Assessment of the University of KwaZulu-Natal Bachelor of Agricultural Extension
Curriculum Implemented at Cedara College

by

John Sanzimwami Polepole

Thesis submitted in fulfilment of a Doctor of Philosophy in Agriculture
in the School of Agricultural Earth, and Environmental Sciences,
Agricultural Extension & Rural Resource Management Programme,
Faculty of Science and Agriculture,
University of KwaZulu-Natal,
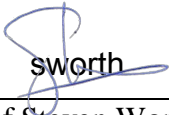Pietermaritzburg

December 2018

DECLARATION

I declare that the thesis hereby submitted in fulfilment of a Doctor of Philosophy in Agriculture in the School of Agricultural Earth, and Environmental Sciences, Faculty of Science and Agriculture, University of KwaZulu-Natal, Pietermaritzburg is my own independent work and has not been submitted by me at another university or faculty.

	21/12/2018
John Sanzimwami Polepole	Date

	21/12/2018
Prof Steven Worth	Date

ABSTRACT

This study assessed the effectiveness of Bachelor of Agriculture in Agricultural Extension and Rural Resource Management (BAgricExt) qualification of the University of KwaZulu-Natal (UKZN), implemented at Cedara College of Agriculture. Any academic programme aiming to achieve success requires regular assessments of its activities to determine areas that need to change or improve. The BAgricExt is considered as one of the potentially pivotal qualifications in agricultural education with a direct link to farmers and primary production.

The impact of Agricultural Education and Training (AET) is and will remain considerable in the South African landscape. It is contributing substantially to provide knowledge and skills for production of food and fibre which, in turn adds value to the country's economy. The quality of education provided in the agricultural field will determine the graduates' efficiency and ability to contribute to the increase in quality, quantity and efficiency of food and fibre production countrywide.

The primary research is presented under three main topics in the form of publishable articles. The first one establishes a framework to assess an undergraduate qualification of any kind. Different elements (input, process, outcomes and influencing factors) to be assessed in the undergraduate qualification are suggested and the most important area to consider as far as qualification performance is concerned are specified. This led to developing a model of assessing an undergraduate qualification. The model is called: ITAPP (Intake, Teaching and Learning, Access to facilities, Performance, and Placement) model. The second paper describes the learning outcomes required to enable graduates to serve effectively as extension practitioners to

build the capacity of farmers. In addition to extension theory and practice, the areas of learning include agricultural production, natural resource management, farm business management, and farm engineering. The third part of the literature review establishes a framework showing how better learning can be acquired specifically in the BAgricExt.

A qualitative approach, consisting of interviews and focus group discussions with various categories of participants purposefully chosen was followed to collect data. The study was conducted among 65 UKZN students, nine lecturers, three administrative officers and seven potential employers of BAgricExt graduates. With this sample, it was possible to obtain qualitative data and more insights into the research question based on the experiences and knowledge of respondents.

Using the ITAPP framework, the learning outcomes required for BAgricExt were established. Learning outcomes were presented based on level descriptors as recommended by the South African government (Higher Education), and determined the environment, including safe-guarding quality assurance, conducive to successful completion of the qualification. With reference to the research objective, the study found that the BAgricExt programme with its present curriculum is operational and has a clear delivery and support system that is sustainable. BAgricExt programme allows students to start and finish being well-grounded, with substantial knowledge and skills (theory and practice) in Agricultural Extension, agricultural production, farm business management, resource management and farm engineering. Specifically, against the ITAPP framework, the study found that the BAgricExt was successful on two core elements: 'Teaching and Learning; and 'Performance'. While this places the programme on a solid footing, the study determined a need for greater efficiency in the other elements of the framework (Intake, Access to Facilities, and Placement) – which, the study suggests can be improved by

taking into considerations the recommendations drawn from this study – particularly regarding the "placement" element.

The study recommends to the BAgricExt to give more attention to placement and look at the ways that it increases prospects of a livelihood either as an employee or through self-employment. The degree should be more directly centred on '*where the graduate is going*' and how the graduate will gain a living by using the competences acquired in the programme. A model was developed for this purpose, and a revised framework presented to evaluate the BAgricExt in prospect of a livelihood - it is called "Placement-Centred Intake to Performance (PCIP) Framework". It is anticipated that through this shift in focus the BAgricExt will be substantially strengthened.

PREFACE

The present study was conducted between 2012 and 2015 at the University of KwaZulu-Natal, School of Agricultural, Earth and Environmental Sciences, Agricultural Extension and Resource Management Programme. Most of the work was done at Cedara College of Agriculture, where the BAgricExt programme is located. The source of inspiration for this thesis is my involvement in the teaching under the BAgricExt programme and the eagerness to learn more about academic curriculum, which took root during my master research.

Due to student unrest and xenophobia-related incidents with immediate effect on family of the researcher/candidate, the completion of the study was delayed for about 18 months – part of which involved relocation as refugees.

Special thanks for this study is addressed to my supervisor, Prof Steven Worth, for his outstanding contribution, his humility, patience and caring. Also, I would like to thank my family and friends for being supportive and understanding during my research time at the University.

DEDICATION

I dedicate this thesis to

My wife Niclette Ngombo Kambu for her support, encouragement, and constant love,

My children Gabriela, Abigail and Daniel, I owe you so much,

May the hand of Almighty God continues be upon you.

ACKNOWLEDGEMENT

Table of Contents

List of tables and figures

Tables

Chapter 1:
Table 1.1: Students sampling
Table 1.2: Focus group participation
Table 1.3: List of modules taught in BAgricExt programme
Table 1.4: Administrative staff from UKZN and Cedara College in charge of intake
        process
Table 1.5: Employers interviewed and their respective institutions

Chapter 3:
Table 3.1: Undergraduate qualifications in AET at HE
Table 3.2: Agricultural Extension Competence exit-level outcomes

Chapter 5:
Table 5.1: Entrance requirements for BAgricExt programme
Table 5.2: National Senior Certificate (NSC) Points Calculation
Table 5.3: APS from students from 2010 to 2015
Table 5.4: Number of students who did not remember their APS
Table 5.5: Marks scored for main subjects
Table 5.6: Familiarity with entrance requirements (from students)
Table 5.7: Student's perceptions about application process
Table 5.8: Student's perceptions about registration process
Table 5.9: Perceived reasons for manageability of the registration process
Table 5.10: Source of funding for BAgricExt students
Table 5.11: Intake numbers in BAgricExt from 2010 to 2015

Chapter 6:
Table 6.1: Time spent per week for academic activity

Figures

List of abbreviations

Acronym	Meaning
AACU:	Association of American Colleges and Universities
ACT:	African Conservation Trust
AERRM:	Agricultural Extension and Rural Resource Management
AET:	Agricultural Educational Training
AGRI151:	Farming Systems
AGRI152:	Agricultural Production
AGRI261:	Field Crop Production
AGRI265:	Intensive Livestock Production
AGRI266:	Forage Livestock Production
AGRI267:	Plant Propagation
ANC:	African National Congress
APS:	Accumulated Points Score
BAgric:	Bachelor of Agriculture
BAgricExt:	Bachelor of Agriculture in Extension
BScAgric:	Bachelor of Science in Agriculture degree
BTech:	Bachelor of Technology
CAO:	Central Applications Office
CCC:	Cedara Centenary Complex
CEO :	Chief Executive Officer
CERI :	Center for Education Research and Innovation
CHE :	Council on Higher Education
CIPP:	Context, Input, Process and Product
CSU:	Cedara Student Union
DAFF:	Department of Agriculture, Forestry and Fisheries
DHET:	Department of Higher Education and Training
DoA:	Department of Agriculture
DoE:	South African National Department of Education
ETQA:	Education and Training Quality Assurance Bodies
ETQAs:	Education and Training Quality Assurance Bodies
EXTN161:	Rural Wealth Creation
EXTN162:	Rural Economic System
EXTN261:	Extension Methods
EXTN262:	Extension Practice
EXTN371:	Designing Extension Project
EXTN372:	Participatory Extension
EXTN373:	Extension Placement
FANRPAN:	Food Agriculture and Natural Resource Policy Analysis Network
FBMT151:	Production Economics and Marketing
FBMT262:	Farm Business Management
FBMT371:	Farm Finance
FRME153:	Farm Infrastructure

FRME262:   Farm Development
HE: Higher Education
HEQC: Higher Education Quality Committee
HEQSF: Higher Education Qualifications Sub-Framework
HESA: Higher Education South Africa
HET: Higher Education and Training
HSRC: Human Sciences Research Council
ID: Identification
IMHE: Institutional Management in Higher Education
IT: Information Technology
ITAPP   Intake, Teaching and Learning, Access to facilities, Performance, and Placement
KN-P-BAC: CAO code for Bachelor of Agriculture (Extension and Rural Resource Management)
LAN: Local Area Network
N.D: Not Dated
NGO: Non-Government Organisation
NQF: National Qualifications Framework
NSB: National Standards Bodies
NSC: National Senior Certificate
NSFAS: National Student Financial Aid Scheme
NSH: Notional Study Hours
OBE: Outcomes-based education
PMB: Pietermaritzburg
PMS: Performance Management System
RMGT151:   Natural Resources
RMGT152:   Impact on Natural Resource
RMGT262:   Land Preparation
RMGT371:   Land Use Planning
SAQA: South African Qualifications Authority
SETAs: Sector Education and Training Authorities
SETAs: Sectoral Education and Training Authorities
SGB: Standards Generating Bodies
T&L: Teaching and Learning
UCF: University of Central Florida
UKZN: University of KwaZulu-Natal
WESSA: Wildlife Environment Society of South Africa

Chapter 1: General Introduction

1.1. Background to the study

South Africa has one of the highest rates of public investment in education in the world. About 20% of total state expenditure is allocated to education (Department of National Treasury, 2014). As a part of the educational programme, developing agricultural knowledge is considered the basis for the country's sustainable development and food security. In this context, it is argued that an effective Agricultural Educational Training (AET) system should be responsive to the needs of the sector (DoA, 2005).

Worldwide, the demands on AET programmes are growing rapidly, and programmes in many countries are unable to generate the human resources needed to meet the world's agricultural requirements. To resolve this, AET programmes need to develop and implement curricula that will offer training in a variety of competencies in agriculture (Maguire, n.d). In South Africa, agriculture has a negative image as a career choice in the eyes of most youth. To combat this, there is considerable motivation from the government to inspire young people, especially those from historically disadvantaged backgrounds, to study agriculture and thereby fill the gap between the potential found in land that is under-utilised and people who were excluded from the main agricultural economy. AET programmes can equip these youth with appropriate knowledge and skills, and enable them to be involved in the process of developing agricultural sector in the country (FANRPAN, 2012).

For many years, formal AET in South Africa was very poorly coordinated, both in terms of content and qualification of educators – particularly for the previously disadvantaged. Some argued that it was overly content driven, and insufficiently learning driven. Therefore, South Africa AET policy stressed the importance of identifying the constraints in providing AET to meet provincial, national, regional and global challenges in agriculture – particularly with regard to human resource development (DoA, 2005).

Taking into account the fact that all humans possess learning capabilities, higher education institutions should find ways to improve every student's talents and define the way each student could take to succeed (Barr and Tagg, 1995). Therefore, the most important factors shaping the learning and progress of students is the quality of teachers' education. If that is established, acquisition of knowledge can become a reality through quality education. But research-led curriculum was rare.

With the express intention of developing a curriculum that was grounded in evidence-based research, over the course of several years, the University of KwaZulu-Natal (UKZN) investigated the development of an appropriate curriculum for its three-year Bachelor of Agriculture in Extension and Rural Resource Management (BAgricExt). The qualification was originally created to provide quality human resources for agricultural and rural development. Its roots are in experiential learning, systems thinking and discovery learning. Five years of research into curriculum, Agricultural Extension, agricultural policy and educational policy, as well as involvement in the evolution of South Africa's agricultural colleges, led the Agricultural Extension and Rural Resource Management unit of UKZN to develop a unique three-year BAgricExt in partnership with a practical agricultural college (Cedara College of Agriculture

(Cedara)) with a curriculum specifically designed to contribute to the fulfilment of the transformational policies for South African agriculture (Worth, 2009). The UKZN BAgricExt was launched in 2010; located at Cedara (with a working farm) where students reside and attend classes.

After five years in operation, there was a need to assess the programme.

1.2. Research Question

The study focuses on the University of KwaZulu-Natal Bachelor of Agriculture degree in Extension (BAgricExt). The research question explored and assessed the effectiveness of Bachelor of Agriculture newly-implemented at Cedara College of Agriculture – that is, to what extent has the BAgricExt met its objectives? The primary research is presented under three main topics structured as journal articles. They answer the three secondary questions evolved from the main question:

a. What is an appropriate framework to assess an undergraduate qualification?

b. What are the learning outcomes required for a Bachelor of Agricultural Extension qualification in South Africa?

c. How can learning acquired in the BAgricExt be improved?

1.3. Research Objectives

The objectives of this study were to:

a. Identify the established curriculum of BAgricExt that is operational;

b. Identify and describe the collaboration between UKZN – Cedara with particular reference to the BAgricExt;

c. Identify weaknesses and strengths of the BAgricExt and ways of overcoming challenges identified;

d. Establish the technical components of the programme/system that are sustainable;

e. Identify and/or develop learning outcomes resulting in integrated actions on the field (grounding extension officers with strong agricultural knowledge based on theory and practice); and

f. Determine how to improve the efficiency of BAgricExt in meeting its objectives.

