained before engaging with participants on their views pertaining to the introduction and implementation of such audits. The objective of the sub-question was to establish whether such audits would be welcomed and how they could be used effectively to enhance the employability of ES graduates. It was not surprising that the academics who had said it was not the role of the university to prepare students for work were the same people who did not support audits that focus on employability. Like Billet (2009); Morley (2001) and Little (2001), these academics question the role of higher education; the authors maintain that the role of higher education is to provide education for the general development and well-being of individuals and not to produce graduates as commodities to be consumed by the labour market. Billet (2009) calls this shifting to 'higher vocational education' where institutions introduce workplace concepts in the classroom (see Chapter 2). Hence, the view of some academics interviewed that the UB is not a polytechnic but an institution of higher academic learning.

While that may be the case, according to Elizabeth and Clarke (2009), employable graduates are ones who possess critical specific subject knowledge and skills as well as transferable knowledge, skills and attitudes needed by 21st century industries and organisations. Therefore, if graduates are not empowered with the employability skills they need, and quality assurance mechanisms in the form of employability audits to ensure that graduates are getting the knowledge, skills and competencies they need (Harvey, 2005), they will not be fit for purpose. This was supported by ES graduates in the sense that they felt that because they were not well prepared, their work had to be given to consultants, like Geographical Information Systems consultants which means that employers may actually spend more in getting the job done when they have employed graduates to do the same job. This does not seem fair to both the employer and the graduate. According to ES graduates, Geo-Spatial Information Systems for Environmental Science, for example, is a career line meant for single major students. Amongst the six ES graduates who were interviewed only one was a single major graduate which was not surprising considering the fact that the department produces about 30 such graduates a year. And even he was not satisfied with the level of skills and competencies he had. In that respect employability audits as a quality assurance mechanism may contribute in enhancing the knowledge, skills and competencies required for the world of work are enhanced. Furthermore, in support of employability audits all participants agreed that they all had a role to play in ensuring their success.

6. *All the ES graduates, employers and academics and administrators agreed that there is need for collaboration and partnerships between the UB, employers, students and government.*

All participants in this study agreed that they all have a role to play in ensuring that ES graduates are employable and in ensuring that employability audits succeed. This role included that of the HRDC and BQA as regulatory bodies in facilitating the implementation of employability audits in higher education. The roles identified in this study of the employer, UB as higher education institution and students in employability audits would ensure that ES students reach optimal levels of preparedness for work. The roles identified for UB and employers were similar to those identified in sub-question 2 in Chapter 5 which dealt with the roles in terms of ensuring that graduates have the knowledge, skills and competencies required in the world of work. With employability audits, internships and work placements as some of employability development activities created by the UB, play a major role in preparing students and graduates for work (see Chapter 2 and 6). The mentoring of students by employers during internships would contribute in preparing and shaping students who would later accept jobs within that industry or workplace. These ideas link very well with the conceptual framework because it shows that employability articulates with employment. Employment, here, includes opportunities for self-employment. In fact, Little (2001) and Yorke (2006) argue that preparing students for work should be separated from employment which could mean that educating students should not be linked to employment that could create gaps for employers to fill. The labour market as indicated earlier is dynamic and employment opportunities are ever fluid and unpredictable. Hence the need to equip graduates with employability skills required for them to fit better in the world of work.

Employability audits provide a platform for employers and academics to assess and improve the quality of ES students while they are at university. Thus, an assessment of students on internship will be critical to record work done for the purposes of providing evidence for the audit and to ensure that students are not just given simple or irrelevant tasks like messenger jobs. This type of assessment should be done, not only by the institution but also by employers, as a feedback mechanism. Alternatively, a tool could be designed by UB to capture the issues that they would like addressed and employers could be asked to complete a form. In that case UB could focus on just monitoring students to ensure that they are engaged in meaningful activities. Earlier, it was suggested that the TEC could also do the monitoring, but that would be tantamount to micro-managing institutions. Besides, it is the responsibility of UB to ensure that students are meaningfully engaged in internships. In this case, it is UB in collaboration with the employer that should establish an assessment instrument which, in turn, will assist the institution to improve the implementation of the programme and what happens in the classroom. With this type of assessment and monitoring, UB would be in a position to detect challenges to internships, such as students being given tasks that have nothing to do with the programme of study (see Chapter 4).

It was concluded that as a regulatory body the role of the TEC in employability audits would be, basically, to audit the audit. The TEC would have to come up with a number of tools for quality assurance and control. Furthermore, as an advisor to government on issues of higher education, the

TEC facilitates the development of government policy. This function is relevant to employability audits because participants suggested that guidelines should be developed by the TEC to guide the audits. It was also suggested that the guidelines could form part of the policy document that mandates institutions and employers to engage in such audits. This policy would take care of those who do not support the idea of employability audits. The idea of making such collaborations mandatory came as a surprise, especially coming from the industry side, which implies that employers may be frustrated with the quality of graduates and, hence, they are pushing for change in the way ES graduates are prepared for work. The TEC already has guidelines on how institutions should form partnerships and collaborate with industry. For example, the guidelines on the accreditation of programmes state that any collaboration with stakeholders should be supported by a Memorandum of Understanding (MOU) with documented agreements signed by both parties on how the partnerships will operate (Regulations 2008). This regulation covers internship programmes where institutions make agreements with industry to send their students for work placements. The guideline stipulates that such agreements must be documented. As such, introducing guidelines and policy for employability audits would fall within the norm.

The contribution made by this study on employability audits is that it has provided a deeper understanding of how employability audits - as a QA mechanism - could be employed by UB and the TEC, the regulatory body to enhance graduate employability. Having been introduced and pioneered by higher education in Wales, before designing a tool for such audits it is important to ensure that stakeholders understand the concept and that there is a buy-in from all participants involved, particularly industry. These audits fit in well with the whole graduate employability agenda for the entire university, which shows that this study is timely and relevant. The possible role of the TEC as a regulatory body has been outlined as well as the possible roles of UB, employers and students. Of particular interest was the possible role of students in such audits because they are the people that the audit is meant to empower.  As outlined in Chapter 6, the role of employability audits demonstrates the link that these audits have with the university and the entire process of enhancing graduate employability - an aspect that was found to be lacking in the models that were adapted from Hennemmann and Liefner (2010) and Harvey (2004). The QA aspect was not imbedded in the process of enhancing employability and this study has helped fill that gap. Employability audits are linked to the curriculum, its development and delivery in terms of the feedback loop in order to enhance the employability of graduates. This study has produced new knowledge which could be used to enhance internal quality assurance mechanisms in institutions and, externally, for the TEC as a regulatory body.

### 7.4.4    Final Reflection

After addressing the four research sub-questions one can conclude that the main research question which reads: ***How do industry, higher education and employability audits contribute to ensure that Environmental Science students and graduates of the University of Botswana are employable?,*** has been adequately answered. Firstly, the statement of the problem that the research started with regarding the immediately use of graduates from the point of view of employers has been

understood and, the research has attempted to addressed. It has been established that graduates of environmental science from the University of Botswana are not immediately effective in the workplace without further on-the-job training. To improve their employability there is need for collaboration and partnerships between the UB, industry and government. This is critical considering that employers may have wrong expectations of ES graduates given the fact that the Department does not educate specialists.

From this research it was also evident that the concept of employability although very useful and practical is not an easy one to understand and appreciate resulting in conflicts in terms of the roles of higher education visa vis that of industry. As a result not all the academics and administrators interviewed agreed with what needs to be done and by whom. Of more concern is the fact although the UB has a general policy on graduate employability there are still some academics that do not completely support the policy because they believe employability is not an issue for an academic institution like UB but that of a training institution and the employer. Such discrepancies in the views of academics need to be addressed by the University to bring everyone on board. If not addressed these disparities can inadvertently affect the roles of the UB in respect to the enhancement of employability of graduates and ensuring that they are well prepared for work in part through the introduction of employability audits. Consequently these discerning voices although very few can affect the success of the graduate employability strategy if not addressed through means such as workshops within the institution.

Finally, although the focus was on ES graduates, the case study design enables analytical generalisation meaning that the findings of this study, can be applied with higher probability to graduates in other fields of study. Moreover, employability is not restricted to specific programmes of study. Indeed there may be fields of study that lend themselves easily to the concept of employability such as Medicine and Law but all graduates need to be employable irrespective of the field of study they pursue. As such Employability skills such as communication, writing skills and problem solving skills are universal and depict a consistent set of core desirable skills needed in all fields of study. Hence the concept of the 21st century skills of which all graduates must be exposed to if they are to transit well into the world of work and progress in their careers

## 7.5 RECOMMENDATIONS

The recommendations that emanate from this study address three areas: policy and practice, and further research.

### 7.5.1 Policy and Practice
Recommendations made in this category are those that affect policy and practice in terms of how the employability of ES graduates could be addressed from lessons learnt in this research.  These will be discussed as follows:

### *7.5.1.1 Policy*

In terms of policy, the following recommendations are made:

- The evidence from this research suggests that for employability audits to be implemented effectively, a policy document should be designed that would mandate the implementation of employability audits - as recommended by both ES graduates and employers. According to the views of these participants, some employers may not want to cooperate and engage with the university in accepting students for internships. However, if mandated by policy they may be encouraged to respect the idea of employability audits and implement them.

- Similarly the Tertiary Education Council/ HRDC or BQA should develop guidelines that would help both institutions and the TEC/HRDC or BQA coordinate the activity. These guidelines should stipulate the *modus operandi* of employability audits. The BQA has similar guidelines in place, for example, that guide institutions on accreditation and the review of programmes. Awareness workshops should be held for institutions on the importance and the role of employability audits. The workshops should not only be for institutions, but also for companies and organisations that are likely to accept ES graduates for internships. Student representatives should be invited to attend these workshops so that they are able to appreciate the importance and the role of employability audits and contribute to the implementation of these audits. This exercise is important in bringing everyone on board and for the buy-in of all stakeholders involved.

### *7.5.1.2 Practice*

In terms of practice with respect to the UB education programmes, the TEC or BQA and the collaboration between these and industry, the following recommendations are made:

- In order to enhance the employability of ES graduates, the Department of Environmental Science should differentiate its programme to offer qualifications in specified areas that are clear to the graduates and prospective employers. The qualification currently offered is a BSc in Environmental Science which is broad-based and does not delineate and differentiate various specialized areas, such as Geo-Spatial Information Systems for Environmental Science. This differentiation of the programme will help address the issue of specialization that employers have stressed so much in the interviews. Such qualifications will help ES graduates and the employer decide where they fit in the world of work. Currently, career paths are designated only for single major students, which is not fair to the rest of the students taking the programme. The class is very small, comprising only a maximum of 30 students from a population of about 400 students who graduate, annually, from the programme. The department should find ways of increasing the number by employing more staff and providing other resources needed for teaching and learning. The single major students receive good advice and attention that other students do not get in terms of assignments, skills development and research projects and,

therefore, single major students acquire employability skills that other students do not get because of large classes. These skills and similar support should be offered to the rest of the students enrolled in the programme.

- A point related to the one above is that currently two-thirds of the students enrolled in the programme graduate from other faculties because of the options provided, such as minor-major and minor-minor. These options are unfavourable to students' employability in the sense that students do not acquire the full content and subject knowledge, which results in half-baked environmental scientists. The Department should find a way of addressing this issue and one way of doing that would be through the differentiation of the programme to delineate clearly the various career paths students can pursue.

- Partnerships should be encouraged between the UB in particular the Department of Environmental Science with industry and BQA or HRDC. This is important in facilitating for example the engagement of more students in internships programmes to expose them to the world of work. This type of exposure will provide students with the work experience required for the world of work. ES Students and graduates including employers and some academics and administrators have indicated in a loud voice that there is need to instil workplace skills amongst learners. To counteract the issue of small industry base in Botswana that was raised in the research, UB and other institutions should consider the possibility of sending students outside the country for such internship programmes. With the internationalization of higher education, students should be willing and prepared to go out of their comfort zones and look beyond the boundaries of Botswana for opportunities for internships or attachments. For these internship programmes to succeed collaboration and partnerships with industry should be sealed through Memoranda of Understanding between UB and respective companies that will accept ES students should be developed. These agreements should be signed by both parties and should stipulate, precisely, what students would do to avoid the situation experienced by the department whereby students are made to do jobs that have nothing to do with their field of study. The MOUs should also stipulate the length of time students will spend on internships and how they will be assessed. These assessments should, then, be used to improve the delivery and development of the programme.

- The evidence collected suggests that employability audits should be introduced at tertiary institutions to address the issue of employability - not only of ES graduates, but of all graduates from other fields of study as well. From this study some of the participants supported the idea of employability audits. Furthermore, UB has a Graduate Employability Strategy and a Teaching and Learning Policy that have not really been implemented by all departments, including Environmental Science. The Teaching and Learning Policy stipulates key attributes that students should develop by means of the programme. Many of these are employability skills

and, therefore, the introduction of employability audits would help support and move both the policy and strategy forward.

- The UB should cascade their Graduate Employability Strategy down to every department and individual lecturers and students. From the interviews held with academics especially lecturers in the Department of Environmental Science a number of them were not aware of the strategy. Students should also be made aware so that they could maximise the opportunities afforded to them by the institution.

- The UB should involve students in their QA processes. From this study it was discovered that students are not invited to the Departmental Board for example, to which they are members. The reason advanced was that when invited students do not attend. Students should be educated and made aware of the importance of their contribution to the quality assurance procedures employed by the University. This is important because students will have an opportunity to address issues that are of critical importance to them such as employability.

### 7.5.2    Further Research

Possible areas of further research emanating from this study are the following:

- Employability audits is a new concept in Botswana. Therefore, it is advisable that before these audits are implemented, thorough research should be conducted to solicit more views on how such audits should be conducted and also to get a buy in from a larger population which includes the University and industry. This type of study should also include the design of the audit tool to be used for such an audit. An audit tool could include aspects such as the focus of the audit and the kinds of activities that the institution or department will concentrate on depending on the type of programme on offer. The tool may also seek to assess the kinds of interactions the institution has had with employers. Therefore such a tool that would be used by institutions and the TEC/BQA, as a regulator body, should be carefully designed in order to make sure that it captures issues that really matter and would produce desired results. Thus, it should be designed and trial tested before it can be implemented. For this tool to work and be accepted by a wider audience, it is advisable that more stakeholders from other fields of study should be incorporated as well. This could be, adequately, addressed by applying design research as the research design (Plomp & Nieveen; 2013).

- More research should also be conducted on how teaching and learning - in terms of integrating employability skills - may result in the enhancement of the employability of graduates. The research conducted by Mason and Cramer (2009) shows a positive relationship between structured work experience that students were involved in and their securing graduate jobs within 6 months of graduation. However, there is a lack of a positive correlation between teaching, learning and the assessment of employability skills of graduates securing

employment. Issues raised by Yorke (2004) about the changes in the labour market and that work experience does not guarantee attributes needed for employability should be considered. Some of the academics who were interviewed suggested that special accredited courses should be introduced that would, specifically, target the employability of graduates and ensure that graduate employability skills are enhanced. More research that targets teaching and learning methods in higher education to enhance employability is necessary. Perhaps, a longitudinal study should be carried out – a kind of tracer study - a few years after students graduate as it would be useful to provide concrete evidence that teaching and learning methods that are practised have a lasting impact on graduate employability. It is important to conduct such studies so as not to put undue pressure on higher education to set aside resources for teaching and learning without concrete evidence that such practices enhance the employability of graduates.

- Since 21st century skills are relevant for employability, an investigation should be done on how 21st century skills can become part of employability skills and how these can be realized in the university's curriculum. Twenty-first century skills, such as communication skills, ICT skills and learning-to-learn are part of employability skills and they enhance employability. An investigation into how these can be integrated into employability skills in a university setting is critical; it should be undertaken in the context of developing curricula that can help students acquire knowledge and that enables them to develop the skill to use this knowledge in specific professions and changing work environments (Nygaard *et al.,* 2008).

# REFERENCES

Aamodt, P. O. & Havnes, A. (2008). Factors affecting professional job mastery: Quality of study or work experience? *Quality in Higher Education, 14*(3), 233-248.

Aamodt, P. O., Hovdhaugen, E. & Bielfeldt, U. (2010). Serving the society? Historical and modern interpretations of employability. *Higher Education Policy, 23*(2), 271-284.

Acquah, A. (2009). Tertiary graduates: Earnings and employment prospects in the South African labour market. *Southern African Review of Education with Education with Production, 15*(2), 27-44.

African Quality Assurance Network. (2009)*The Dodowa Declaration of AfriQan.*www.afriqan.aau.org/declartion.php

Allen, J., Ramaekers, G. & Velden van de, R. (2005). Measuring competencies of higher education graduates. *New Directions for Institutional Research, 126*, 49-59.

Allen, J. & Velden van de, R. (2001). Educational mismatches versus skills mismatches: Effects on wages,job satisfaction and on-the-job search. *Oxford Economic Papers, 3*(434), 452.

Ama, O. Njoku. (2008). Transition from higher education to employment: A case study of graduates of social sciences university of botswana. *Educational Research and Review, 8*(3), 267-274.

Andrews, J. & Higson, H. (2008). Graduate employability, "soft skills" versus "hard" business knowledge: A European study. *Higher Education in Europe, 33*(4), 411-422.

Ayer, A. (1986). Logical positivism, 1959. *Las Citas Corresponden a La Traducción Castellana*References

Billet, S. (2009). Realising the educational worth of integrating work experiences in higher education. *Studies in Higher Education, 34*(7), 827-843.

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M. & Rumble, M. (2010). *Defining 21st century Skills*. Melbourne: The University of Melbourne. Retrieved 17 March 2012 from http://atc21s.org/

Bird, A. (2008). Assessing global leadership competencies. In M. Mendenhall, J. Osland, A. Bird, G. Oddou,M. Maznevski, et al. (Eds.), *Global leadership. Research, practice and development* pp. 64–81. London: Routledge.

Blanche, M. T., Durrheim, K. & Painter, D. (2006). In Blanche M. T., Durrheim K. and Painter D. (Eds.), *Research in practice: Applied methods for the social sciences* (Second Edition Ed.) University of Cape Town Press.

Boden, R. & Nedeva, M. (2010). Employing discourse: Universities and graduate "employability". *Journal of Education Policy, 25*(1), 37-54.

Bowen, Glenn A. (2009) Document Analysis as a Qualitative Research Method. *Qualitative Research Journal, 9(2).*

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology,* 3(2), 77-101.

Bronson, P. & Merryman, A. (2010). The Creativity Crisis, *Newsweek.* July, 10, 2010

Cassidy, S. (2006). Developing employability skills: Peer assessment in higher education. *Education and Training,* 48(7), 508–517.

Central Statistics Office (2011)
http://www.cso.gov.bw/templates/cso/file/File/Formal%20Employment%20June%202011%20Stats%20Brief%20final.pdf

CHERI (2008) "The employment of UK graduates: comparisons with Europe" Report to HEFCE by Centre for Higher Education Research and Information, The Open University. http://www.hefce.ac.uk/pubs/rdreports/2008/rd22_08/rd22_08_1.pdf

Contreras, R. B. (2011). Examining the Context in Qualitative Analysis: The Role of the Co-Ocurrence Tool in Atlas ti. *Newsletter Atlas.ti.*

Cosser, M. (2010) "The Skills Cline: Higher Education and the supply –demand complex in South Africa." T*he international journal of higher education and educational planning,* 59(1), 43 – 53).