1.4. Methodology and techniques

The study was conducted using a qualitative approach undertaken with a well-informed sample of people to address the research question. It determines how people experiencing certain conditions will define what they are going through (Roller, 2017). Interviews were conducted to obtain qualitative data and to get more insight into the research question. The researcher was able to gain the opinions of respondents based on their experiences and knowledge. The interviews took place after completing a literature review and developing to the theoretical framework that guided the rest of the study. The fieldwork was conducted among UKZN BAgricExt students (current and graduated), lecturers and administrative officers, as well as among potential employers of BAgricExt graduates. The participants were purposefully chosen. This form of selection, uses the criterion 'fit for the purpose', meaning that only respondents that are

appropriate for the research must be selected to partake into the study (Mthembu, 2003). For example, lecturers in the BAgricExt programme were considered because they were in a good position to provide relevant information as far as teaching and learning is concerned within the BAgricExt programme. Other participants were similarly selected.

1.4.1. Techniques for data gathering

Techniques used to gather data consisted of literature reviews to establish the theoretical framework for the study, surveys using questionnaires, semi-structured interviews, and focus group discussions. Questionnaires were used to obtain the perceptions of students and lecturers on the five different main areas of the theoretical framework proposed by the study to assess the performance of undergraduate qualifications. These areas were: (1) Intake; (2) Teaching and Learning; (3) Access to Facilities; (4) Performance; and (5) Placement. The interviews were conducted with employers and administrative staff with the aim to generate more detail on (1) intake and (5) how graduates are performing in the work place. The focus group discussions were used to validate answers given in the questionnaires from students.

1.4.1.1. Literature review

The literature review explored books, journals and other sources and documents (e.g. university and government documents) some of which were accessed through the Internet, and was used to give a broad understanding and develop theoretical frameworks that informed the research design, the structure and content of questionnaires and interview/focus group schedules and the framework for recording and analysing data. The focus of the review was education research and theory with particular reference to agricultural education.

1.4.1.2.   Questionnaires

Five questionnaires were used: one to interview current first-year students; one to interview current second-year students; one to interview current third-year students; one to interview graduates (employed and unemployed); and one to interview lecturers. The questionnaires for current students and employed graduates was comprised of five common sections. The first section dealt with demographics; the second section was about the intake process and funding; the third section addressed the question on the teaching and learning process; the fourth section covered the questions on student performance; and the fifth section investigated access, use and value of facilities (see questionnaires in Appendices 1, 2 and 3). The questionnaires for the different years of registration varied based on the level descriptors on each level of learning NQF levels 5, 6 and 7. See Section 3.2) and was applied to the 'performance' element of ITAPP. The questionnaire for employed graduates had a sixth section to explore the "placement" element of the ITAPP framework to establish the extent of relevance of the competences taught to their respective work-places (Appendix 4).

The lecturers' questionnaire covered three sections. The first section addressed the details of the module taught by lecturer; the second section dealt with the questions related to the perceptions of lecturers for the Programme (BAgricExt / UKZN – Cedara), and the third section asked general questions on teaching and learning (Appendix 5).

1.4.1.3.   Semi-Structured Interviews

Semi-structured interviews were used to collect information from employers and administrative staff at UKZN who were involved in aspects of the Intake process for the BAgricExt. Key

questions were developed to generate qualitative data via open-ended questions "designed to encourage a full, meaningful answer using the subject's own knowledge and/or feelings" (Mugo, 2007: n.p.). The question guides for employers and administrative staff are found respectively in Appendices 6 and 7. For employers, the aim was to find out how graduates are performing in their respective institutions and any areas of improvement to suggest to academic institutions (i.e. UKZN) for future graduates. For administrative staff, the aim was to understand the intake process for the BAgricExt students by looking at the entry requirement; recruitment and selection process; registration process; accommodation and tuition fees.

1.4.1.4. Focus Group Discussions

Three focus group discussions were conducted with small groups of students taken from the larger group. Participants were purposefully selected. For each level, three categories of students were selected: students with high, average and lowest class marks to allow validation of information and better representation of opinions.

1.4.2. Data Analysis

Data were analysed using Microsoft Excel for interpretation. A coding system was established through a structured analysis of answers on the questionnaires. Similar answers were identified and classified into themes which correlated with the main research question. Then, summaries were presented in tables and then into paragraphs to produce the actual write-up. This process took root based on the data analysis spiral described by Creswell (1998) in Leedy and Ormrod (2005) in Figure 1.1.

Each category of answers was decoded in numeric terms expressed as percentages to show how strongly respondents agreed or disagreed with a particular issue (question); this process facilitated a good flow in presenting and discussing data, by making it clear and simple to understand.

The Final Report

Synthesis
. Offering hypotheses or propositions
. Constructing tables, diagrams, hierarchies

Classification
. Grouping the data into categories or themes
. Finding meanings in the data

Perusal
. Getting an overall "sense" of the data
. Writing down preliminary interpretations

Organisation
. Filling
. Creating a computer database
. Breaking large units into smaller units

The Raw Data

1.4.3. Research area and sampling

The study area of this research consists of Cedara College of Agriculture and the University of KwaZulu-Natal (Pietermaritzburg Campus). These two educational institutions were chosen because Cedara is where BAgricExt is offered, and Pietermaritzburg is where the majority of the administration for the qualification is offered.

Research was conducted among UKZN students, lecturers and administrative officers as well as among potential employers of BAgricExt graduates. The sample size consisted of 65 students, nine lecturers, three administrative staff and seven employers. It was crucial to consider these groups for the purposes of triangulation, which is an application and combination of more than one research perspective in the study of the same phenomenon. It helps in the confirmation of findings through convergence of different perspectives and hence clarifies issues better than using a single-observed research and serves to validate the data (Beckett & Turner, 2009). The first two groups (students and lecturers) were administered questionnaires, and the others (administrative staff and employers) were interviewed using semi-structured interview schedules.

The BAgricExt programme was the focus of the study, therefore the sampling comprised all 99 of the students registered for the BAgricExt since 2010 (the year BAgricExt programme shifted to Cedara) up to and including 2015. All of them were sent questionnaires; however, 65 students responded giving an overall response rate of 65.7%. The frequency and corresponding response rates for students in first year, second year and third year at the time of the study, as well as those who had graduated, and who were either currently employed or unemployed are shown in Table

1.1. Most response rates were very high, with the exception the unemployed graduates which was at 31.1%.

Table 1.1: Students sampled and response rates

Levels	Total number of registered students (questionnaires out)	% of population	Total number of students visited (questionnaires in)	Response rate
First Year	17	26.2%	17	100%
Second Year	15	21.5%	14	93.3%
Third Year	20	20.0%	13	65%
Graduates Employed	15	16.9%	11	73.3%
Graduates Unemployed	32	15.4%	10	31.1%
Total	99	100%	65	65.7%

Three focus group discussions were organised with six to nine students purposefully chosen from the groups listed in Table 1.1 to validate the answers given in the questionnaires. One focus group with employed graduates was cancelled due to unavailability of participants (see table 1.2).

Table 1.2: Focus group participation

Levels	Total number of students present for focus group	% of population
First year	9	40.1%
Second Year	6	27.3%
Third Year & Graduates unemployed	7	31.8%
Graduates employed	0	0
Total	22	100%

For lecturers, all those teaching on the BAgricExt were given a questionnaire to fill according to the modules they taught, except the researcher on this study who was teaching three modules in the programme; he was excluded to avoid bias in the study. The total number of modules in the programme is 22, meaning 19 questionnaires were distributed to lecturers of these, nine (9) were

returned giving a response rate of 47.4%. The accounting of questionnaires distributed and returned is presented in Table 1.3.

Table 1.3: List of modules taught in BAgricExt programme

Year	Semester	Module	Questionnaire distributed	Questionnaire returned
1	1	Farming Systems (AGRI151)	YES	YES
		Natural Resources (RMGT151)	YES	YES
		Farm Infrastructure (FRME153)	YES	YES
		Rural Wealth Creation (EXTN161)	NO	N/A
	2	Agricultural Production (AGRI152)	YES	NO
		Production Economics and Marketing (FBMT151)	YES	NO
		Impact on Natural Resource (RMGT152)	YES	YES
		Rural Economic System (EXTN162)	YES	NO
2	1	Intensive Livestock Production (AGRI265)	YES	YES
		Plant Propagation (AGRI267)	YES	YES
		Farm Business Management (FBMT262)	YES	YES
		Land Preparation (RMGT262)	YES	NO
		Extension Methods (EXTN261)	NO	N/A
	2	Forage Livestock Production (AGRI266)	YES	YES
		Field Crop Production (AGRI261)	YES	NO
		Farm Development (FRME262)	YES	NO
		Extension Practice (EXTN262)	NO	N/A
3	1	Designing Extension Project (EXTN371)	YES	NO
		Participatory Extension (EXTN372)	YES	NO
	Year long	Farm Finance (FBMT371)	YES	YES
		Extension Placement (EXTN373)	YES	NO
		Land Use Planning (RMGT371)	YES	NO
		Count	19	9 (47.4%)

The administrative staff included in the study were the ones who were dealing directly with the intake process of BAgricExt students for both institutions (UKZN and Cedara College). This was required because students participate in two parallel intake activities. Two administrative officers were interviewed at UKZN and one at Cedara College (Table 1.4)

Table 1.4: Administrative staff from UKZN and Cedara College in charge of intake process

Institution	Position of participant
UKZN	Manager Academic services
UKZN	Principal Academic Admin officer
Cedara College	Administrative Clerk

For employers, the interviews were conducted at 7 institutions where BAgricExt graduates were employed at the time of the study. Institutions were purposefully chosen taking into account their location to the study area (table 1.5).

Table 1.5: Employers interviewed and their respective institutions

	Name of Institution	Position of participant
1	Institute of Natural Resources	Principal Scientist
2	WESSA (Wildlife Environment Society of South Africa)	Project Manager & Human Resource Manager
3	LIMA Rural development foundation	Managing Director & Human Resource Officer
4	Mahlathini Organics	Director
5	Save ACT	Director
6	African Conservation Trust (ACT)	CEO
7	Umfolozi Sugar Mill	Manager

The field research was designed more fully following a thorough review of relevant literature to establish a comprehensive understanding of the pertinent issues and to create a rigorous theoretical framework for the study. All the data collected was processed and analysed using the tools appropriate for qualitative studies and, where relevant, appropriate statistical tools.

1.5.   Expected outcomes of the study

The following outcomes were expected from the study:

1. Description of the curriculum of BAgricExt that is operational at UKZN;

2. Analysis of the collaboration between UKZN – Cedara

3. Establish existence of learning outcomes resulting in integrated actions on the field (theory and practice)

4. Identifying weaknesses and strengths of the programme highlighted and ways of overcoming challenges identified.

1.6.   Significance of the study

The study will deliver important information about the current UKZN B.Agric programme / curriculum and suggest what can be done to reinforce training under the qualification; this will depend on findings, comment of participants and analysis of the current situation. In addition, it will provide an academic framework for evaluating a Bachelor of Agriculture curriculum, which will be beneficial for tertiary institutions and ultimately for the state.

The outcomes of this research can contribute to the improvement of teaching and learning on tertiary level. As stressed by Kwarteng (2000), agricultural education is facing challenges such as weak connections with other parts of the agricultural system (colleges, vocational schools, farmer training networks, etc.) and the high unemployment of graduates from universities due to lack of relevance of curriculum. This is why it is crucial to evaluate the design and effectiveness of this learning programme/curriculum and to get a good understanding of it purpose and outcomes, and their relevance to the workplace. The present work focuses on a tertiary qualification as a means of helping UKZN and other institutions offering similar qualifications that need to grasp issues and problems faced by agricultural practitioners and look ways of improving AET programmes to address them. Specifically, one of the key components of South

African government is to improve lives of people through agriculture, which can be reached if only a suitable approach can be taken in Agricultural Extension education to train personnel who will be charged with implementing transformational policy (Worth, 2008).

1.7.   Limitations of the study

The research studies only on the BAgricExt programme offered in the School of Agricultural, Earth and Environmental Sciences, in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal implemented in collaboration with Cedara College of Agriculture. It is, thus, a case study where a sample was drawn which is, by design, not statistically representative. Therefore, the opinions of participants may not represent the majority's views within the UKZN or Cedara. Further, while the findings may contribute to the growing body of knowledge regarding the offering AET, they cannot be generalised. A specific limitation was that there was a delay during the fieldwork, by some respondents in answering the questionnaires (mostly by lecturers) and there were many postponements of appointments due to their busy schedules, resulting in a poor return of questionnaires/feedback (47%); the same thing happened with employers as well. Given time and financial limitations and the location of some employers being far from the research base, the researcher could not follow up with all of them. Greater insight could possibility been gained by getting more opinions (through a better response rate).

1.8.   Thesis presentation

This thesis is structured in eight chapters where 6 chapters are presented as journal articles (Chapters 2 to 7), while Chapter 1 (this chapter) has served as the introduction, and Chapter 8

will present the discussion, conclusion and recommendations. The chapters presented in journal article format will appear in their publication format, therefore there are some inevitable repetitions of information and overlaps of themes; and each chapter has its own references The chapters (starting with Chapter 2) are presented as set out below.