Cox, S. & King, D. (2006). Skills sets: An approach to embed employability in course design. *Education and Training, 48*(4), 262-274.

Crossman, J. E. & Clarke, M. (2010). International experience and graduate employability: Stakeholder perceptions on the connection. *Higher Education, 59*(5), 599-613.

De Vaus, D. A. (2002). *Surveys in social research.* London: Routledge.

De Vaus, D. (2002). *Analysing social science data: 50 key problems in data analysis* Sage Publications Limited.

Dewey, J. (1925). Logic: The theory of inquiry (1938). *The Later Works, 1953*, 1-549.

European Union (2006). Recommendation of the European parliament and of the council on key competencies for life-long learning (2006). *Official Journal of the European Union, L 394, 30 December 2006.* Author. Retrieved May, 18, 2011, Website*:* http://eur-lex,europa.eu/,1998-2015

Field, A. (2009). *Discovering Statistics Using SPSS* (3rd ed.). London: Sage.

Field, L. & Drysdale, D. (1991). *Training for Competence: A Handbook for Trainers and Teachers.* Kogan Page, London

Finaye. K. A., Adeniji, I. A., Adu. E.O. (2008) Graduate Unemployment in Nigeria: A Blind Spot in the Nation's Educational System. *The African Symposium,* Volume 8, No.2

Fisch, K., McLeod, S. & Brenman, J. (2009). *Did You Know? 3.0 – 2009 Edition.* Retrieved 18 March 2009 from http://www.youtube.com/watch?v=PHmwZ96_Gos.

Flink, A. (2009). *How to conduct surveys "A step by step guide"* (4th ed.). USA: Sage Publications Inc.

Forrier, A., & Sels, L. (2003). The concept employability: A complex mosaic. *International Journal of Human Resource Development and Management, 3*(2), 102-124.

Friese, S. (2012). *Qualitative Data Analysis with Atlas.ti.* London: Sage Publications

Gibbons-Wood, D. & Lange, T. (2000). Developing core skills - lessons from Germany and Sweden. *Education and Training, 42*(1), 24-32.

Greene, F. J. & Saridakis, G. (2008). The role of higher education skills and support in graduate self-employment. *Studies in Higher Education, 33*(6), 653-672.

Griesel, H. & Parker, B. (2009). *Graduate Attributes: A Baseline Study on South African Graduates from the Perspective of Employers.* Higher Education South Africa and the South African Qualifications Authority, ISBN 978-0-620-45244-1

Groot, W. & Vann de Brink, Henriette, Maassen Vann. (2000). Education, training and employability. *Applied Economics, 32*(5), 573-581.

Gynnild, V. (2007). Quality assurance reconsidered: A case study. *Quality in Higher Education, 13*(3), 263-273.

Harvey, L. (2000). An employability Performance Indicator, Perspective: *Policy and Practice in Higher Education, 4 (4) 105-109*

Harvey, L. (2001). Defining and measuring employability. *Quality in Higher Education, 7*(2), 97-109.

Harvey, L., Locke, W. and Morey, A., (2002) *Enhancing Employability, Recognising Diversity.* London, Universities UK.

Harvey, L. & Brown, T. (2003). T*he employability of graduates: Cross Country Comparisons.*www.dfes.gov.uk/research/data/upload files/cr2003.pdf

Harvey, L. & Newton, J. (2004). Transforming quality evaluation. *Quality in Higher Education, 10*(2), 149-164.

Hatfield, D. (2007). Using a skills bank for work-based learning. *Education and Training, 49*(3), 236-249.

Hennemann, S. & Liefner, I. (2010). Employability of German geography graduates: The mismatch between knowledge acquired and competencies required. *Journal of Geography in Higher Education, 34*(2), 215-230.

Higher Education Funding Council for Wales, "Employment & Employability in Wales" Summary report. www.hefcw.ac.uk

Higher Education Funding Council for Wales. (2011). "Students at the Heart of the System" Department for Innovation and Skills White Paper. Retrieved November 24, 2011 from Higher Education Funding Council for Wales website: www.hefcw.ac.uk.

Holmes, L. (2001). Reconsidering graduate employability: The "graduate identity" approach. *Quality in Higher Education, 7*(2), 111-119.

Horsburgh, M. (1999). Quality monitoring in higher education: The impact of student learning. *Quality in Higher Education,* 5(1), 9-26.

Hoyle, D. (2012). *ISO 9000 quality systems handbook-updated for the ISO 9001: 2008* standard Routledge.

Hughes, I. (2011). Employability Audit Tool. UK Centre for Bioscience. Available at www. bioscience. heacademy.ac.uk/resources/audit.aspx (accessed 02 March 2011).

Jayaprakash, V. (2007). Employability and Education: A win-win situation. *Merinews.* Retrivie*d* July 2011, from Merinews Web site:www.merinews.com/article/employability-and-education-a-win-win-situation/127943.shtml

Jean L. S. K. (1992). Quantitative versus qualitative research methods - two approaches to organisation studies. *Asia Pacific Journal of Management, 9*(1), 87.

Johnson, R. & Onwuegbuzie, J. (2004). A Research Paradigm Whose Time Has Come. *Educational Researcher,* 33(7), 14-26.

Kis, V. (2005). *Quality assurance in tertiary education: Current practices in OECD countries and a literature review on potential effects.* Retrieved November 18, 2009. www.oecd.org/edu/tertiary/review

Kouwenhoven, W. (2009). Competence-Based Curriculum Development in Higher Education: A globalised Concept? Technology, Education and Development, Aleksandar Lazinica and Carlos Calafate (Ed.), ISBN: 978-953-367

Knight, P. T. (2001). Employability and quality. *Quality in Higher Education, 7*(2), 93-95.

Leckey, J. F. & McGuigan, M. A. (1997). Right tracks -wrong rails: The development of generic skills in higher education. *Research in Higher Education, 38*(3), 365-378.

Little, B. (2001). Reading between the lines of graduate employment. *Quality in Higher Education, 7*(2), 121-129.

Lincoln, Y. & Guba, E. (1985). Naturalistic Inquiry. Sage publications, Inc. California

Livanos, I. & Nunez, I. (2010). Higher education and unemployment in Europe: An analysis of the academic subject and national effects. *Higher Education, 59*, 475-487.

Lore, A. (2006). Higher Education and the Area of Work: Issues, Challenges and Responses in Norway and Germany. Reflex.www.reflexproject.org

MacManus, D. (2001). The Two Paradigms of Education and Peer Review of Teaching. *Journal of Geoscience Education,* 49(5), 423-434.

Maharasoa, M. & Hay, D. (2001). Higher education and graduate employability in South Africa. *Quality in Higher Education, 7*(2), 139-147.

Materu, P. (2007). *Higher education quality assurance in Sub-Saharan Africa.* Washington, D.C.: World Bank.

Mason, G., Williams, G. & Crammer, S. (2009). Employability skills initiative in higher education: What effects do they have on graduated labour market outcomes? *Education Economics, 17*(1), 1-30.

Maykut, P. & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide*. London: RoutledgeFalmer.

McQuaid, R., W., Green, A. & Danson, M. (2005). Introducing employability. *Urban Studies, 42*(2), 191-195.

McQuaid, R., W. & Lindsay, C. (2005). The concept of employability. *Urban Studies, 42*(2), 197-219.

Merriam, S. B. (1988). *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass Inc.,

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation "revised and expanded from qualitative research and case study application in education"*. San Francisco: Jossey-Bass.

Mertens, D. M. (2005). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (Second Edition Ed.). London: Sage Publications.

Ministry of Education and Skills Development. (2009) National Human Resource Strategy 2009-2022 "Realising our potential". Gaborone: Author.

Ministry of Finance and Development Planning. *(2009). National development plan.* Gaborone. Author.

Morley, L. (2001). Producing new workers: Quality, equality and employability in higher education. *Quality in Higher Education, 7*(2), 131-138.

Naderi. A. (2006). The Paradox of Insufficient Human Capital Investment and Graduate Unemployment: The Case of Iranian Labour Market. Conference paper, University of Tehran, Iran.

Nygaard, C., Hojlt, T. & Hermansen, M. (2008). Learning-based curriculum development. *Higher Education, 55*, 33-50.

OECD (1993). From Higher Education to Employment: Synthesis Report. Paris: OECD

O'Leary, J. (2005). *What we can infer from Australian graduate employment statistics: The discrepancy between employers' expectations and graduate performance.* Retrieved February 16, 2011. http:/education.curtin.edu.au/iier/qjer/qr11/oleary.html

*Outcomes from institutional audit, institutions' work with employers and professional, statutory and regulatory bodies.* (2008). www.QAA.ac.uk

Pauw. K., Oosthuzen, M. & Van der Westhuizen, C. (2008). Graduate Unemployment in the face of Skills Shortages: A Labour Market Paradox. South African Journal of Economics. 76 (1), 45-57

Plomp, T. & Nieveen, N. (ED). (2013). Educational Design Research. SLO. Netherlands Institute for Curriculum Development. The Netherlands.

Plomp, T. (2011). "Preparing Education for the Information Society: Curricular and Implementation Challenges". Unpublished paper presented at a Conference in Shanghai China.

Quintini, G. (2011). "Right for the job: Over-skills or Under-skilled?" *OECD social employment and migration working papers No. 120.* OECD: Author. Retrieved March, 12, 2011, Website: http://dx.doi.org/10.1787/5kg59fcz3tdk-en

Reynolds, J. & Saunders, M. (1987). Teachers' responses to curriculum policy: beyond the 'delivery' metaphor, in Harvey & Newton, Transforming quality evaluation. *Quality in Higher Education, 10*(2), 149-164.

Rooney, P., Kneale, P., Gambini, B., Keiffer, E., Vandrasek, B. & Gedye, S. (2006). Variations in International Understandings for Geography. *Journal of Geography in Higher Education.* 30 (1), 133-145.

Rothwell, A. & Arnold, J. (2007) "Self-perceived employability: Development and Validation of a Scale". *Personal Review*, Vol. 36 (1), 23-41.

Sale, J., Lohfeld, L. & Brazil, K. (2002). Revisiting the Qualitative Debate: Implications for Mixed - Methods & Research. *Quality&Quantity.*36, 43-53

Salehi-Isfahani, D. (2010) Human Development in the Middle East and North Africa: Human Development Research Paper 2010/26. UNDP. Retrieved February 02, 2012 from UNDP Website: http:/www. bw.undp.org.

Schomburg, H. & Teichler, U. (2006). *Higher education and graduated employability in Europe "results from graduate surveys from twelve countries"*. Netherlands: Springer.

Siphambe, H. K. (2007). *Growth and employment dynamics in Botswana: A case study of policy coherence.* No. Working Paper No. 82). Geneva: International Labour Organisation.

Stake, R. (1995). The Art of Case Study Research. Thousand Oaks, CA: Sage Publications.

Tam, M. (2001). Measuring Quality and Performance in Higher Education. *Quality in Higher Education,* 7 (1), 47-54.

Teichler, Ulrich & Kehm, Barbara. (1995). Towards a new understanding of the relationships between higher education and employment. *European Journal of Education, 30*(2), 115-132.

Teichler, U. (2000). Graduate employment and work in selected European countries. *European Journal of Education,* 35(2), 141-156.

Tertiary Education Act (1999). Government Printer, Gaborone (unpublished manuscript).

Tertiary Education Council. (2005). *Tertiary education policy for Botswana: Challenges and choices.* Botswana: Gaborone: Author.

Tertiary Education Council (2012). *Tertiary education at a Glance Report 2012-2013.* Gaborone: Author.

The Quality Assurance Agency for Higher Education (2008). Outcomes from Institutional audits: Institutions work with employers and professional, statutory and regulatory bodies. Second Series www.qaa.ac.uk,

Thijssen, j. (2000) ' Employability in the focal point. Impetus for clarification of a diffuse phenomenon of ' HRM, magazine, 1, 7-34.

Torrance, E. (1974) Torrance Tests of Creative Thinking. www.wcu,edu/ceap/houghton/learner/think/thinkingskills.html.

UNESCO. (1998). World conference on higher education: Higher education in the twenty first century vision and action "requirements of the world of work".*IV-1*

UNESCO (2012) "Youth education, employment, empowerment key to global progress" www.unesco.org/new/en/education/themes/strengthening-education-systems/higher-education

University of Botswana, Department of Environmental Science. (nd). *Teaching and learning strategy*: Gaborone: Author.

University of Botswana. Centre for Academic Development. (2003). *Academic Quality Management Policy*. Gaborone: Author.

University of Botswana. Department of Environmental Science. (2012). *New Department of Environmental Science Handbook*. Gaborone: Author.

University of Botswana. Centre for Academic Development. (2008). *Learning and Teaching Policy.* Gaborone: Author.

University of Botswana. (2009). *A Graduate Employability Strategy for the University of Botswana: Task Force on Graduate Employability. Final Version.* Gaborone: Author.

University of Botswana. (2010). *Graduate Employability Strategy.* Gaborone: Author.

Walliman, N. (2006). *Social research methods.* London: Sage Publications.

Washer, P. (2007). Revisit key skills: A practical framework for higher education. *Quality in Higher Education, 13*(1), 57-67.

Watts, A. G. (2006). *Career Development learning and employability.* Learning and Employability Series. York: The Higher Education Academy. Available at www.heacademy.ac.uk.learningandemployability.htm (accessed March 02, 2011).

Westerheijden, D. F., Stensaker, B. & Rosa, M. J. (2007). *Quality assurance in higher education: Trends in regulation, translation and transformation*. Dordrecht: Springer.

Westerheijden, D. F. (2005). Walking towards a moving target: Quality assurance in European higher education. *The Quality of Higher Education, 2*(52), 71.

Westnes, P. *et al.*, (2009) "The Role of Universities in Strengthening Local Capabilities for Innovation – A Comparative Case Study". *Higher Education Policy - the quarterly Journal of the International Association of Universities (IAU),* 22 (4) 483-503.

Whelan, B. (2010). *Capturing Stakeholder Perceptions of graduate employability development: Challenges associated with graduate employability indicators*. Proceedings of the Australian Collaborative Education Network National Conference. Perth.

Wiess, P. (1942). Charles Sanders Pierce. *The Sewanee Review, Vol. 50 (2), 184-192.* The Johns Hopkins University Press (accessed 06 January 2013).

Wilkinson, S. (2000) Women with Breast Cancer Talking Causes: Comparing Content, Biographical & Discursive Analysis. *Feminism & Psychology.* Vol. 10 (4), 431- 460

Woodhouse, D. (2002), 'Auditing for Improvement', Keynote address to Australian Universities Quality Forum, Brisbane, 27-28 September

World Bank. (1994). World Bank (1994) higher education: The lessons of experience.

World Bank. (2008). Accelerating catch - up: Tertiary education for growth in Sub-Saharan Africa. Synopsis.

Yin, R. K. (2009). Case Study Research: Design & Methods. Fourth Ed. Sage Publications. London

Yorke, M. (1994). Enhancement-led higher education. *Quality Assurance in Higher Education,* 2(3), 6-12.

Yorke, M. (2004). Employability in the undergraduate curriculum: Some student perspective. *European Journal of Education, 39*(4), 409-427.

Yorke, M. (2006) *Employability in higher education: What it is - what it is not.* Retrieved on February 17, from the Higher Education Academy web site: www.heacademy.ac.uk/employability.htm

# ANNEXURES

# Annexure A: List of additional reference tables and figures in thesis
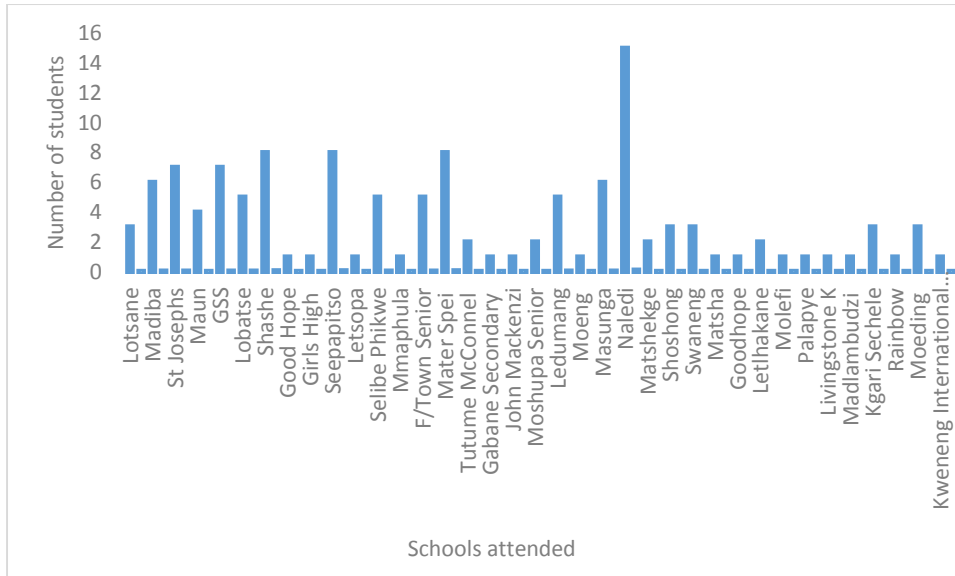
**Figure A1: Schools attended by the first year students in 2012**

**Table A1: Relationship between year of study and employability**

| Chi – square tests | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) | Point Probability |
|---|---|---|---|---|---|---|
| Pearson Chi-Square | 11.962(a) | 2 | .003 | .002 | | |
| Likelihood Ratio | 12.074 | 2 | .002 | .003 | | |
| Fisher's Exact Test | 11.991 | | | .002 | | |
| Linear-by-Linear Association | 11.739(b) | 1 | .001 | .001 | .000 | .000 |
| N of Valid Cases | 242 | | | | | |

**Table A2: Correlation between year of study and employability**

| Symmetric measures | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .222 | .003 |
| | Cramer's V | .222 | .003 |
| N of Valid Cases | | 242 | |

**Table A3: Relationship between gender and employability**

| Employability | Gender | | | | Total | |
|---|---|---|---|---|---|---|
| | Male | | Female | | | |
| | N | % | N | % | N | % |
| Yes | 34 | 35.0 | 69 | 46.9 | 103 | 42.6 |
| No | 12 | 12.6 | 13 | 8.8 | 25 | 10.3 |
| Not Sure | 49 | 51.6 | 65 | 44.2 | 114 | 47.1 |
| Total | 95 | 39.3 | 147 | 60.7 | 242 | 100.0 |

**Table A4: Correlation between gender and employability**

| Symmetric Measures | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .114 | .207 |
| | Cramer's V | .114 | .207 |
| N of Valid Cases 242 | | | |

**Table A5: Correlation between school attended and employability**

| Symmetric Measures | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .845 | .082 |
| | Cramer's V | .597 | .082 |
| N of Valid Cases | | 125 | |