Chapter 2: Establishing a framework for assessing undergraduate qualification

This chapter is a literature review and ultimately proposes ITAPP (Intake, Teaching and Learning, Access to facilities, Performance, and Placement) as a model of assessing undergraduate qualifications.

Chapter 3: Learning outcomes required for a Bachelor of Agricultural Extension qualification in South Africa

This chapter is a literature review presenting a description of the learning outcomes required to enable a graduate to serve effectively as an extension practitioner to build the capacity of farmers.

Chapter 4: How best to learn in the Bachelor of Agricultural Extension qualification

This chapter is a theory paper establishing a framework showing how better education (learning) can be acquired in the BAgricExt.

Chapter 5: Results for the intake process

This chapter presents the findings about how a place in BAgricExt programme is made available to students; the requirements to apply; the steps to follow for application and registration; the funding of studies; and strengths and weaknesses for intake process. It presents the findings relevant to the "I" in the ITAPP model.

Chapter 6: Results for Teaching and Learning

This chapter provides findings on general perspectives for Teaching and Learning in BAgricExt with specific attention to interaction among students, relevance of modules content, modules interrelation, workload, time allocated to academic activities, language issues, and strengths and weaknesses about Teaching and Learning. It presents the findings relevant to the "T" in the TTAPP model.

Chapter 7: Results for access to facilities, and performance in BAgricExt programme

This chapter presents findings on two sections. The first section is the access to facilities, presenting result on how BAgricExt students have access to available resource at Cedara. The second section is about performance of students, covering the performance in the key competencies of BAgricExt; the assessment of performance against level descriptors; and students' performance in the five learning areas. It presents findings relevant to the "A", and first "P" in the ITAPP model.

Chapter 8: Results for placement of BAgricExt graduates

This chapter present the result about placement of BAgricExt graduates. It provides the perspectives of employers and graduates about placement. The section highlights what graduates identified as important skills required to perform their duties. It presents findings relevant to the second "P" in the ITAPP model.

Chapter 9: Discussion, Conclusion and Recommendations

This chapter provides a general discussion (particularly of Chapters 6 and 7). It also presents conclusions, recommendations and suggestions for future research.

References

Barr, R.B. and Tagg, J. (1995), From Teaching to Learning - A New Paradigm for Undergraduate Education, Change Magazine, Vol. 27(6), Taylor & Francis Group, Philadelphia, pp. 12-25. http://www.maine.edu/pdf/BarrandTagg.pdf. Accessed January 2015.

Beckett, S.B and Turner, G. (2009) Triangulation: How and Why Triangulated Research Can Help Grow Market Share and Profitability http://www.beckettadvisors.com/ pdfs/09_may_white_1.pdf. Accessed August 2015.

Department of National Treasury (2014). Budget Review 2014: National Treasury Republic of South Africa. Communications Directorate National Treasury, Pretoria.

DoA (South African National Department of Agriculture) (2005). National Education and Training Strategy for Agriculture and Rural Development in South Africa (AET Strategy). Department of Agriculture, Pretoria. http://www.nda.agric.za/doaDev /sideMenu/ educationAndTraining/AET_strategy.pdf. Accessed August 2015.

Food Agriculture and Natural Resource Policy Analysis Network (FANRPAN) (2012). Current and Emerging Youth Policies and Initiatives with a Special Focus on Links to Agriculture: South African Case Study Draft Report.

Kwarteng, J.A. (2000). *Extension education: Reshaping African Universities and challenges for 21st century*. Centre for Applied Studies in International Negotiations.

Leedy, P.D. and Ormrod, J.E., (2005). *Practical research: Planning and design*, 8th Edition. Pearson Education, New Jersey.

Maguire, C.J (n.d). Agricultural innovation systems: an investment sourcebook Agricultural Education and Training to Support Agricultural Innovation Systems. http://siteresources.

worldbank.org/INTARD/Resources/335807-1330620492317/9780821386842_ch2.pdf. Accessed June 2014.

Leedy, P.D. and Ormrod, J.E., (2005). *Practical research: Planning and design*, 8th Edition. Pearson Education, New Jersey.

Mthembu, D.E. (2003). Investigating the role of Ezemvelo KZN-Wildlife in Environmental Impact. Pietermaritzburg, University of KwaZulu-Natal. Unpublished thesis for Master of Environment and Development.

Mugo, F.W. (2007): Sampling in Research. www.socialresearchmethods.net/tutorial/Mugo/tutorial.htm. Accessed August 2015.

Roller, M.R. (2017). Qualitative Research: A Collection of Articles from Research Design Review.http://www.rollerresearch.com/MRR%20WORKING%20PAPERS/Qualitative%20 Research%20-%202016.pdf

Worth, S.H. (2008). An assessment of the appropriateness of Agricultural Extension education in South Africa. PhD thesis. School of Environmental Sciences, Faculty of Science and Agriculture.

Chapter 2: Establishing a framework for assessing undergraduate qualification

The aim of any qualification is to meet its academic objectives through the successful implementation of its associated activities. The implementation of the processes associated with the qualification needs to be monitored in order to know how well the qualification is meeting its objectives. The assessment requires a method of regular collection of data that needs to be analysed and utilised accordingly to improve student learning (University of Central Florida, 2005) because when student learning improves, it is an indicator of the programme's success. A qualification is (or should be) designed to produce outcomes on different levels within a certain timeframe following the vision and objectives of the programme where the qualification is offered. If the qualification is not evaluated against is objectives, then there can be no certainty of its efficacy or success.

This chapter will discuss different parameters of success for an academic programme, especially for an undergraduate qualification. This is done with the aim of establishing a framework for

evaluating a qualification. Throughout the chapter, the concepts "assessment" and "evaluation" will be considered in the same context. It will highlight the evaluation of undergraduate qualifications, why a qualification need to be evaluated, for what reasons, what elements to look at when evaluating an undergraduate qualification, how to conduct the evaluation, by whom and what should be evaluated. The chapter will also present some factors influencing student performance, the challenges expected in the evaluation process, as well as what to do with the results.

2.1. Understanding the evaluation of undergraduate qualifications

As a precursor to discussing evaluating qualifications, it is useful to look first at an undergraduate qualification as a complete and independent system. A qualification is an educational programme that gives opportunities to students to improve their intellectual capabilities and potential leading to individual, physical, emotional and social wellbeing. In addition to engaging students with specific content, it should help students to think creatively and critically, and make informed judgments. All these elements put together are expected to produce a positive result (Department of Education, 2004). One such result would be preparing the student to engage in a livelihood. Hence evaluation becomes imperative.

The concept "assessment" is used in many instances when there is a need to examine the activities carried out in order to determine if a plan was implemented as intended and the desired target reached. This chapter has adopted the definition of assessment as posited by the University of Central Florida (UCF, 2005: 2), which it developed drawing on Huba and Freed (2000), Hutchings and Marchese (1990), and Palomba and Banta (1999), defining assessment as:

"systematic and ongoing method of gathering, analyzing and using information from measured outcomes to improve student learning".

This definition applies to assessing both student learning and the performance of a qualification. However, for the purposes of this chapter it is used only in the latter context, where the process informs the institution of how well it is meeting its objectives.

Since the aim of undergraduate qualifications is to provide specific education and learning, assessment would have little value if it did not contribute to that aim. Although aimed at improving the implementation of the qualification, the assessment should ultimately contribute to better learning among its students (James, 1998).

Assessing an undergraduate programme has an overriding purpose: to improve decision-making that enables the programme to respond to students' needs and lead to improvement in their economic, social, and environmental conditions (Snoke, 2003). Further, programme assessment requires great care, including meticulous procedures, as the decisions made can have a significant impact on the well-being of many people in the current and future generations (Sanders, 2000).

2.1.1. Purpose of evaluating an undergraduate qualification

For an educational programme to be successful, it needs to be evaluated to determine the quality of the programme, if there is a need for improvement and how it can be improved (Sanders, 2000). There are four main purposes of programme assessment (UCF, 2005): to "improve" the

programme where the results of assessment are used to develop or improve the existing programme in terms of student learning, curriculum content, and attending processes; to "inform" the faculty and other decision-makers about the impact and contributions of the programme; to "prove" to the faculty, staff, students and outsiders what the programme has achieved; and to "support" strategic planning, accountability, accreditation and similar processes (UCF, 2005).

As students are at the centre of educational programmes, assessment should start at student level (Association of American Colleges and Universities (AACU), 2004). In this instance, student-level assessment refers to tracking student performance as a function of the quality of teaching and learning (not to the feedback given to students in the course of their studies). This will assist the faculty members responsible for the programme and its overall educational experience to be aware of how well students are learning, identify challenges they face, and identify areas that need to be improved. This will also facilitate periodic reporting to external stakeholders about student and programme performance (AACU, 2004).

With the assessment done on student level, the information collected will be used by teachers to adjust teaching activities to meet the programme standards and student learning needs. On the programme level, this information will be used to identify the strengths and weaknesses on different levels (student, teacher, school and programme level) so strategies can be developed to change or improve things as required (CERI, 2008).

2.2.   Toward a theoretical framework for evaluating an undergraduate programme

It is suggested that there are three key elements included in a framework for evaluating any programme: Who should conduct the evaluation; Who should be included in the evaluation; and What should be evaluated. To determine these, it is helpful to briefly discuss various approaches to programme evaluation.

2.2.1. Approaches to programme evaluation

Worth (2009:89), noted that educational evaluation methods have evolved considerably over the last 50 years. As many as "22 approaches to the evaluating of educational and related programmes can be identified and described" and can be grouped into four broad categories:

- Pseudo evaluations;

- Quasi-evaluation studied using Questions/Methods-oriented evaluation approaches;

- Improvement/Accountability-oriented evaluation approaches; and

- Social Agenda-directed/Advocacy approaches.

Pseudo evaluations are not genuine evaluations. They are more in the line of public relations efforts to make a programme look perhaps better than it is. Quasi-evaluation studies use recognised methodologies, but "the methodologies and questions may not be appropriate to

produce information which can actually substantiate claims. They tend to focus on a few, pointed questions and avoid a broad assessment of something's merit and worth. They are quasi-evaluations because they occasionally, more by accident than by design, provide a substantive assessment. They should be used and weighed critically" (Worth 2008:90).

Improvement/Accountability-oriented evaluation approaches use quantitative and qualitative methods to look at programmes from the point of view of stakeholders. They cover technical as well as economic factors. They look for outcomes that are relevant to the stakeholders, and not only the obvious programme objective. The aim is either to improve the programme or make it accountable. These approaches offer rigorous and verifiable data providing a basis for genuine and effective assessment (Worth 2008).

Social Agenda-directed/Advocacy approaches seek specifically to ensure that programmes contribute to the betterment of society. They tend to be participatory and inclusive with the intention of "equal access by all stakeholders". They are "bias toward the disadvantaged, educational and social opportunities and service" (Worth 2008: 90).

Similarly, Karatas and Fer (2009: 48) identify six groups of evaluation approaches objectives-oriented, management-oriented, consumer-oriented, expertise-oriented, adversary-oriented and participant-oriented approaches":

- Objectives-Oriented Approach

- Management-Oriented Approach

- Consumer-Oriented approach

- Expertise-Oriented Approach

- Adversary-Oriented Approach

- Participant-Oriented Approach

The focus of the objectives-oriented approach is to specify goals/objectives and determine the extent to which those goals/objectives have been reached by the programme. This approach tries to link programme activities with outcomes (University of North Carolina, n.d). From all the programme evaluation approaches, the "objectives-oriented approach is arguably the simplest and most straightforward to use" (Artino, n.d:1), there is strong attention to agree on objectives, and the standard for judging those objectives (Marvin, et al., 2004).

The management-oriented approach focuses on identifying and meeting the needs of key decision-makers or those people who are most likely to use the results to make decisions and changes. This approach needs a close link between the manager/key decision makers and the evaluator(s) (University of North Carolina, n.d).

The Consumer-oriented approach develops the information to evaluate based on consumers' perceptions and needs. This approach tends to remove the influence of goals-objectives out of the evaluation process to establish whether the programme meets consumers' needs (University of North Carolina, n.d). It focuses on planning and integrating evaluation questions and procedures with the needs and views of consumers receiving their services, and who will be able to tell how good the programme is meeting those needs. The general purpose of consumer oriented approach is to encourage stakeholders to focus on the Consumers' needs (Bledsoe and Graham, 2005).

The expertise-oriented approach depends primarily on the professional expertise of the evaluator to judge the quality of the evaluation (University of North Carolina, n.d), meaning it relies on experts' knowledge and subjective professional judgement (Attwell, 2006). The critical aspect of this approach is placed in the reputation of the expert (University of North Carolina, n.d).

The adversary-oriented approach is an evaluation approach for education which was known as judicial approach, as it has the advantages of using the process similar to a jury trial in judging the worth of a given educational programme. Because of that aspect, other scholars argued that the adversary approach is not appropriate in education (Worthen and Rogers, n.d). It requires the information to be gathered from both sides of the argument; and it has been used in the context of highly controversial issues (University of North Carolina, n.d).

The participant-oriented approach seeks how to fulfil the needs of different stakeholders who are taking part in the evaluated programme (Bettesworth, 2011). It requires the participation of various levels of stakeholders to determine the needs, values, criteria, and process of collecting data for the evaluation. In this approach the evaluator performs as a facilitator, acting to encourage dialogue, participation, and deliberation among all participants involved (University of North Carolina, n.d).