**Table A6: Factors influencing first and fourth year students' choice of programme**

| Responses | N | % |
|---|---|---|
| government sponsorship | 105 | 43.8% |
| my own choice | 160 | 66.7% |
| career guidance at UB | 20 | 8.0% |
| my friends | 25 | 10.4% |
| labour market | 43 | 17.9% |
| parents/relatives | 72 | 30.0% |
| teachers at school | 14 | 5.8% |
| career guidance at school | 20 | 8.3% |
| other | 5 | 2.1% |
| **Total** | **464** | **193** |

**Table A7: First and fourth year students' ratings of skills in the "very weak" category**

| Skills | Year of Study | | Total |
|---|---|---|---|
| | 1 | 4 | |
| | N | N | N |
| Ability to find and access information | 2 | 0 | 2 |
| Ability to use new information | 1 | 0 | 1 |
| Proficiency in English | 1 | 0 | 1 |
| Oral presentation skills | 5 | 1 | 6 |
| Written and oral communication skills | 1 | 2 | 3 |
| Mathematics competence and basic competence in Science and Technology | 15 | 6 | 21 |
| computer literacy | 11 | 0 | 11 |
| Creativity, innovation and entrepreneurship | 6 | 3 | 9 |
| Social and civil, including cultural competencies | 7 | 3 | 10 |
| Critical thinking and problem solving | 3 | 1 | 4 |
| Learning to learn | 1 | 0 | 1 |
| Collaboration and teamwork | 5 | 1 | 6 |
| **Total** | **37** | **16** | **53** |

**Table A8: First and fourth year students' ratings of competencies in the "strongly disagree" category**

| Comptencies | Year of Study | | |
|---|---|---|---|
| | 1 | 4 | Total |
| | N | N | N |
| I can choose appropriate information to address new problems | 2 | 0 | 2 |
| I can apply an appropriate approach to problem solving | 1 | 0 | 1 |
| I can plan and execute tasks independently | 4 | 1 | 5 |
| I can monitor and evaluate own work-related issues | 2 | 0 | 2 |
| I can devise ways to improve on own actions | 3 | 0 | 3 |
| I can deal with different cultural backgrounds | 6 | 0 | 6 |
| I have understanding of changing workplace practices | 11 | 4 | 15 |
| **Total** | **19** | **5** | **24** |

**Table A9: First and fourth year students' ratings of knowledge in the "very weak" category**

| Knowledge areas | Year of Study | | |
|---|---|---|---|
| | 1 | 4 | Total |
| | N | N | N |
| General knowledge about local and global affairs? | 5 | 2 | 7 |
| Subject or discipline knowledge? | 1 | 0 | 1 |
| Understanding ES core principles and Processes? | 6 | 2 | 8 |
| Enquiry and Research Skills? | 3 | 1 | 4 |
| Understanding economics and business realities? | 15 | 6 | 21 |
| Ability to summarize key issues? | 3 | 0 | 3 |
| Critical and analytical thinking? | 2 | 0 | 2 |
| Ability to follow and construct logical argument? | 3 | 2 | 5 |
| Rapid conceptualization of issues? | 8 | 2 | 10 |
| **Total** | **21** | **10** | **31** |

**Table A10: First and fourth year students' ratings of knowledge in the "very strong" category**

| Knowledge areas | Year of Study | | | | Total | |
|---|---|---|---|---|---|---|
| | 1 | | 4 | | | |
| | N | % | N | % | N | % |
| General knowledge about local and global affairs? | 22 | 26.5 | 23 | 30.3 | 45 | 28.3 |
| Subject or discipline knowledge? | 39 | 47.0 | 33 | 43.4 | 72 | 45.3 |
| Understanding ES core principles and Processes? | 25 | 30.1 | 36 | 47.4 | 61 | 38.4 |
| Inquiry and Research Skills? | 18 | 21.7 | 44 | 57.9 | 62 | 39.0 |
| Understanding economics and business realities? | 15 | 18.1 | 23 | 30.3 | 38 | 23.9 |
| Ability to summarize key issues? | 31 | 37.3 | 40 | 52.6 | 71 | 44.7 |
| Critical and analytical thinking? | 38 | 45.8 | 41 | 53.9 | 79 | 49.7 |
| Ability to follow and construct logical argument? | 35 | 42.2 | 33 | 43.4 | 68 | 42.8 |
| Rapid conceptualization of issues? | 17 | 20.5 | 30 | 39.5 | 47 | 29.6 |
| **Total** | **83** | **52.2** | **76** | **47.8** | **159** | **100.0** |

**Table A11: First and fourth year students' ratings for assistance from the Department**

| Assistance | N | % |
|---|---|---|
| Very poor | 66 | 10.6 |
| Poor/not so well | 97 | 15.6 |
| Well | 241 | 38.7 |
| Very well | 218 | 35.0 |
| **Total responses** | **622** | **100.0** |

**Appendix A12: Chi-square test for females and males who consulted the center**

| Chi-square statistic | Value | df | Asymp. Sig. (2-sided) | ExactSig. (2-sided) | Exact Sig. (1-sided) |
|---|---|---|---|---|---|
| Pearson Chi-Square | 1.102 | 2 | 0.576 | 0.562 | |
| Likelihood ratio | 1.092 | 2 | 0.579 | 0.562 | |
| Line-by-line association | 0.305 | 1 | 0.581 | 0.657 | 0.344 |
| N of valid cases | 128 | | | | |
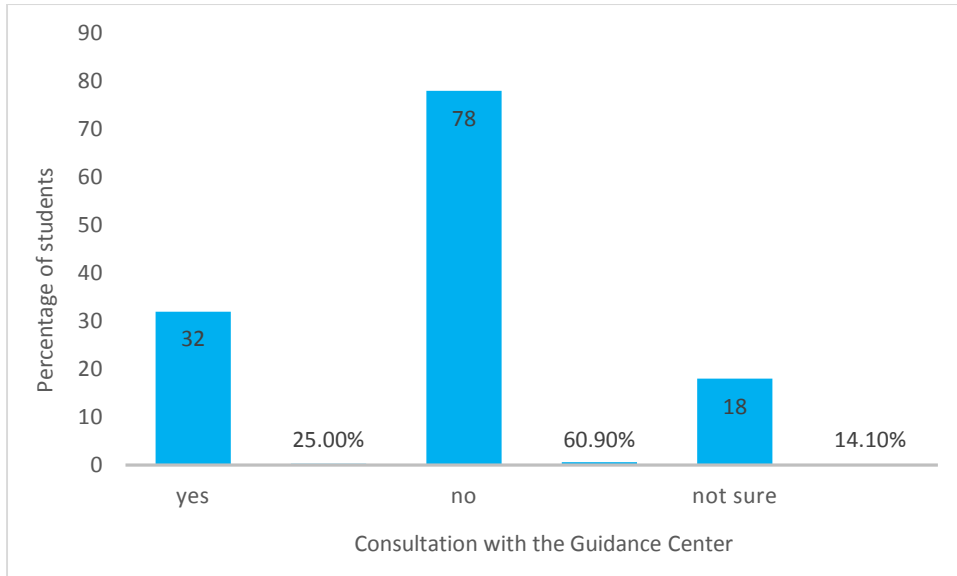
**Figure A2: First year students who have not consulted the Guidance Center**

**Table A13: Chi square test for staying longer at university and year of study**

| Test | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 16.733[a] | 2 | .000 |
| Likelihood Ratio | 17.172 | 2 | .000 |
| Linear-by-Linear Association | .094 | 1 | .759 |
| N of Valid Cases | 241 | | |

**Table A14: Strength of the relationship between staying longer at university and year of study**

| | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .263 | .000 |
| | Cramer's V | .263 | .000 |
| | Contingency Coefficient | .255 | .000 |
| N of Valid Cases | | 241 | |

**Table A15: Reasons for staying longer in the University by year of study**

| Reasons for not staying longer in the University | Year of Study | | | | Total | |
|---|---|---|---|---|---|---|
| | 1 | | 4 | | | |
| | N | % | N | % | N | % |
| Can never be sure when the right jobs will come so keep looking and marketing myself | 11 | 23.9 | 18 | 23.1 | **29** | **23.4** |
| No right job available will accept any job and gain experience while looking for the right job | 17 | 37.0 | 26 | 33.3 | **43** | **34.7** |
| Will start own business/self-employment | 4 | 8.7 | 9 | 11.5 | **13** | **10.5** |
| Don't like school and it is a waste of time | 13 | 28.3 | 19 | 24.4 | **32** | **25.8** |
| Jobs will always be available | 1 | 2.2 | 2 | 2.6 | **3** | **2.4** |
| Staying in school requires a lot of money | 0 | 0.0 | 4 | 5.1 | **4** | **3.2** |
| **Total** | 46 | 37.1 | 78 | 62.9 | **124** | **100** |

**Table A16: Reasons for not staying longer in the University by year of study**

| Reasons for staying longer in the University | Year of Study | | Total |
|---|---|---|---|
| | 1 | 4 | |
| | N | N | N |
| Improve qualifications while waiting | 26 | 21 | 47 |
| So that the qualification is not wasted | 7 | 2 | 9 |
| Keep busy to avoid crime | 7 | 4 | 11 |
| Total | 40 | 27 | 67 |

# Annexure B: Questionnaires

# QUESTIONNAIRE for 4th YEAR ES STUDENTS

# PHD IN QUALITY ASSURANCE AND ASSESSMENT

# VIOLET NOMALANGA ESSILFIE

## PURPOSE OF THE STUDY

The purpose of this study is to explore possible roles of higher education, employability audits in higher education and employers in enhancing the knowledge and employability of Environmental Science students and graduates in the changing expectations of the world of work. The roles of the individual student will also be examined. Therefore, in order to find answers to the main research question: "How do factors, higher education, employability audits within higher education and industry contribute (or not) to the employability of ES students and graduates?" We request you to be one of the main participants in the study. As a student of ES, we would like to establish your views about how well you think the department prepares you for the world of work; how competent you think you are; and what you think needs to be done to prepare you well for the transition into the world of work. The results of these questionnaires will be shared with participants. The final thesis will be available in the University of Botswana library and the TEC library. In addition, a consultative meeting will be organized at the TEC for all the stakeholders involved to come and deliberate on how to work together to enhance the employability of students and graduates of ES.