A blend of approaches embracing principles and processes associated with Improvement/ accountability-oriented evaluation, social agenda-directed/advocacy evaluation and management-oriented evaluation appear to offer the kind of underpinnings to provide for a rigorous assessment of an undergraduate programme. Specifically, this collection of approaches provides the basis for determining the three key elements of a framework for evaluating an undergraduate qualification: Who should conduct the evaluation; Who should be included in the evaluation; and What should be evaluated. The former elements form part of the evaluation or

research methods. The latter element speaks to the theoretical framework for the essence of the evaluation.

2.2.2. Who should conduct the evaluation

The management-oriented approach suggests that people who are responsible for planning and implementing programmes should lead the assessment or evaluation (Karatas and Fer, 2009) because the information collected will be the essential part of decision making process for the benefit of the programme. After developing the plan, implementation must follow. It is crucial to define at this point who will be responsible to collect it, where and how the information will be kept (UCF, 2005). Even if it was mentioned that faculty members or managers are responsible for assessment, "only one person needs to be assigned responsibility and sufficient incentive for managing the programme's assessment plan and data" (Choban, 2005:3). It will depend, then, on the data collected for the faculty to suggest certain improvements in curriculum, student support services or instructions if needed (Banta et al., 2009).

However, because of the potential for bias and succumbing to pressure to conduct pseudo evaluations, care must be taken to ensure that the evaluation itself is rigorous and verifiable. This can, in part be address by who is included in the evaluation and what is evaluated.

2.2.3. Who should be included in the evaluation

The Improvement/Accountability-oriented evaluation and the Social Agenda-directed/Advocacy approaches suggest that all relevant stakeholders should be included in the assessment. Educational programmes have three broad groupings of stakeholders: customers (represented

primarily by students and potential employers of graduates); academics who deliver and otherwise govern teaching and learning; and administrators who provide for key operational and administrative processes supporting the programme. Principals, teachers, students, school board members, state education department staff, and university specialists are among those to be included Sanders (2000:20); also included are parents and policymakers (Kellagham et al., 2003).

Related to this are documentary sources such as public documents (reports, textbooks, research studies, dissertations), school files and records (Sanders, 2000). All of these can augment the data obtained directly from stakeholders. Sanders also notes that who should be included, and the sources of secondary data are influenced by what is included in the assessment.

2.3. What should be evaluated: A theoretical framework for evaluating an undergraduate qualification

As noted earlier, it is vital to be clear about what is to be evaluated. In educational programmes, there are many possibilities broadly grouped as: resources (e.g. equipment and facilities); processes (e.g. pedagogy, curriculum and management); and, student learning (e.g. achieving learning outcomes, results, student performance). The choice of what to be evaluated requires the involvement of the key stakeholders. The choice itself influences the tools or models to be used (UCF, 2005).

Some 13 models or tools can be identified in literature. While similar in nomenclature to the evaluation approaches discussed earlier, they are more specifically focused on the technical

component of what should be evaluated and less so on the overall approach. These models and tools include: Tyler's objective-oriented model; Societal experimentation model; CIPP (Context, Input, Process and Product) model; Countenance evaluation; Discrepancy evaluation model; Responsive evaluation; Transactional evaluation; Goal-free evaluation; Investigative approaches to evaluation; Evaluation as illumination; Evaluation as connoisseurship; Advocacy model of evaluation; Participating evaluation model; and Situation-specific strategy model.

Among these models, the one that is prominently used is the CIPP model due to its pertinence and effectiveness (Hussain et al., 2011). The CIPP model is known to be a "comprehensive framework for guiding formative and summative evaluations of projects, programmes, personnel, products, institutions, and systems" (Stufflebeam et al., 2003). It was originally constructed at the end of the 1960s to fulfil the evaluation demands which were oriented toward a programme's objectives (Yahaya et al., 2001). The model has been used throughout the United States and around the world in different investigations, short-term and long-term. Applications of this model have crossed various disciplines, including education, housing and community development, military personnel review systems and transportation safety (Stufflebeam et al., 2003). The "most significant element introduced by the CIPP model is that it demanded an examination of the context in which the evaluation was to be conducted. This approach is consistent with the model proposed for the evaluation of extension curricula" (Worth, 2008:96). A survey conducted by the American Society for Training and Development found that the CIPP model was preferred over other evaluation models (Zhang et al., 2011).

As denoted by its name, the Context, Input, Process and Product (CIPP) programme evaluation model suggests four evaluation levels (Phattharayuttawat, et al. 2009). These are described briefly.

2.3.1. Context Evaluation

Context evaluation looks into principles driving the programme; the reason the evaluation needs to take place, the necessity of the evaluation, and the suitability of the objectives of the project and problems. In brief, it attempts to understand all of the external and environmental factors that influence the structure, content and direction of the programme and how the programme fits (Wise, 2008). The information collected will serve as basis for programme decisions and the subsequent improvement of objectives (Tseng et al., 2010).

The objective of context evaluation is to assess the overall environmental readiness of the project, examine whether existing goals and priorities are attuned to needs, and assess whether proposed objectives are sufficiently responsive to assessed needs.

2.3.2. Input Evaluation

The inputs relevant to undergraduate programmes are those resources required as a minimum to allow the programme to be offered and to deliver its intended outcomes (Council on Higher Education (CHE), 2004) or enable the programme to be run. These include human, financial and material or physical resources (Sanders, 2000). Such resources also include suitable and

sufficient venues, and information technology (IT) infrastructure, library facilities, laboratory and other practical facilities (if needed) (CHE, 2004).

Input evaluation examines these resources as they are used in the programme to achieve the assigned objectives. The aim here is to assess the possible changes that can be effected within the resources available for better programme delivery. The results of the input evaluation will determine where there is the need for change and ultimately suggest solutions that are feasible (Tseng et al., 2010).

2.3.3. Process Evaluation

Process refers to what is done in the programme, how it is done and by whom (Sanders, 2000). For undergraduate academic programmes the main activity is teaching and learning in relation to students enrolled in the programme. Thus, it starts with recruitment, admission and selection of students according to the programme's academic requirements and the programme's capacity (in terms of student numbers) to offer good quality education, and to achieve the intended learning outcomes (CHE, 2004). The process continues with the actual teaching and learning which incorporates learning activities, assessments (e.g. test, exams, projects) to determine student progress (UCF, 2005; Moss et al., 2008; Cartwright et al., 2009) or project. Process evaluation also looks at module evaluation to check on "the clarity of the instructor's expectations of learning; the instructor's ability to communicate the course content effectively; the instructor's ability to inspire interest in the subject; the fairness of the instructor's assessment of learning (exams, essays, tests, etc.); the instructor's concern for students' learning; and the overall quality

of the instructor's teaching" (Gravestock and Greenleaf, 2008:21) and marks management (Hansen, 2013) both being integral processes in delivering the programme as intended.

Teaching and learning can follow direct transmission and/or constructive approaches. Direct transmission "implies that a teacher's role is to communicate knowledge in a clear and structured way, to explain correct solutions, to give students clear and resolvable problems, and to ensure calm and concentration in the classroom" (Kemp and Mouton, 2009:92). – in short, knowledge-transfer to passive recipients.

Constructivist approaches see students as "active participants in the process of acquiring knowledge," and the primary focus is on "facilitating student inquiry" where students play an active role and are required to "develop solutions to problems on their own". Emphasis is placed on "the development of thinking and reasoning processes" rather than on "acquisition of specific knowledge" (Kemp and Mouton, 2009:92). Of course, it is possible to use both approaches within a specific class or programme (Santa Clara University, 2009).

2.3.4. Product evaluation (learning outcomes)

For the purpose of this discussion, the "product" element of the CIPP model are termed "learning outcomes". Learning outcomes are the knowledge, skills, attitudes and behaviours that students should acquire as they proceed through a certain learning experience – in this case, an undergraduate qualification. They are concrete statements about what learners will know and be able to do and their corresponding attitudes and behaviours. They are indicators of learners' competence gained through successfully mastering the information, content, tools and ideas

presented in a class or programme (Gultig, et al., 1998) as well as the concomitant development of cognitive capacity. In any learning programme there are at least two broad categories of learning outcomes: exit-level learning outcomes; and learning outcomes that build toward exit-level outcomes. The purpose is to find out whether the instructional programme is making any difference, including whether students have learned to apply their knowledge to new problems (Tseng et al., 2010). Such an investigation would need to track both the exit-level outcomes and those building toward them.

Some educational programmes (such as in South Africa) are structured following the principles of outcomes-based education (OBE), which is result-oriented and learner-centred (Fakier & Waghid, 2004). OBE proposed that education should aim to equip learners with knowledge, skills and values that will allow them to contribute to their personal progress, family improvement, and community or national development (DoE, 1997) and expose them to job opportunities (Chakeredza et al., 2008). Although OBE has been highly criticised, particularly in South Africa, its overall framework that demands clearly articulated learning outcomes (knowledge and skills) and their respective assessment criteria is useful in developing curricula (Worth 2008) and thus facilitates programme evaluation.

Depending on the discipline and focus of the qualification, specific learning outcomes are formulated to address the requirements of the discipline/qualification. Rigorously constructed qualifications have curricula that are carefully constructed to provide learning across specified learning areas and simultaneously account for building cognitive capacity across the duration of the qualification (Higher Education and Training, 2013).

Embedded in the content-specific learning outcomes are seven critical cross-field outcomes identified by the South African Qualifications Authority (SAQA) that are applied to all fields of education and training in South Africa (SAQA, 1997:5):

- "Identify and solve problems using critical and creative thinking;

- Work effectively with others as a member of a team;

- Organise and manage one and one's activities responsibly and effectively;

- Collect, analyse, organise and critically evaluate information;

- Communicate effectively using visual, mathematical and /or language skills in oral and or written form;

- Use science and technology effectively and critically show responsibility toward the environment and health of others and;

- Demonstrate an understanding of the world as a set of related systems and recognise that problem-solving contexts do not exist in isolation".

These cross-field outcomes are in place to ensure that the quality of learning is consistent across all qualifications. They are augmented by a framework of advancing levels across 10 categories of "applied competence" with the aim of ensuring learning coherence across qualifications and to provide a basis for international comparability. The 10 categories are: scope of knowledge; knowledge literacy; method and procedure; problem solving; ethics and professional practice;

assessing, processing and managing knowledge; producing and communicating information; context and systems; management of learning; and accountability. (SAQA, n.d.: 1).

Every qualification is supposed to build this framework into its learning programme and to do so in a way that advances the 10 areas of competence along three stages: Foundational competence (embracing "the intellectual/academic skills of knowledge together with analysis, synthesis and evaluation" – including processing information and problem-solving); Practical competence (including the "concept of context"); and Reflexive competence (incorporating "learner autonomy"), (SAQA: n.d.: 1). The 10 level indicators and the respective Foundational, Practical and Reflexive stages suggest the need for deliberate laddering of learning within programmes and present themselves as an area to be assessed in any evaluation. An examination of the indicators and stages further suggests that by the end of an undergraduate qualification students will be largely responsible for their own and capable of self-directed learning in settings that are complex, uncertain and ill-defined, where knowledge is contested and relative rather undisputed and absolute.

2.4. Student performance and influencing factors

In addition to the CIPP elements, there are other elements and factors that significantly impact on student performance and the whole curriculum. Research suggests academic performance is influenced particularly by three elements: "family causal factors, academic causal factors, and personal causal factors" (Mlambo, 2011:80). The family causal factors consist of parents' education influencing their occupation and income which, in turn, influences the socio-economic

status of their children (students) which is found to influence their academic performance (Martha, 2005). Generally, people who are economically and socially disadvantaged are less likely to gain access to higher education; and if they do, they are more likely struggle to complete it successfully. This is found especially in developing countries where opportunities to access higher education are rare and poverty is prevalent (CHE, 2013). Kidane and Worth (2014) identified similar factors relative to attitudes of high school learners specifically towards agricultural education and training as offered in the South African high school curriculum. Factors included family size, family income, education of parents, and parental care.

Academic causal factors affecting academic performance include previous education, student effort, class attendance, and entry requirements (Mlambo, 2011). Previous education including school background (location, ownership, academic status and financial status of former school) influences the way students will perform academically. Students are likely to perform well in the future if they attended the schools with good quality standard in teaching and learning (Martha, 2005); which is debatable as some schools may have good background called and still experience poor student performance.

The CHE (2013) determined that academic factors are the most influential on student achievement. And among these, the dominant cause of poor performance in higher education is the under-preparedness of students, limited access to learning facilities and "lack of motivation, anxiety about personal or financial circumstances, or alienation from the institution" (CHE, 2013:56).

Personal causal factors relate to learning preference, student age and self-motivation (Mlambo, 2011). With reference to student learning preference, some students learn better when the

information is offered verbally, whereas others will learn better when they see pictures or images (Mayer and Massa, 2003). They are respectively verbal and visual learners. Visual learners remember and comprehend best what they see (diagrams, pictures, films, flow charts, time lines, and demonstrations). They prefer to use concept maps, listing key points, enclosing them in boxed or circles, drawing lines between concepts to show links. Verbal learners get more from words (written and spoken explanations). They prefer to write summaries, work in groups to have more effective learning experience and gain understanding of material by hearing classmates' explanations (Pallapu, 2007).