**PARTICIPATION AND CONFIDENTIALITY**

Under no circumstances are you forced to take part in this study. Your participation is voluntary, greatly needed and highly appreciated. There is nothing that as a participant you say will be identified with you, as anonymity is maintained. The strictest confidentiality code will be maintained throughout the study. Participating in this study will take - at most - 20 minutes of your valuable time.

## 1.     PART A: BIOGRAPHICAL DATA

Please indicate your answer by placing a tick in the box.

**a. You are:      Male** ☐          **Female** ☐

**b. Age Group:**

| Below 20-25 | 25-30 | Above 30 |
|---|---|---|

## 2.     PART B: EDUCATIONAL BACKGROUND

a.  Programme of Study at UB:_____

b.  Year of Study:  Indicate which year of study you are in   ☐

c.  Number of years at University_____

d.  Are you a repeating student?        **Yes** ☐          **No** ☐

e.  Qualification to be attained at the end of the programme_____

f.  Who influenced your choice of study the most? (Choose the most important (max 3)

|  | Yes | No |
|---|---|---|
| Government sponsorship |  |  |
| My own choice |  |  |
| Career guidance at UB |  |  |
| My friends |  |  |
| Labour market |  |  |
| Parents/Relatives |  |  |
| Teachers at School |  |  |
| Career guidance at school |  |  |
| Other (specify) |  |  |

g.  Which Faculty are you studying in? Please tick one box

| Faculty | Yes | No |
|---|---|---|
| Humanities | | |
| Social Sciences | | |
| Engineering | | |
| Education | | |
| Science | | |
| Centre for Continuing Education | | |
| Business | | |

h.  Who is sponsoring your? **Government** ☐ **Private** ☐ **other** ☐

## 3.  PART C: KEY COMPETENCIES FOR LIFE LONG LEARNING

a)  Do you think you are more employable as an Environmental Science student?

**Yes** ☐        **No** ☐        **Not Sure** ☐

**Please explain**

| |
|---|
| |

b)  What do you understand by "employability" of graduates? Indicate your answer by ticking the most appropriate answer.

| Definition | Yes | No | Not sure |
|---|---|---|---|
| Having skills and knowledge that make you perform well at work | | | |
| Not having a problem with getting jobs | | | |
| Moving from one job to another easily | | | |
| Employability is the same as employment | | | |

c)  Which of these basic skills/attributes were developed during your study at University of Botswana? Indicate your answer by ticking one column per row.

| Skills/attributes | Yes | No | Not sure |
|---|---|---|---|
| Ability to find and access information | | | |
| Ability to use new information | | | |
| Proficiency in English | | | |
| Oral presentation skills | | | |
| Written and oral communication skills | | | |
| Mathematical competence and basic competence in science and technology | | | |
| Computer literacy | | | |
| Creativity, innovation and entrepreneurship | | | |
| Social and civil  including cultural competencies | | | |
| Critical thinking and problem solving | | | |
| Learning to learn | | | |
| Collaboration and teamwork | | | |

d)  If you were to **single** out the most important skill/attribute in terms of workplace performance which one would it be? Please explain why.

e) How would you rate yourself in terms of these skills/attributes?

| Skills/attributes | Very strong | Strong | Weak | Very Weak |
|---|---|---|---|---|
| Ability to find and access information | | | | |
| Ability to use new information | | | | |
| Proficiency in English | | | | |
| Oral presentation skills | | | | |
| Written and oral communication skills | | | | |
| Mathematical competence and basic competence in science and technology | | | | |
| Computer literacy | | | | |
| Creativity, innovation and entrepreneurship | | | | |
| Social and civil including cultural competencies | | | | |
| Critical thinking and problem solving | | | | |
| Learning to learn | | | | |
| Collaboration and teamwork | | | | |

f) Did the Department of Environmental Science assist you to develop these competencies?

**Yes** ☐          **No** ☐          **Not Sure** ☐

g) If yes, how well were the skills developed?

| Activity | Very well | well | Poor | Very poor |
|---|---|---|---|---|
| Internship programmes | | | | |
| Group work | | | | |
| Class presentations | | | | |
| Learning and teaching | | | | |
| Others (specify) | | | | |

h) Are there **other skills/attributes** which you think you need to learn/develop to help you with the transition into the world of work? If yes, please indicate which ones in order of importance.

| Role | Very important | Important | Not so important | Unimportant |
|------|---------------|-----------|------------------|-------------|
| Curriculum development | | | | |
| Teaching | | | | |
| Internship/work placements | | | | |
| Provide funding to the institution | | | | |
| Sponsor selected students | | | | |

## 4. PART D: THE ROLE OF CAREER GUIDANCE

a) Are career guidance services offered in this University?

**Yes** ☐   **No** ☐   **Not Sure** ☐

b) Do you know factors that influence employability of graduates in the labour market?

| Yes | No | Not sure |
|-----|-----|----------|
| | | |

c) If yes can you describe them?

| |
|---|
| |

d) Would you stay longer in school until the right jobs are available?

| Yes | No | Not sure |
|-----|-----|----------|
| | | |

e) Explain your answer

| |
|---|
| |

## 5.	PART E: KNOWLEDGE AND COMPETENCIES

a)	How would you rate yourself in terms of the following knowledge and competencies?

| Knowledge and Competencies | Very strong | Strong | Weak | Very weak |
|---|---|---|---|---|
| General knowledge about local and global affairs | | | | |
| Subject or discipline knowledge | | | | |
| Understanding of ES core principles and processes | | | | |
| Enquiry and Research Skills | | | | |
| Interest in ideas and desire to continue learning | | | | |
| Understanding of economics and business realities | | | | |
| Ability to summarise key issues | | | | |
| Critical and analytical thinking | | | | |
| Ability to follow and construct logical argument | | | | |
| Rapid conceptualization of issues | | | | |

b)	Which of these knowledge and competencies mentioned above, would you consider the **single** most important for you to function effectively in the workplace?

## 6.	PART F: WORK PLACE SKILLS AND KNOWLEDGE

a)	How would you rate your ability in terms of the following work-place skills and application of knowledge acquired?

| Work-place skills and knowledge | Strongly agree | agree | Disagree | Strongly disagree |
|---|---|---|---|---|
| I can apply knowledge to new situations | | | | |
| I can recognize a problem situation | | | | |
| I can choose appropriate information to address knew problems | | | | |
| I can apply an appropriate approach to problem solving | | | | |
| I can plan and execute tasks independently | | | | |
| I can monitor and evaluate own work-related issues | | | | |
| I can devise ways to improve on own actions | | | | |
| I can deal with different cultural backgrounds | | | | |
| I have Understanding of changing workplace practices | | | | |

b)	Would you say therefore, you are ready for work?

| Yes | No | Not sure |
|-----|-----|----------|

c) Explain your answer.

<br>

**Thank you for your cooperation.**

# QUESTIONNAIRE for 1st Year ES STUDENTS

# PHD IN QUALITY ASSURANCE AND ASSESSMENT

## VIOLET NOMALANGA ESSILFIE

**PURPOSE OF THE STUDY**

The purpose of this study is to explore possible roles of higher education, employability audits in higher education and employers in enhancing the knowledge and employability of Environmental Science students and graduates in the changing expectations of the world of work. The roles of the individual student will also be examined. Therefore, in order to find answers to the main research question: "How do factors, Higher Education, employability audits within higher education and industry contribute (or not) to the employability of ES students and graduates?" We request you to be one of the main participants in the study. As a student of ES, we would like to establish your views about how well you think the department prepares you for the world of work; how competent you think you are; and what you think needs to be done to prepare you well for the transition into the world of work. The results of these questionnaires will be shared with participants. The final thesis will be available in the University of Botswana library and the TEC library. In addition, a consultative meeting will be organized at the TEC for all the stakeholders involved to come and deliberate on how to work together to enhance the employability of students and graduates of ES.

**PARTICIPATION AND CONFIDENTIALITY**

Under no circumstances are you forced to take part in this study. Your participation is voluntary, greatly needed and highly appreciated. There is nothing that as a participant you say will be identified with you, as anonymity is maintained. The strictest confidentiality code

will be maintained throughout the study. Participating in this study will take - at most - 20 minutes of your valuable time.

## 1. PART A BIOGRAPHICAL DATA

Please indicate your answer by placing a tick in the box applicable to you

a) You are:     Male [ ]          Female [ ]

b) Age Group:

| Below 20 | 20-25 | Above 25 |
|----------|-------|----------|
|          |       |          |

## 2. PART B EDUCATIONAL BACKGROUND

a) Name of Secondary School
   Attended:_____

b) Programme of Study at UB:

   _____

c) Indicate which Year of Study you are in:     Year [ ]

d) Number of years at
   University_____

e) Are you a repeating student?     **Yes** [ ]          **No** [ ]

f) Qualification to be attained at the end of the
   programme_____

g) Who influenced your choice of study the most?

|                          | *Tick all that apply* |
|--------------------------|-----------------------|
| Government sponsorship   |                       |
| My own choice            |                       |
| Career guidance at UB    |                       |
| My friends               |                       |
| Labour market            |                       |
| Parents/Relatives        |                       |
| Teachers at School       |                       |
| Career guidance at school|                       |
| Other (specify)          |                       |

h) Which faculty are you studying in?

| Faculty | *Tick the appropriate choice* |
|---|---|
| Humanities | |
| Social Sciences | |
| Engineering | |
| Education | |
| Business | |
| Centre for Continuing Education | |
| Science | |

i) Who is sponsorship you? **Government** ⬚  **Private** ⬚  **other** ⬚

j) Do you think you are more employable as an Environmental Science student?