If the learning preferences are known, it will help the instructor to design a curriculum to successfully address the needs of learners in a class (Pallapu, 2007). This explains why in a class where only one method of teaching is used, there is a strong possibility that many students will find the learning environment less suitable, resulting in a negative effect on academic performance (Mlambo, 2011). Self-motivation was identified as another important personal causal factor affecting academic performance; learners who are self-motivated can more easily direct the process of their own learning by setting targets for themselves and by using appropriate strategies to achieve their targets (Zimmerman et al., 1992). They demonstrate courage and usefulness in whatever thing they can do, which positively influences their skills and knowledge (Zimmerman et al., 1992). Motivation positively influences on study strategy, academic success and well-being of students as far as education is concerned (Kusurkar et al., 2012).

2.5. Proposed framework for evaluating an undergraduate qualification

Figure 2.1 consolidates the discussion thus far and shows the key areas to be included when evaluating an undergraduate qualification. Using the CIPP framework, it outlines in some detail specific aspects of the input, process and product elements to be investigated. It attempts to ensure that the assessment approach and method is relevant to the intended outcomes of the programme. Applied in practice, this requires clear articulation of the programme's objectives (UCF, 2005).

The upper half of the diagram in Figure 2.1 captures the Input, Process and Product aspect of the CIPP model. Input comprises the human, financial and physical resources needed to offer the programme. This includes: human resources comprising students, lecturers and academic administrators; financial resources covering funds to pay programme staff members and to maintain facilities; physical resources comprising venues, laboratories, library, information Technology (IT) infrastructure with access to internet and telephones, equipment needed for practical activities and vehicles).

Process has three aspects. First is the provision of academic governance. This is the university-level response to the context. It includes provision of oversight (potentially of multiple programmes). As a part of the university's response, academic management structures coordinate the inputs and processes in the delivery of the programme. This also includes the academic process of creating curricula and modules, managing delivery (timetables and venues), proving quality assurance and academic governance (establishing and implementing academic policies).

The second process is related to recruitment, selection, admission and registration of students. Each of these is subject to policies that apply to more than the programme being assessed. Thus assessment of this aspect would be limited to how well it supports the programme being assessed.

The third process is academic delivery, which has a collection of key processes. Teaching and learning focuses on developing the skills, knowledge, attitudes and behaviours associated with the programme. Class assessment uses a variety of methods such as tests, assignments, practical, tutorial, exams and other approved methods to will determine how well students are performing. Module evaluation (where students will give feedback on the teaching and their own learning) helps determine the effectiveness of the teaching and learning processes. Marks management and recording student results are essential to tracking student progress. And, finally, student-counselling service provides students with psychological and other support to cope with academic life.

Product comprises the learning outcomes of the programme. It includes exit-level and intermediary learning outcomes to be acquired by the students. It also includes the graduates who, upon successful completion of the programme, are ready for the work place and can contribute on personal, family, community and national levels. This feeds back into the original context which gave rise to the programme, ideally completing the cycle. This latter link becomes a crucial part of the assessment of the programme.

INPUT → **PROCESS** → **PRODUCT**

Human resources
- Students
- Lecturers
- Administrators

University Response
Academic Governance
- Academic programme administrators
- Curriculum
- Module structure
- Time Tabling
- Provision of information from high management of Institution
- Ensure integrity of qualification

Administrative support
- Student recruitment, selection, admission & registration

Learning Outcomes
- Initial outcomes
- Intermediate outcomes
- Exit-level outcomes

Financial resources
- Facility maintenance
- Personnel wages
- Research

Academic delivery
- Teaching & Learning
  - Skills
  - Knowledge
  - Values (Attitudes & Behaviors)
- Class Assessment
  - Assignment
  - Test
  - Practical & Tutorial
  - Exam
- Module evaluation
  - Students' feedback
- Marks management / Record of results
- Student counseling / support

Graduates
- Ready for the workplace
- Students able to apply Skills, Knowledge and Values learnt with effect on:
  - Personal level
  - Family level
  - Community level
  - National level

Physical resources
- Venues / Laboratories
- Student Accommodation
- Library (books)
- IT infrastructure (internet & telephone)
- Equipment
- Vehicles

CONTEXT ISSUES – MATCHING GOALS & PRIORITIES WITH NEEDS FOR PROGRAMME

Factors influencing student performance

Family factors
- Parents' income
- Parents' education

Academic factors
- Students' previous education
- University entry requirements
- Academic preparedness

Personal factors
- Self–motivation
- Learning

Language support / Literacy

University Factors

University Mandate
- Vision
- Mission
- Governance

External Limiters
- Higher education funding
- Student funding (financial aid & bursaries)
- Academic capacity

External Drivers
- State objectives
- Industry objectives
- Labor/Job market requirements

UNIVERSITY RESPONSE TO CONTEXT
PROGRAMMES, INPUTS & PROCESSES

Figure 2.1: Factors influencing students' performance and elements for assessing an undergraduate qualification

The lower half of the diagram in Figure 2.1 depicts the context aspect of the CIPP model. In this case, the context comprises three elements: factors that influence student performance; external drivers that give the reason for the programme; external drivers framing the 'need' for the programme; external limiters delimiting the context within which the programme can be offered; and the university factors which is essentially defined by its mandate. In response to this context, the university offers the programme including the curriculum, inputs and processes

The influencing factors are family, academic and personal factors. On the family level, income and education of parents are the elements that can influence the status of students who might find themselves more or less privileged, vis-a-vis the socio-economic situation of their families (parents). The university can, at least theoretically, deal with this socio-economic factor under financial aid service or bursary. The academic factors comprise the former education of student candidates for the qualification, the entry requirements as set by the university, class attendance and their level of preparedness to face university life. The last factor is personal; some students join the university without being personally motivated to do so or without any learning preference. The university can address these two last factors via student counselling service or academic development programme available such as language support or literacy.

The external drivers are really the prime cause of the programme's existence. The general labour market expresses a need for certain knowledge and skills. The state, too, has objectives that create a need for knowledge and skills. And the particular industry expresses its need for knowledge and skills. The university's response is a programme that delivers these.

The external limiters are those things beyond the control of the programme, and perhaps the university, which limit response options. These include higher education funding, student

funding and academic capacity (i.e. the availability of suitable academics to deliver the programme).

Completing the context is the university's mandate. The programme is necessarily contextualised in the university's vision, mission and governance framework.

From Figure 2.1, on the process level, five aspects emerge as particularly significant: Intake, Teaching and Learning; Access to facilities; Performance; and Placement (ITAPP). These aspects constitute the new assessment model suggested by this chapter, called the ITAPP model. It focuses on the process which constitutes the master piece of any academic programme (Figure 2.2). It is the place where most activities are implemented to produce results (called outcomes). It presents important aspects to look at when assessing the performance of undergraduate qualification. For each aspect, there are specific questions to ask for qualification assessment. In the ITAPP model, the following will be asked under each level:

- For the "I", questions related to entry requirements, selection, registration and fees are considered;

- For the "T", the questions consider the extent of support received from the University to enforce teaching and learning, this comprises the teaching methods, assessment methods, students' performance, academic support offered to students in need, teaching environment and acquisition of competence;

- For the "A", the questions cover the extent of accessibility to learning facilities such as computer rooms, internet, library and venues;

- For the first "P", the questions look at the extent of students' performance against, in this instance, level descriptors as set by the South African Qualifications Authority from foundational, practical and reflective level; and

- For the second "P", the questions of job opportunities, graduate's placement, and the choice of graduates to further their studies are considered.

As emanating from CIPP, the ITAPP model will primarily be applied to assess the overall delivery of an undergraduate qualification; secondly it will look at the process aspect in the whole CIPP model. For the Context, ITAPP would examine the means by which the qualification is kept true to its claimed context; for Input, it would examine the factors that affect the various inputs into the programme, for Process, it would examine all 'formal' processes relative to the programme (teaching and learning); and for Product, it would examine the process that measures the delivery of the product (student assessments).

ITAPP will be exposed to the same factors described in figure 2.1, which include factors influencing student performance, university factors, external limiters and external drivers. The assessment results will be used to improve the programme by identifying the areas that need more attention in the process of delivering a qualification. This could only be possible if the challenges expected in the assessment process are overcome.
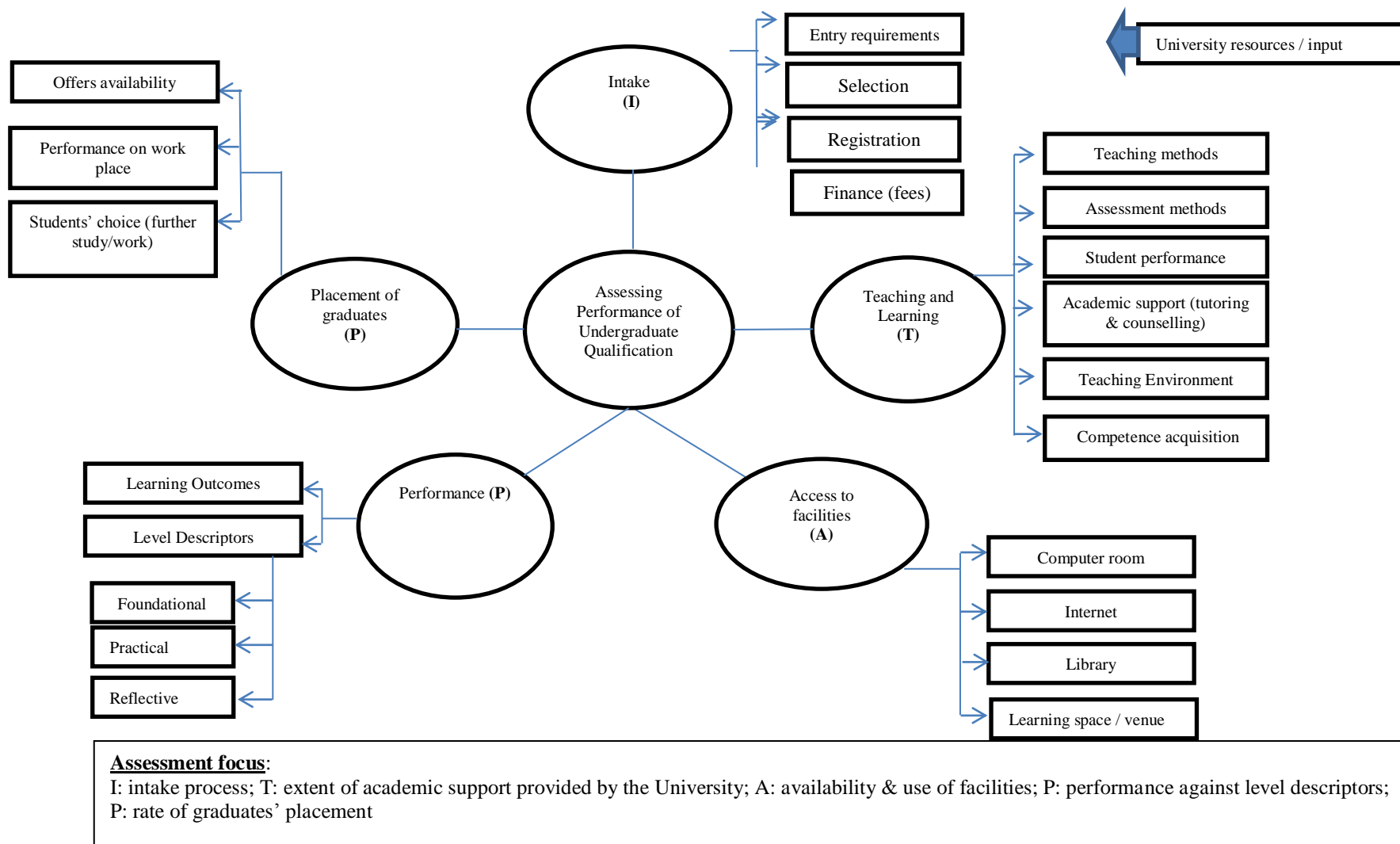
Figure 2.2: *Framework for assessing the process of performance for undergraduate qualification -**ITAPP** (**I**ntake, **T**eaching and Learning, **A**ccess to facilities, **P**erformance, and **P**lacement) **Model***

The framework consists of a central ellipse "Assessing Performance of Undergraduate Qualification" connected to five surrounding ellipses:

Intake (I) — connected to:
- Entry requirements
- Selection
- Registration
- Finance (fees)

University resources / input

Teaching and Learning (T) — connected to:
- Teaching methods
- Assessment methods
- Student performance
- Academic support (tutoring & counselling)
- Teaching Environment
- Competence acquisition

Access to facilities (A) — connected to:
- Computer room
- Internet
- Library
- Learning space / venue

Performance (P) — connected to:
- Learning Outcomes
- Level Descriptors
  - Foundational
  - Practical
  - Reflective

Placement of graduates (P) — connected to:
- Offers availability
- Performance on work place
- Students' choice (further study/work)

Assessment focus:
I: intake process; T: extent of academic support provided by the University; A: availability & use of facilities; P: performance against level descriptors; P: rate of graduates' placement

43

2.6. Challenges in curriculum assessment

In addition to having a clear model to assess an undergraduate programme, any assessment must also take into account the challenges it will undoubtedly face. Key among these is reluctance on the part of stakeholders to an assessment of their programme. The largest barrier to programme assessment is the fear that evaluation outcomes or results could be negative (Fulop, 2011). Another challenge is in the difficulty in obtaining 'absolute' or definitive answers to questions such as "Does the programme have an effect?", "Does the programme make a difference in the 'world'?" Sometimes, assessment cannot answer these questions because the programme is not offered in isolation, and often the impact cannot be observed directly or immediately. Another challenge is ensuring the evaluator fully understands the programme and is aware of its intent and purpose. Otherwise the assessment may result in recommendations, while plausible based on the data, are not actually valuable to the programme (Shackman, n.d).

UCF (2005) highlighted additional challenges. During the process of selecting and designing the appropriate assessment methods, the time constraint, feedback from people involved, and difficulty to match the assessment method with expected outcomes constitute other challenges. It is important when developing and applying a new assessment method, to start small and to test the method before committing resources to the assessment. This will allow for redesign should it prove not appear to be an effective assessment instrument before taking the assessment too far. Providing feedback to the participants through group discussion, individual conversation, e-mail or other communication means is essential.

2.7.   Preparing for handling the results of assessment

Part of planning for an assessment entails what to do with the results. When the assessment is completed, the information received could be used to modify the current programme in different ways. This could be in the way the course was designed and/or delivered. It may suggest a review of the assessment measures or a deeper analysis of the learning environment (Wolf et al., 2006). Sanders (2000) expands on this by suggesting the results may point to revisiting programme needs assessments, individual needs assessments, resource allotment, processes or strategies for providing services to learners (e.g. curriculum design, classroom process, materials of instruction, monitoring of pupil progress, learning motivation, teachers effectiveness, learning environment, staff environment, decision making, community involvement, and board policy formation), and even the learning outcomes.

Worth (2009) argued that an assessment may suggest a rethink of the very foundations and assumptions on which the programme is based. He argues in favour of allowing the assessment to challenge the theoretical basis of the programme and that one must be prepared for fundamental change of the programme.

2.8.   Conclusion

This chapter has argued that the assessment of an undergraduate qualification is a continuous method of collecting information of a given programme, which information should be thoroughly analysed and used to improve student learning. In this process, it is essential to determine up front the focus of the assessment, if it will be on the resources, the activities or the results (student learning outcomes) – or all of them. This will help the assessor design and

mobilise appropriate instruments and define a suitable method for the elements to be evaluated. The clearer the focus, the better the outcomes of the assessment.

Within the broad framework of the CIPP method, this chapter argues that "process" is the critical component of any academic programme in terms of achieving the product, and therefore should comprise the primary focus of an assessment of an undergraduate qualification. The model proposed for process evaluation is the ITAPP (Intake, Teaching and Learning, Access to facilities, Performance and Placement) model, which derives from the CIPP (Context, Input, Process and Product) model. Applying ITAPP will provide a well-rounded, sufficiently detailed set of data that interrogate the programme in critical areas. The results, it is argued, will enable the stakeholders to make improvements to the programme to enhance its rigour in meeting the context needs from which the programme originally was derived.

References

Artino. A (n.d). A Comparison of Three Approaches to Program Evaluation. Accessed August 2015. www.sp.uconn.edu/...Evaluation/EDF5461_AnalysisofApplication.doc

Association of American Colleges and Universities (AACU) (2004). Taking responsibility for the quality of the baccalaureate degree: A Report from the Greater Expectations Project on Accreditation and Assessment. Washington DC.

Attwell, G. (2006). Evaluating E-learning: A Guide to the Evaluation of E-learning. Evaluate Europe Handbook Series Volume 2.

Banta, TW., Griffin, M., Flateby, TL and Kahn, S. (2009). Three promising alternatives for assessing college students' knowledge and skills. National Institute for Learning Outcomes Assessment.

Bettesworth, L. (2011). Program and practice assessment: Participant-oriented to evaluation. University of Calgary.

Bledsoe, K.L and Graham, J.A (2005). The Use of Multiple Evaluation Approaches in Program Evaluation. The College of New Jersey.

Cartwright, R., Weiner, K. and Veneruso, S.S (2009). Student Learning Outcomes Assessment Handbook. Montgomery College, Maryland.

Center for Education Research and Innovation (CERI) (2008). Assessment for Learning Formative Assessment. Learning in the 21st Century: Research, Innovation and Policy.

Chakeredza, S., Temu, A.B., Saka, D.J.K., Munthali, D.C., Muir-Leresche, Akinnifesi, F.K., Ajayi, O.C. and Sileshi, G. (2008). Tailoring Tertiary Agricultural Education for Sustainable Development in Sub-SaharanAfrica: Opportunities and Challenges. Scientific Research and Essay, 3(8), 326- 332. http://www.academic journals.org/sre/PDF/pdf2008/Aug/Chakeredza %20et%20al%20Pdf.pdf. Accessed August 2012.

Choban, M. (2005). Implementing Sustainable and Useful Educational Outcomes Assessment. White Paper: Implementing Sustainable and Useful Outcomes Assessment. Pittsburgh. http://www.nuventive.com/white_papers/SustainableOutcomes Assessment.pdf. Accessed March 2014.

Council on Higher Education (CHE) (2004). Criteria for Program Accreditation. Higher Education Quality Committee. Pretoria.

Council on Higher Education (CHE). (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Report of the Task Team on Undergraduate Curriculum Structure. Discussion Document. Brummeria Pretoria.

Department of Education (2004). Public school programs, Nova Scotia. Retrieved on http://www.ednet.ns.ca/pdfdocs/psp/psp_03_04_full.pdf. Accessed May 2014.

DoE (South African National Department of Education), (1997). Curriculum 2005: Specific outcomes, assessment criteria, range statements. Grades 1 to 9. Department of Education, Pretoria. http://www.polity.org.za/polity/govdocs/discuss/curric1.html. Accessed August 2012.

Fakier, M., and Waghid, Y. (2004). On outcomes-based education and creativity in South Africa. International Journal of Special Education, 19 (2), 53-63. www.internationalsped.com/ documents/fakir%20SA%20(7).doc. Accessed August 2012.

Fulop, M (2011). The Critical Need for Program Accountability & Evaluation. Portland. http://facilitationprocess.com/the-critical-need-for-program-accountabiltiy-evalaution. Accessed September 2012.

Gravestock, P. and Greenleaf, E.G. (2008) Student Course Evaluations: Research, Models and Trends report. The Higher Education Quality Council of Ontario, Canada.

Gultig, J., Lubisi, C., Parker, B., Wedekind, V. (1998).Understanding outcomes-based education: Teaching and assessment in South Africa. South African Institute for Distance Education. Cape Town.

Hansen, R. (2013) Assignment & Marks Management and the Results Processing System (RPS). Massey University, New Zealand

Hussain, A., Dogar, A.H., Azeem, M., Shakoor, A. (2011). Evaluation of Curriculum Development Process. International Journal of Humanities and Social Science. Vol. 1 No. 14.

James, M. (1998). Using assessment for school improvement. Oxford, USA.

Karatas, H. and Fer, S. (2009). Evaluation of English Curriculum at Yıldız Technical University Using CIPP Model. Education and Science. Vol. 34, No 153.

Kellagham, T., Stufflebeam, D.L., Wingate, L.A. (2003), International handbook of educational evaluation: part two. Vol 9. Kluwer Academic Publishers. London.

Kemp, M. and Mouton, L. (2009).Creating Effective Teaching and Learning Environments First Results from TALIS. Teaching and learning international survey. OECD Publications, Paris. France.

Kidane, T.T. & Worth, S.H. (2014). Student Perceptions of Agricultural Education Processes at Selected High Schools in KwaZulu-Natal Province, South Africa, The Journal of Agricultural Education and Extension, DOI: 10.1080/1389224X.2013.872 046.

Kusurkar R. A., Ten Cate, T.J., Vos, C. M. P., Westers, P., Croiset, G. (2012). How motivation affects academic performance: a structural equation modelling analysis. Adv in Health Sci Educ.

Martha, K. (2005).Factors Affecting Academic Performance Of Undergraduate Students At Uganda Christian University. Dissertation submitted to graduate school in partial fufilment of the requirements for the award of the degree of master of arts in educational management of Makerere University.

Marvin C. Alkin and Christina A. Christie (2004). An evaluation theory tree.

Mlambo, V. (2011). An analysis of some factors affecting student academic performance in an introductory biochemistry course at the University of the West Indies. Caribbean Teaching Scholar Vol. 1, No. 2, November 2011, 79–92.

Moss, P. A., Pullin, D.C., Paul Gee, J., Haertel, E.H., and Young, L.J. (2008). Assessment, equity, and opportunity to learn. Cambridge University Press, New York.

Phattharayuttawat, S., Chantra, J., Chaiyasit, W., Bannagulrote, K., Imaroonrak, S., Sumalrot, T., Auampradit, N. (2009). An evaluation of the curriculum of a graduate program in Clinical Psychology. South East Asian Journal of Medical Education Vol. 3 no. 1.

Sanders, J.R. (2000). Evaluating school programs: An educator's guide, Second edition. Corwin Press, California.

Santa Clara University (2009). Guidelines For Academic Program Review 2008-09. http://www.scu.edu/provost/assessment/upload/SCU_ProgramReview0809.pdf. Accessed July 2014.

SAQA (1997). Introducing the SAQA Bulletin: The emergence of the NQF and SAQA. Volume one Number one May/June.

SAQA (no date). Level Descriptors for the South African National Qualifications Framework. SAQA, Pretoria.

Shackman, G. (n.d). Challenges to program evaluation: A beginners guide. CDC Evaluation Working Group.

Snoke, R. (2003). Generic attributes in undergraduate programs: a casestudy of a regional and capital city university. Central Queensland University, Bundaberg, Australia.

Stufflebeam, D.L., Harold and McKee, B. (2003) The CIPP model for evaluation. Western Michigan University. Presented at the 2003 Annual Conference of the Oregon Program Evaluators Network. Portland, Oregon.

Tseng, K.H, Diez, C.R, Lou S.J, Tsai, H.L, and Tsai, T.S. (2010). Using the Context, Input, Process and Product model to assess an engineering curriculum. World Transactions on Engineering and Technology Education, Vol.8, No.3, 2010.

UCF (University of Central Florida) (2005). Program assessment handbook: guidelines for planning and implementing quality enhancing efforts of program and student learning outcomes. University of Central Florida.

University of North Carolina at Greensboro (n.d). Overview of Program evaluation. Department of Educational Research Methodology. http://erm.uncg.edu/oaers/methodology-resources/program-evaluation/. Accessed August 2015.

Wise, D. (2008). Curriculum Evaluation. University of Exeter, Exeter.

Wolf, P., Hill, A., Evers, F. (2006). Handbook for Curriculum Assessment. Educational Research and Development Unit, University of Guelth, Guelph.

Worth, S.H. (2008). An assessment of the appropriateness of Agricultural Extension education in South Africa. PhD thesis. School of Environmental Sciences, Faculty of Science and Agriculture.

Worthen, B.R and Rogers W.T (n.d). Pitfalls and potential of adversary evaluation. http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_198004_worthen.pdf. Accessed August 2015.

Yahaya, A.H.J, Asas, P.J., Pendidikan, F. (2001). The Using of Model Context. Input, Process and Products (CIPP) In Learning Programmes Assessment. (International Conference on Challenges and Prospects in Teacher Education, Concorde Hotel Shah Alam16 & 17 July 2001).

Zhang, G., Zeller, N., Griffith, R., Metcalf, D., Williams, J., Shea, C., and Misulis, K. (2011). Using the Context, Input, Process, and Product Evaluation Model (CIPP) as a Comprehensive Framework to Guide the Planning, Implementation, and Assessment of Service-learning Programs. Journal of Higher Education Outreach and Engagement, Volume 15, Number 4, p. 57.

Zimmerman, B.J., Bandura, A., and Martinez-Pons, M. (1992). Self-motivation for academic attainment: the role of self-efficacy beliefs and personal goal setting. American Educational Research Journal. Fall 1992, Vol. 29, No. 3, pp. 663-676.

Chapter 3: Learning outcomes required for a Bachelor of Agricultural Extension qualification in South Africa

According to FAO (2017), the world's population will reach almost 10 billion in 2050 and yet around 700 million people are still living in extreme hunger, most of them are in rural areas. The demands on agricultural education and training (AET) programmes in this midst are increasing rapidly and programmes in many countries are unable to produce the human resources needed to meet the world's agricultural requirements. To address this, AET programmes need to review, develop and implement curricula that will provide training in a wide range of agriculturally-related competencies and skills (Maguire, n.d). AET is targeting three major aspects: firstly, develop resource capabilities; secondly, produce and apply research to address agricultural production needs; and thirdly, spread research and innovation to smallholders to improve food security and livelihoods (Rivera, 2006 in Freer, (2015)).

In South Africa, the agricultural industry is a major pillar sustaining the country's economy. Much of the country's potential is locked up in land that is under-utilised and in the hands of people who were disenfranchised from the main agricultural economy. There is great need for graduates skilled in assisting these people acquire the capacity to engage their land more productively and to fully participate in the agricultural economy. Additionally, there is currently considerable motivation from South African government (including the provision of financial aid) to encourage young people, especially those from historically disadvantaged backgrounds, to study agriculture in order to fill this gap and contribute to the economy of the country. Such motivation anticipates that the new graduates will be equipped with relevant knowledge and

skills that will allow them to participate in the process of expanding and strengthening South Africa's agricultural sector (Food Agriculture and Natural Resource Policy Analysis Network (FANRPAN), 2012).