**Yes** ⬚  **No** ⬚  **Not Sure** ⬚

k) Please explain

|  |
|---|
|  |

### 3.  KEY COMPETENCIES FOR LIFE LONG LEARNING

*a)* What do you understand by "employability" of graduates? (*Tick where applicable. One tick per row).*

| Definition | Yes | No | Not Sure |
|---|---|---|---|
| Not having a problem with getting jobs | | | |
| Moving from one job to another easily | | | |
| Having skills and knowledge that make you perform well at work | | | |
| Employability is the same as employment | | | |

*b)* Which of these basic skills/attributes were developed at secondary school? (*Indicate your answer by ticking one column per row.)*

| Skills/attributes | Yes | No | Not sure |
|---|---|---|---|
| Ability to find and access information | | | |
| Ability to use new information | | | |
| Proficiency in English | | | |
| Oral presentation skills | | | |
| Written and oral communication skills | | | |
| Mathematical competence and basic competence in science and technology | | | |
| Computer literacy | | | |
| Creativity, Innovation and entrepreneurship | | | |
| Social and civil including cultural competencies | | | |
| Critical thinking and problem solving | | | |
| Learning to learn | | | |
| Collaboration and teamwork | | | |

c) How would you rate yourself in terms of these skills? *(Indicate your answer by placing one tick per row.)*

| Skills | Very strong | Strong | Weak | Very weak |
|---|---|---|---|---|
| Ability to find and access information | | | | |
| Ability to use new information | | | | |
| Proficiency in English | | | | |
| Oral presentation skills | | | | |
| Written and oral communication skills | | | | |
| Mathematical competence and basic competence in science and technology | | | | |
| Computer literacy | | | | |
| Creativity, innovation and entrepreneurship | | | | |
| Social and civil including cultural competencies | | | | |
| Critical thinking and problem solving | | | | |
| Learning to learn | | | | |
| Collaboration and teamwork | | | | |

**d)** Is the Department of Environmental Science assisting you to develop these skills?

**Yes** ☐          **No** ☐

e) If yes, how well were the skills developed?

| Activity | Very well | Well | Not so well | Very poor |
|---|---|---|---|---|
| Internship programmes | | | | |
| Group work | | | | |
| Class presentations | | | | |
| Learning and teaching | | | | |
| Others (specify) | | | | |

**f)** Are there other skills which you think you need to learn to help you with the transition into the world of work? If yes, please indicate which ones in order of importance**.**

g) How important is the role of employers in preparing students for work for each of the following? (*Tick one per row.*)

| Role | Very important | Important | Not so important | Unimportant |
|------|----------------|-----------|------------------|-------------|
| Curriculum development | | | | |
| Teaching | | | | |
| Internship/work placements | | | | |
| Provide funding to the institution | | | | |
| Sponsor selected students | | | | |

## 4. THE ROLE OF CAREER GUIDANCE

**a)** Have you made use of career guidance services offered in this University?

Yes ☐          No ☐          Not Sure ☐

**b)** If yes why and if not why not?

**c) Would you stay longer at the University until an appropriate job for your qualification is available?**

| Yes | No | Not sure |
|-----|-----|----------|
| | | |

**d) Explain your answer**

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│                                                         │
│                                                         │
│                                                         │
│                                                         │
└─────────────────────────────────────────────────────────┘
```

## 5.    PART E: KNOWLEDGE AND SKILLS

a)   How would you rate yourself in terms of the following knowledge and skills? (*Tick one per row.*)

| Knowledge and Skills | Very strong | Strong | Weak | Very weak |
|---|---|---|---|---|
| General knowledge about local and global affairs | | | | |
| Subject or discipline knowledge | | | | |
| Understanding of ES core principles and processes | | | | |
| Enquiry and Research Skills | | | | |
| Understanding of economics and business realities | | | | |
| Ability to summarise key issues | | | | |
| Critical and analytical thinking | | | | |
| Ability to follow and construct logical argument | | | | |
| Rapid conceptualization of issues | | | | |

b)   Which of these knowledge and skills mentioned above, would you consider the **single** most important for you to function effectively in the workplace?

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│                                                         │
│                                                         │
│                                                         │
│                                                         │
│                                                         │
│                                                         │
└─────────────────────────────────────────────────────────┘
```

c)   To what extent do you agree with the following statements regarding your competencies? (P*lace one tick per row.)*

| Work-place competencies and knowledge | Strongly agree | agree | Disagree | Strongly disagree |
|---|---|---|---|---|
| I can apply knowledge to new situations | | | | |
| I can recognize a problem situation | | | | |
| I can choose appropriate information to address new problems | | | | |
| I can apply an appropriate approach to problem solving | | | | |
| I can plan and execute tasks independently | | | | |
| I can monitor and evaluate own work-related issues | | | | |
| I can devise ways to improve on own actions | | | | |
| I can deal with different cultural backgrounds | | | | |
| I have Understanding of changing workplace practices | | | | |

**Thank you for your cooperation.**

# Annexure C: Interview Schedule

# INTERVIEW SCHEDULE FOR THE ACADEMIC STAFF AND ADMINISTRATORS

# PHD IN QUALITY ASSURANCE AND ASSESSMENT

# VIOLET NOMALANGA ESSILFIE

## PURPOSE OF THE STUDY

This study is carried out to fulfil the requirements of an independent PhD programme of study at the University of Pretoria. The purpose of this study is to explore possible roles of higher education, employability audits in higher education and employers in enhancing the knowledge and employability of Environmental Science (ES) students and graduates with the changing expectations of the world of work. The roles of the individual student will also be examined. The main research question is: "How do the factors, Higher Education, employability audits within higher education and industry contribute (or not) to the employability of ES students and graduates?" We would like to interview you as one of the main participants in the study. As academics and involved in the teaching and learning of ES students, we would like to find out your views about what the department is doing in preparing students for the world of work.

The results of these interviews will be shared with the participants. The thesis will be available in the University of Botswana library and the Tertiary Education Council library (TEC). In addition a consultative meeting will be organized at the TEC for all the stakeholders involved to come and deliberate on how to work together to help graduates of ES for the workplace.

**Tape Recording, Note-taking and Confidentiality**

The interview will be recorded on a tape recorder because it is important to capture the conversation correctly. The interviewee will also take notes as the interview progresses to keep track of the interview and ideas put forward.

However, strict confidentiality and anonymity will be kept. Nothing you say will be identified with you or traced back to you. You will not be identified by name except for record purposes for the interviewee to be able to identify the ideas from different participants.

**PART A:      BACKGROUND INFORMATION (questions with bullets are possible probes)**

**A1      What is your name? Which courses do you offer in the department and the number of students enrolled for that course?**

- *How many graduates do you produce a year?*
- *what courses do you teach and number of students in the courses*
- *Which faculties or departments are the students from?*

**A2      To what extent are the ES programmes offered at the University of Botswana meeting the needs of the industry/country?**

- *How are you preparing your students to meet the challenges of the future e.g. jobs that do not yet exist and to use the technology that is yet to be developed?*
- *What QA measures do you have in place within the department to ensure quality of programmes?*
- *How often do you review your curriculum?*
- *When was the last time and what was the major change?*
- *How can higher education and industry work together to ensure relevance and quality in the programmes?*

**PART B:      QUALIFICATION MATCH/MISMATCH**

**B1      How do you take into consideration the labour supply and demand issues when you design your programmes?**

- *What do you think the demand for your qualifications is at the moment in the country especially with the increasing number of graduates?*
- *How do you match qualifications you offer with skills required on the job market?*
- *How appropriately qualified are ES graduates for the world of work?*

- *In what way do students take into account the job market situation when they choose the programme of study?*

## PART C: WORKPLACE SKILLS, COMPETENCIES AND KNOWLEDGE (Employability)

**C1** **How employable are the ES graduates in the changing workplace environment?**

- *What do you think about preparing graduates for work-readiness rather than a specific job?*
- *What kinds of workplace skills do you think ES graduates need for the transition into the world of work?*
- *What kinds of workplace competencies do you think ES graduates need for the transition into the world of w*
- *ork?*
- 
- *To what extent do you think your graduates possess these when they leave the University?*
- *What knowledge area do you think they need for the changing workplace environment?*
- *To what extent do your students have this knowledge by the time they leave?*
- *What the main factors affecting the employability of ES graduates in Botswana?*

**C2** **How would you describe the role of Higher Education in preparing students for the world of work?**

- *What steps has the Department taken to ensure that ES graduates are well prepared for work?*
- *To what extent is employability incorporated into the curriculum?*
- *Is there a policy/strategy on employability in place to guide the Department in preparing students for the world of work?*
- *How can HE work with employers to make sure that graduates are appropriately prepared for the world of word?*
- *How does the department support students to take responsibility for their employability?*
- *Do you ever follow up on your graduates to see how they are coping in the workplace?*
- *What would you say is the role of the employer in making sure graduates are work –ready?*

## PART E: EMPLOYABILITY AUDITS

**E1** **How do you think audits that focus on the work-readiness of graduates can be used to assist institutions produce graduates fit for purpose?**

- *Do you think such audits would work for this Department?*
- *How do you think the staff would react to such audits?*
- *What should be the role of the TEC?*
- *What should be the role of the industry/employer?*
- *What should be the role of the students?*

# INTERVIEW SCHEDULE for THE EMPLOYER

# PHD IN QUALITY ASSURANCE AND ASSESSMENT

# VIOLET NOMALANGA ESSILFIE

## PURPOSE OF THE STUDY

This study is carried out to fulfill the requirements of an independent PhD programme of study with the University of Pretoria. The purpose of this study is to explore possible roles of higher education, employability audits in higher education and employers in enhancing the knowledge and employability of Environmental Science (ES) students and graduates with the changing expectations of the world of work. The roles of the individual student will also be examined. Therefore, in order to find answers to the main research question which is "How do factors, Higher Education, employability audits within higher education and industry contribute (or do not contribute) to the employability of ES students and graduates?" We would like to interview you as one of the main participants in the study. As an employer of ES graduates, we would like to find out your views about how these graduates are prepared for the world of work and what you think can be done to enhance the employability of ES graduates.