This chapter proposes a framework for learning outcomes for a Bachelor of Agriculture in Agricultural Extension that can be used to evaluate existing and proposed qualifications. The framework is developed through a brief discussion of AET in South Africa, statutory requirements for qualifications and the commensurate levels of learning, and learning areas and their respective learning outcomes.

3.1. Agricultural education and training (AET) in South African higher education

Agricultural Education and Training (AET) is provided on different levels in South Africa. It is included as a matriculation option in the High School curriculum. It is provided at the training and vocational level where learning is focused on practical agriculture. AET is also offered at Higher Education (HE) institutions, including Universities, Colleges of Agriculture and Universities of Technology. AET also features in non-academic institutions where training – usually non-formal training – is provided to farmers, potential farmers and personnel involved in agricultural activities within government and private organisations. This latter training is offered by public and private sector institutions, such as commodity organisations and Provincial Departments of Agriculture (South African National Department of Agriculture (DoA, 2005).

The South African AET strategy, published in 2005, was the country's first attempt to deal broadly and coherently with agricultural education and training. Drafting the strategy was a

consultative process involving a wide range of stakeholders including farmers, private and NGO agricultural service providers, state departments, universities, agricultural colleges, as well as the SETAs (Sector Education and Training Authorities). The aim was to determine how AET should be structured, focused, coordinated and delivered to effectively contribute to the success of agricultural activities and economic development in the country (DoA, 2005a).

One qualification to emerge from the AET Strategy was the University of KwaZulu-Natal (UKZN) Bachelor of Agriculture in Agricultural Extension and Rural Resource Management (BAgricExt) framed against a HE Diploma in Agriculture offered at a College of Agriculture. Launched in 2010, it was five years in the making and, at the time of this study, had been running for five years. As a preliminary to interrogating the qualification, this chapter will establish the learning outcomes framework for the interrogation; that is, what knowledge and skills should be acquired by a student taking such a degree.

This chapter will provide a general description of AET in South African Higher Education by giving an overview of AET and the range of qualification types that exist. It will explain the position of the UKZN BAgricExt in the suite of agricultural qualifications. Qualifications are constructed on a number of national standards: Names; Subject Matter; National Qualifications Framework Levels; Annual and Total Credits; and Duration in years. Table 3.1 presents the range of undergraduate qualifications generally extant in AET at HE: Three-year Diplomas in Agriculture (Diploma); Three-year Bachelors of Agriculture (BAgric); One-year Bachelors of Technology in Agriculture (BTechAgric) and Advanced Diploma (AdvDip) following on the Diploma; Four-year Bachelors of Agricultural Science (BScAgric); One-year Honours in Agriculture and/or Agricultural Extension following on the BAgric (BAgHons/BScHons); and

One-year Postgraduate Diplomas in Agriculture/Agricultural Extension following a cognate three-year qualification (PGDip).

A particularly important concept is that of the National Qualifications Framework (NQF) levels. The NQF has 10 levels. Generally, for HE, they work as follows: Level 10 is for a doctorate, 9 for masters, 8 for honours and four-year degrees, 7 for three-year degrees, 6 for diplomas, and 5 for higher certificates. Levels 4, 3, 2 and 1 fall below HE – with level 4 being equivalent to grade 12, 3 with grade 11, 2 with grade 9, and 1 with grade 8. These levels correspond with expected levels of learning, largely related to cognitive development (SAQA, n.d.). Table 3.1 shows the respective NQF level for each of the qualifications listed. This is discussed further in Section 3.2.

Table 3.1: Undergraduate qualifications in AET at HE

Name of Qualification	Subject Matter	NQF level	Credits	Duration (Years)
Diploma	Primary Agriculture	6	360	3
Bachelor of Agriculture	Agricultural Extension Agricultural Management Primary Agriculture	7	360	3
Bachelor of Technology (following on Diploma)	Agricultural Extension Agricultural Management Primary Agriculture	7	120	1
Advanced Diploma (following on Diploma)	Agricultural Extension Agricultural Management Primary Agriculture	7	120	1
Bachelor of Science	Various Agricultural Specialisations	7	360	3
Bachelor of Science in Agriculture	Various Agricultural Specialisations	8	480	4

In South Africa, the development of the AET strategy began in 2003 following on from consultations involving diverse stakeholders in the agricultural sector. A National Strategy Formulation Team was created comprising the senior officials and others from different entities (government, NGO service providers, farmers, farm workers, Universities, agricultural colleges and SETAs). The impetus emanated from the post-1994 efforts to remediate the many imbalances of the past – in this instance from the White Paper on Agriculture (DoA, 2005a) which outlined the vision for agriculture in the new democracy (DoA, 1995).

Prior to 1994, South African education (including AET) was characterised by racial segregation and did not respond to the needs of the majority in the country (Kidane & Worth, 2012). The AET strategy set the vision of "accessible, responsive, quality education and training for agriculture and rural development" (DoA, 2005a:12). To achieve this vision, mechanisms were put in place to improve the country's agricultural production through AET services (DoA, 2008). The AET strategy targeted four processes: harmonising, unifying and improving the coordination of AET; redressing historical imbalances of access and opportunity; enhancing responsiveness to agricultural challenges; and addressing critical and scarce skills broadly categorised as agricultural production, agricultural economics, agricultural engineering, agricultural development, and specific occupational shortages (DoA, 2008).

In addition to those discussed above, policy shifts for agriculture were also implemented. First was the need to move the focus from commercial agriculture to rural development and eradication of poverty (DoA, 2008). Second, extension was targeted for reform via the Norms and Standards for Agricultural Extension (DoA, 2005b) and was identified by the 2005 National

AET strategy as integral part and key competency required to meet the demands of agricultural development agenda (DAFF, 2009).

The Department of Agriculture indicated that Agricultural Extension needed improvement and reform, and identified five key issues hindering the provision of Agricultural Extension to black farmers (primarily smallholders who lived in the former homelands). These issues were: "low qualification of Agricultural Extension practitioners serving the homelands; the difficulty of delivering service to these farmers due partly to the wide diversity of systems, needs and contexts they presented; poor communication within the extension service; lack of accountability to farmers; and lack of vision and focus about the purpose and client" (Worth, 2008:45). Responding to the issue of "low qualification of Agricultural Extension practitioners", the Government prioritised enhancement of human capacity (especially farmers) in South African agricultural policy. It developed an Extension Recovery Plan which, among other things called for recruiting new extension personnel and retraining extension personnel (DoA, 2008).

While the recovery plan put forward a number of strategies to build the capacity of farmers, it was singularly vague on the details how extension personnel would be trained to effect the desired capacity building. There is no reference to AET or to the Agricultural Extension curricula or what it should offer at the tertiary institutions; the sole emphasis is only the retraining of extension staff who are currently working in the government and hiring people with agricultural science qualifications. However, research conducted by UKZN, which included an examination of the recovery plan as well as the norms and standards, identified five broad "qualities needed in an Agricultural Extension practitioner" to be integrated into Agricultural Extension curriculum: "(i) inspirational capacity; (ii) listening skills and problem-solving skills;

(iii) skills in communication and participatory approaches; (iv) specific technical (agricultural) training; and (v) skills in programme planning, implementation, monitoring and evaluation" (Worth, 2008:46).

As a key part of its research, UKZN investigated for many years the development of a more appropriate curriculum for its three-year Bachelor of Agriculture degree in Extension. The intention was to provide quality human resources for agricultural and rural development. The programme eventually designed (the BAgricExt) offered a combination of theoretical knowledge and practical skills in Agricultural Extension, project management, rural development, farm engineering and farm economics, agricultural production and management (UKZN, 2013).

3.1.1. Positioning BAgricExt in the suite of agricultural qualifications

Tertiary agricultural institutions need to produce suitable agriculturalists that will contribute to the development of the agricultural sector (Chakeredza *et al*., 2008). For this to happen, there is a need to continue making progress in the production of these graduates and stimulate the commitment of all on different levels. In the HE system, there are two curricular paths: the diploma route (offered at colleges of agriculture and universities of technology); and the degree route (offered at mainstream universities). The diploma route offers a 120-credit higher certificate, a 360-credit diploma, and a 120-credit Bachelor of Technology (BTech) or Advanced Diploma. The degree route offers, a 360 credit Bachelor of Science (in a branch of agriculture), a 360-credit Bachelor of Agriculture (BAgric) and a 480-credit Bachelor of Science in Agriculture (BScAgric). Generally, the 120, 360 and 480 credits translate to one, three and four-year

qualifications, respectively. Broadly speaking, the diploma route offers more practical AET (aimed at agricultural practice) while the degree route offers more theoretical AET (aimed at research). Table 3.1 presents examples of these qualifications.

With specific reference to the degree route, Masuku (2010:16) argues that "the Bachelor of Science in Agriculture degree (BScAgric) was developed for graduates who were being prepared to work with commercial white farmers, while the Bachelor of Agriculture (BAgric) degrees were introduced for the training of black graduates from the former homelands areas who were to work with small-scale farmers after graduating". It is suggested that this opinion represents an old paradigm embedded in an historic perspective of South African society and AET. And while perhaps factually true, it is more a function of application, than curriculum design.

It can be argued further that as there was variance between the qualifications, a similar variance existed between the institutions offering the degrees. While the BScAgric (and in some cases the BAgric) was offered at both historically black and white institutions, historically white institutions were better resourced were thought to offer 'better' AET and carried greater prestige. The historically black institutions were less resourced, were thought to offer a 'poorer' education and attracted less respect (Worth, 2008). This had a substantial influence on the employability of graduates. Graduates may have had the same qualifications (i.e. the BScAgric), but the institutions where the qualifications were obtained constituted the main consideration. In particular, extension workers were affected by these real and perceived differences, with black graduates being given less opportunity for advancement (Masuku, 2010). As a result, this led to shortage of knowledge and skills among agricultural graduates and extension officers in

precisely the places they were most needed. This was demonstrably obvious as South Africa became a unified, ostensibly non-racial state in 1994 (Kidane & Worth, 2012).

It is true that, previously, one could simplistically divide the qualifications, and the institutions that offered them, on racial lines – and there is no doubt that that is part of their history. However, an objective review of the current situation, will demonstrate that such a divide is overly simplistic. Since 1994, substantial and substantive changes have occurred in the offering of AET at HE level. Previously 'white institutions', such as Elsenburg College of Agriculture, the University of Natal (later to become part of the University of KwaZulu-Natal), and the former Lowveld College of Agriculture, incorporated into the newly-established University of Mpumalanga, offer the B Agric as do a number of previously 'black institutions' such as the University of Fort Hare.

Similarly, while historically black HE institutions have remained primarily black (in terms of student enrolments), agricultural programmes at the historically white institutions are now predominantly black (again, in terms of student enrolments). Thus, the situation has changed and consequently creates an opportunity to examine agricultural qualifications more objectively.

There is a second divide to take into account. While there is a tendency within academic institutions to consider the four-year BScAgric as the 'better' qualification, the South African Council on Higher Education and the South African Qualifications Authority go to some length to underscore that each qualification is uniquely designed to deliver particular learning outcomes set to meet specific industry requirements. Thus, it is important to understand the difference in function and purpose of these qualifications when intending to assess them and to develop a framework to do so. This strengthens the necessity to examine these agricultural qualifications

objectively. In this instance, the degree in question is the BAgric with the specialisation in Agricultural Extension (Higher Education and Training, 2013).

3.2.   Statutory requirements and levels of learning

The South African Qualifications Authority (SAQA) is an independent statutory body under the Ministries of Education and Labour. It was formed by legislation in 1995 to oversee the creation and maintenance of educational standards which are characterised by learning outcomes supported by discrete units of learning, often referred to as unit standards (Allais, 2010). The Act that created SAQA also established the National Qualifications Framework (NQF) (Allais, 2003) to facilitate the recognition of learning either through life experiences, work or through formal education (Lefkowitz, 2012).

The NQF consists of 10 levels. HE is comprised of levels 5-10, encompassing Higher Certificates (NQF5), Diplomas (NQF6), Bachelor's Degrees (NQF7 & 8), Masters (NQF9) and Doctorates (NQF10). Under the NQF there are also twelve organising fields of learning: "Agriculture and Nature Conservation; Culture and Arts; Business, Commerce and Management Studies; Communication Studies and Language; Education, Training and Development; Manufacturing, Engineering and Technology; Human and Social Studies; Law, Military Science and Security; Health Sciences and Social Services; Physical, Mathematical, Computer and Life Sciences; Services; Physical Planning and Construction" (SAQA, 2011:8). The process is supported by Standards Generating Bodies (SGB), National Standards Bodies (NSB) and

Education and Training Quality Assurance Bodies (ETQA). These bodies develop and monitor the quality of qualifications and standards (Allais, 2010; Isaacs, 2000).

The philosophy behind the NQF is to apply what has been learnt (applied competence). Level descriptors are used to monitor this process to ensure there is coherence in learning outcomes in a given qualification at particular levels, and to enable to compare qualifications nationally and internationally (SAQA, 2012). Ten descriptors are used to describe applied competencies across the ten levels of the NQF. These categories are: scope of knowledge; knowledge literacy; method and procedure; problem solving; ethics and professional practice; accessing, processing and managing information; producing and communicating of information; context and systems; management of learning; and accountability (SAQA, 2012). For the standards setting, each qualification requires a movement from generic to specific outcomes among these categories (Department of Education, 2007).