The results of these interviews will be shared with the participants. The thesis will be available in the University of Botswana library and the Tertiary Education Council (TEC) library. In addition a consultative meeting will be organized at the TEC for all the stakeholders involved to come and deliberate on how to work together to help graduates of ES for the workplace.

**Tape Recording, Note-taking and Confidentiality**

The interview will be recorded on the tape recorder because it is important to capture the conversation correctly. The interviewee will also take notes as the interview progresses to keep track of the interview and ideas put forward.

However, strict confidentiality and anonymity will be kept. Nothing you say will be identified with you or traced back to you. You will not be identified by name except for record purposes for the interviewee to be able to identify the ideas from different participants.

**PART A:      BACKGROUND INFORMATION (questions with bullets are possible probes)**

**A1      What is your name and the name of the organization?**

- *(What is the mandate of your Organisation)?*
- *(Are you also a graduate of the Environmental Science programme from the University of Botswana?)*
- *(How many employees do you have in your Organisation?)*
- *(How many of these are Environmental Science graduates?)*

**A2      How do you advertise your vacancies?**

- *(Which media do you use more often that works for the organisation?)*
- *(Do you use the same strategies for recruiting ES graduates?)*
- *(How does one's social background affect them in getting a job?)*
- *(How would the institution they come from affect them in getting a job?)*

**PART B:      QUALIFICATION MATCH/MISMATCH**

**B1      To what extent are the ES programmes offered at the University of Botswana to meeting the needs of the organisation?**

- *(What changes would you recommend to be made in the programme as a whole?)*
- *(How can higher education and industry work together to set standards of programmes offered or when introducing new programmes?)*

**B2      What qualities do you look for in your prospective employees?)**

- *(And how do you match the profiles to your needs?)*
- 
- *(What value is attributed to skills versus qualifications in your organisation?)*
- *(How has this focus benefited or created problems for the organization?)*

- *(To what extent does the University of Botswana produce sufficient ES graduates?)*
- *(How has this affected the roles they play and work tasks?)*

**PART C:      WORKPLACE SKILLS AND APPLIED KNOWLEDGE (EMPLOYABILITY)**

**C1      What do you think about the quality of ES graduates you are getting?**

- *(How appropriately qualified and prepared for work are they and why?)*
- *(What kinds of skills, knowledge and competencies do they have or bring to the organization?)*
- *(Of these skills, knowledge and competencies which ones would you say are the most needed in your organisation?)*
- *(Which skills and knowledge do they lack?)*
- *(How trainable are they**?)***
- *How is the work environment changing in your organization?*
- *(Are ES graduates coping with this changing work environment?)*
- *(Do you think you need a new crop of graduates or the same graduates are doing well?)*
- *How would you describe the role of industry in preparing ES students for work?*
- *(In your opinion what do you think is the role of higher education in preparing students and graduates for work?)*
- *(What do you think graduates can do to enhance their own knowledge and skills to meet the needs of the labour market?)*

**C2      What employer-provided job training do you have for your employees?**

- *(What difference has the additional training made to the performance of graduates?)*
- *(In which areas would you say they need more training?)*
- *(How costly is this to the organization/industry)*
- *(Would you say re-training or upgrading of skills of these graduates is your responsibility?)*

**PART D:      EMPLOYABILITY AUDITS**

**D1      How do you think audits that focus on the work-readiness of graduates can be conducted to assist institutions produce graduates who are fit for purpose?**

- *(How do you think such activities would enhance the knowledge and skills of graduates?)*
- *(What should be the role of the industry such as yours in these audits?)*

- *(What should be the role of the Tertiary Education Council in this partnership?)*
- *(What should be the role of students?)*
- *(How would such activities benefit the organisation?)*
- *(Would you employ the graduates that get attached to your industry?)*
- *(Do you foresee such partnerships with the University in the near future?)*

**INTERVIEW SCHEDULE FOR THE EMPLOYEE**

**PHD IN QUALITY ASSURANCE AND ASSESSMENT**

**VIOLET NOMALANGA ESSILFIE**

**PURPOSE OF THE STUDY**

The purpose of this study is to explore possible roles of higher education, employability audits in higher education and employers in enhancing the knowledge and employability of Environmental Science students and graduates with the changing expectations of the world of work. The roles of the individual student will also be examined. The main research question is "How do the factors, Higher Education, employability audits within higher education and industry contribute (or not) to the employability of ES students and graduates?" We would like to interview you as one of the main participants in the study. As a graduate of ES, we would like to find out your views about how well you think the Department prepared you for the world of work, how competent you think you are and how the employer is assisting or has assisted you in fitting well in your job.

The results of these interviews will be shared with the participants. The theses will be available in the University of Botswana library and the TEC library. In addition a consultative meeting will be organized at the TEC for all the stakeholders involved to come and deliberate on how to work together to help students and graduates of ES for the workplace.

**Tape Recording, Note taking and Confidentiality**

The interview will be recorded on the tape recorder because it is important to capture the conversation correctly. The interviewee will also take notes as the interview progresses to keep track of the interview and ideas put forward.

However, strict confidentiality and anonymity will be kept. Nothing you say will be identified with you or traced back to you. You will not be identified by name except for record purposes for the interviewee to be able to identify the ideas from different participants.

**A. SOCIO-ECONOMIC BACKGROUND ( questions with bullets are possible probes)**

**A1    Name of participant and organization they work for.**

- *(How long have you been working in this industry/organization?)*
- *(Where is your home village?)*
- *(And where did you go to school?)*
- *(Are you the first graduate in your family?)*
- *(Do you have any preference in terms of the town/village where you want to work?)*
- *(Would you move to any location if you got a job there?)*
- *(Is this your first job?)*
- *(What was the most important factor that got you this job?)*
- *(How would you say people you know also play a role in you getting a job?)*

**B    JOB SEARCHING SKILLS**

**B1    How did you find this job?**

- *(Did you get help from relatives, friends or your lecturer?)*
- *How long did it take you to get this job?*
- *Why did you apply for this job?*
- *How would you describe your job searching skills?*
- *(Would you use the Internet to look for jobs?)*
- *How were you recruited into this job?*
- *Would you say these gave you a fair opportunity to get this job?*
- *Would you availability of jobs keep you longer in school?*
- *What would you say about the employment opportunities in Botswana?*

**C    QUALIFICATION MATCH/MISMATCH**

**C1    What is your job description?**

- *(How would you describe the work environment in this organization?)*

- *(How are you coping with this changing work environment?)*
- *(What qualities does the employer look for in your job?)*
- *(Which of those qualities do you possess?)*

**C2    How did your studies prepare you for your job?**

- *(How relevant are the ES programmes offered at the University of Botswana to the needs of this industry?)*
- *(Why did you choose this programme or qualification?)*
- *(Would you say this country needs more graduates like yourself in ES?)*
- *(How has this affected your finding work and the nature of work you are doing now?)*
- *(Are there other courses you think you should have done that would have prepared you better for this job?)*
- *(Are there any courses you did which you think are irrelevant to your job?)*

**C3    Would you say your qualification is the right one needed for the current job?**

- *(If not what are you going to do about it?)*
- *What qualification is most relevant for your job?*
- *What value is attributed to skills versus qualifications in your job?*
- *(How would you rate yourself in terms of qualification for this job and why?)*
- *(Would you accept a job in which you are not qualified for and why?)*
- *(How would that affect the skills you need for that job?)*
- *(How can institutions work with employers to make sure that graduates are appropriately qualified since this can be costly to both government and employers?)*

**D    WORKPLACE SKILLS AND KNOWLEDGE**

**D1    How employable are you as a graduate of ES from the University of Botswana in the changing workplace environment and why?**

- *(How well has the University prepared you for working in this industry/company?)*
- *(Did you go for internship or work-placements?)*
- *(What particular workplace skills, competencies and knowledge do you think you possess as an ES graduate?)*
- *(How were these taught or included in the curriculum?)*
- *(Which of these skills, competencies and knowledge do you think are the most needed in this job and why?)*
- *(Are these the skills employers require from graduates?)*
- *(How would you rate your knowledge needed for this job?)*
- *(How would you rate your skills and competenices?)*
- *(What do you do to make sure that your skills are up and in line with the rapidly evolving labour market requirements?)*

D2   **What employer-provided job training is offered to you as a graduate?**

- *(If any, how has it improved your work performance and delivery?)*
- *(Which areas did the training focus on?)*
- *(Whose responsibility do you think it is to prepare you for work?)*
- *(What about ES students and graduates, what role do they play?)*
- *(How does the department encourage students to take responsibility for their own employability?)*

**F      EMPLOYABILITY AUDITS**

F1   **How do you think audits that focus on the work-readiness of graduates can be conducted to assist institutions produce graduates who are fit for purpose?**

- *(How can such partnership be used to enhance the knowledge and skills of students and graduates?)*
- *(How do you think such activities can be introduced without making staff feel it is too much work?)*
- *(What role do you think the employer can play in such audits?)*
- *(What would be the role of the Tertiary Education Council?)*
- *(What role do you think students can play in these audits?)*

# ANNEXURE G: ETHICS CLEARANCE CERTIFICATE

# ANNEXURE H: DECLARATION OF ORIGINALITY