The context of this chapter is the Bachelor's degree at NQF7, the primary purpose of which is to "provide a well-rounded, broad education that equips graduates with the knowledge base, theory and methodology of disciplines and fields of study [e.g. Agricultural Extension], and to enable them to demonstrate initiative and responsibility in an academic or professional context" (South African Government, 2013: 28). It should emphasise "general principles and theory in conjunction with procedural knowledge in order to provide students with a thorough grounding in the knowledge, theory, principles and skills of the profession or career concerned [e.g. Agricultural Extension] and the ability to apply these to professional or career contexts". It may include work integrated learning and training in research (South African Government, 2013: 29).

Also it should prepare students for entry into general employment or further studies (DHET, 2013).

The Bachelor's degree is subject to the following conditions (South African Government, 2007; 2013:28-29):

- The curriculum design should outline the learning needed to achieve the intended outcomes. These must comply with the nationally applied level descriptors and pitched at predefined progressions of cognitive difficulty over the duration of the programme. They may be aligned with any registered exit-level outcomes such as those listed earlier;

- There should be a logical progression of learning across the years of learning;

- The final year must be comprised of at least 120 credits of learning at the same level as the level of the qualification (e.g. NQF 7);

- Students will be required to demonstrate acquisition of the specified learning outcomes through appropriate assessment;

- The curriculum must fairly represent the required 10 notional study hours (NSH) per credit spread more or less evenly across the duration of the programme (i.e. 1200 NSH per year);

- Learning activities, including "contact time, self-study, work integrated learning, assignments, projects and examinations", must be clearly articulated; and

- Learning must be spread over 30 weeks in an academic year and is predicated on the

basis that a student will study for 40 hours per week including attending classes and other learning sessions.

3.2.1. Applying statutory requirements to the structure of a BAgricExt

As a Bachelor's degree, the BAgricExt is set at NQF7, is required to carry at least 360 credits of which at least 120 credits must be at NQF7. It should be offered over a minimum of three years (i.e. 120 credits per year). It can carry a single name, called a "designator" (in this case 'Agriculture') and up to two descriptive "qualifiers" (e.g. Agricultural Extension; and rural resource management) (Department of Higher Education and Training (DHET), 2013: 28). Access is attained through a National Senior Certificate (i.e. Matric) or equivalent. In terms of its construct, the degree should comply with the idea that "learners are not only competent in a particular field, but that they are developed holistically, with competence in *inter alia*, communication and numeracy, etc." (SAQA, 2001: 22) and it may include a component of work-integrated learning (DHET, 2013: 29).

The government also stipulates, "in order to use a qualifier, at least 50% of the minimum total credits for the qualification and at least 50% of the minimum credits at the qualification's exit level must be in the field of specialisation denoted by the qualifier." (DHET, 2013: 15). Thus, for a BAgric (Extension and Rural Resource Management) at least 180 credits must be in the field of extension and resource management.

It is expected that a first degree (NQF level 7) in Agricultural Extension would be constructed along these lines where approximately half of the curriculum is related directly to extension and resource management, leaving half of the curriculum to other learning areas to develop the

students holistically, to prepare them for a specific line of work and for post-graduate studies. Since the degree is set in agriculture, it can be expected that some of the 180 credits not dedicated to extension will be in various aspect of agriculture. In keeping with the concept of fundamental learning (SAQA, 2001), the curriculum would include learning related to area such as communication, research, reading and writing.

A BAgricExt may not have more than 96 credits at Level 5 and must have at least 120 credits at Level 7. Thus, it may have between 144-240 credits at Level 6. Each of these levels of learning is connected to the level descriptors discussed earlier addressing ten areas of cognitive development (SAQA, 2012). From each level to the next there is a variation of thinking dimension involving increasingly reflexive competences. The content of the ten areas of cognitive development vary from each level by moving toward the application or practicality of the subject. This is linked to the revised theory of Bloom's taxonomy where acquisition of knowledge starts from lower order of thinking skills to the higher order or from remembering to creating; "you cannot understand a concept if you do not first remember it, similarly you cannot apply knowledge and concepts if you do not understand them" (Churches, 2008:1). The BAgricExt involves level 5, 6 and 7, hence students need to move from the ability to demonstrate an informed understanding of the core areas of the Agricultural Extension discipline and related key terms, concepts, facts, general principles, rules and theories, to the ability to take full responsibility for their work, decision-making and use of resources, which will demonstrate their level of accountability within the disciple of Agricultural Extension. By them doing that, it will be a good indication of how learning has been achieved in the BAgricExt qualification.

3.3.   Establishing learning outcomes for BAgricExt

SAQA specifies that the learning outcomes of all qualifications acquired in South Africa should comprise critical cross-field or generic skills to stimulate lifelong learning as well as specialised knowledge, skills. For the standards setting, each qualification requires to move from generic to specific outcomes. These standards are found in the level descriptors (Department of Education, 2007). The level descriptors "describe the required generic competencies at each level of cognitive complexity in the HEQF" (Department of Education, 2007:7). The purpose of level descriptors is to ensure there is coherence in learning outcomes in a given qualification at particular levels, and to enable the assessment of the national and international comparability of qualifications (SAQA, 2012).

The learning outcomes of a programme describe the proposed educational outcomes or achievement in terms of specific knowledge, attitudes, abilities and values that students should possess in a programme (University of Central Florida, 2005). If learners are able to acquire these learning outcomes and move between different areas of learning and their respective levels of learning, it is arguably a benefit for the learner, the education system and the economy (Human Sciences Research Council, 1995). For each programme or qualification, a clear definition of learning outcomes need to be done first, then it will be the responsibility of the people in charge of the teaching to demonstrate how the outcomes will be achieved through learning and assessment process (Jackson, 1998). Learning outcomes are meant to relate to the relevant NQF level and the corresponding level descriptors.

Figure 3.1 presents a consolidation of this discussion. Being an undergraduate qualification, the BAgricExt learning is laddered along NQF levels 5, 6 and 7 which generally correspond to first

year, second year and third year, respectively. It captures the five learning areas (Agricultural Extension, agricultural production, farm business management; farm infrastructure, and natural resource management), and presents the main learning outcome per NQF level for each.

As required, at NQF level 5 (first year), students are expected to acquire fundamental competence on all the five learning areas of the programme. At NQF level 6 (second year), students will move from fundamental to practical competence and demonstrate their ability to apply level 5 learning in unfamiliar settings in each of the five learning areas. Finally, at third year (NQF level 7/Exit-level), students are expected to acquire reflexive competence and demonstrate a level of autonomy in their learning and apply previous learning in complex and unfamiliar settings.

Key Learning areas → NQF Levels ↓	Agricultural Extension	Agricultural Production	Farm Business Management	Farm Infrastructure	Natural Resource Management
↓	↓	↓	↓	↓	↓
NQF level 5 (First Year)	Correctly identify and define concepts and processes related to agricultural development.	Understand meaning of terms and principles on plant and animal health, physiology and reproduction	Understand basic knowledge of production economics, marketing and farm accounting.	Understand and apply terms and principles governing conservation structures and farm infrastructure and machinery	Understand and apply terms and principles related to the use of natural resources in the context of environmental impact
↓	↓	↓	↓	↓	↓
NQF level 6	Correctly evaluate,	Manage principles	Manage farm	Maintain farm	Select site, plan

(Second Year)	select and apply appropriate extension method(s) and techniques to initiate a process that will strengthen farmer's capacity to improve the situation.	of crop and animal production system, feeding systems available and nutritional requirements for livestock production	business machinery and human resource; and keep records and budget.	infrastructure and machinery at a standard required for sustainable production.	and prepare the land, considering climate, soil fertility, water and vegetation
	↓	↓	↓	↓	↓
NQF level 7 (Third Year)	Independently design, implement and evaluation the impact of an extension programme aiming to build farmers' capacity in his farming enterprise.	Plan and manage a selected production system in a sustainable manner to optimise economic return.	Add value and market the farm business effectively, manage agriculture finances, human resource, external farm environment, and engage in personal risk taking.	Not taught at NQF level 7	Make informed decisions for sustainable land use.

Figure 3.1: Framework of learning outcomes required in different learning areas of a BAgircExt

3.3.1. Framework of learning outcomes

Performing as an extension practitioner requires certain knowledge and skills that will allow the graduate to respond appropriately to issues faced by farmers. The four major knowledge and skills sets suggested by Worth (2008) [see section 3.1] are consistent with the current agricultural agenda in South Africa, (DoA, 2005). From these knowledge and skills, the technical agricultural training was further investigated under the research done (Worth, 2014) in the field of agricultural colleges, and established that the diploma curricula need to be organised under the following key learning areas: Agricultural Production; Farm Business Management; Natural Resource Management; and Farm Engineering. For each one of these areas, the curriculum design should take into consideration the 'first day competencies' when setting the exit level outcomes. This will help to meet employers' expectations especially in production sector (Worth, 2014).

In addition, the South African Department of Agriculture (DoA, 2005) stipulates that Institutions of Agricultural Extension and Advisory Services must equip learners in the fields of project management, crop production, livestock production, horticulture, farm business economics, extension, and land use planning, among others, (DoA, 2005) to effectively respond to farmers and employers' needs.

Drawing from the above and considering that extension and advisory services need for a "cadre of well-trained, dedicated and motivated staff skilled" (DoA, 2005: 8) in different fields, the focus for the exit level outcomes should consider the following for each learning area, as suggested by (Worth, 2014): for Agricultural Production: plan and Manage a production system in a sustainable manner to optimise economic return; for Farm Business Management: manage agribusiness finances as a means of planning and monitoring the management of the enterprise; for Natural Resource Management: make informed decisions regarding sustainable land use; and for Farm Engineering: manage the farm infrastructure and machinery (Worth, 2014). Therefore, the Agricultural Extension qualification (BAgriExt) is expected to consider, in addition to the learning area of Agricultural Extension, the other four learning areas as depicted in figure 3.1 (Framework of learning outcomes for a BAgricExt).

The learning outcomes are presented under the five key learning areas (Agricultural Extension, Agricultural Production, Farm Business Management, Farm Infrastructure, and Natural Resource Management) on the three NQF levels (NQF level 5 and 6 for first year, NQF level 6 for second year, and NQF level 7 for third year). Each key learning area displays achievements (learning outcomes) expected from students doing BAgricExt.

The limit of 96 credits at NQF level 5 suggested that the Agricultural Extension learning area, could start at NQF level 5 where first-year students would be expected to be able to correctly identify and define concepts and processes related to agricultural development and rural agrarian change, but exit at NQF level 6 where students should be able to correctly evaluate an agricultural situation and correctly select and apply the appropriate extension method(s), tool(s) and processes to initiate a process that leads to strengthening farmer capacity to improve the situation. Second year would start and exit NQF level 6 with similar expectations from students. At exit level (NQF level 7), the third-year students should be able to independently design, implement and evaluation the impact of an extension programme aimed at building farmer capacity to improve the sustainability and profitability of his farming enterprise.

In addition to the foregoing, because Agricultural Extension is the primary focus of the qualification, UKZN also developed a "key competency learning ladder" for the discipline of Agricultural Extension. It was aligned with the NQF level descriptors and provided additional detail on the competences at exit level. The ladder addressed eight component areas: (1) Communication; (2) Learning; (3) Project Orientation; (4) Systems Thinking; Sustainable Livelihoods; (5) Participatory Methods, Facilitation, Group dynamics & Innovation; (6) Research; (7) Stakeholder analysis & Partnerships; and (8) Extension Theory & Practice. The anticipated learning outcomes at exit level are captured in Table 3.2.

Table 3.2. Agricultural Extension Competence exit-level outcomes

Extension Learning Component	Exit-level competence
Communication	• Communicate and illustrate concepts in use, in both written and oral form
Learning	• Self-directed • Critically reflect on own strengths and weaknesses, and take steps to improve these

	• Appropriately apply Kolb theory in a complex real-world setting
Project Orientation	• Identify and conduct a project of interest for self • Collaborate with an organised group of rural people in the initiation and/ or conduct of a development project
Systems Thinking Sustainable Livelihoods	• Participate effectively in community groups & learn from them • Critically assess group dynamics using appropriate theory • Innovate original participatory learning activities
Participatory Methods, Facilitation, Group dynamics & Innovation	• Apply theory and tools of SL analysis to virtual and real-world setting
Research	• Plan a research process, gather the information and analyse the results • Critical and discriminatory review of relevant previous material in the field of enquiry
Stakeholder analysis Partnerships	• Apply stakeholder analysis tools in virtual and real-world setting
Extension Theory & Practice	• Understand and apply extension approaches and tools in a complex setting

(UKZN, 2015)

For the Agricultural Production learning area, the expectation on NQF level 5 from first-year students is to understand meaning of terms and principles on plant and animal health, physiology and reproduction. At NQF level 6, the second-year students should acquire management principles of crop and animal production systems, feeding systems available and nutritional requirements for livestock production. At exit level (NQF level 7), the third-year students should be able to plan and manage a selected production system in a sustainable manner to optimise economic return.

For the Farm Business Management learning area, it is estimated on NQF level 5 from first-year students to understand the basic knowledge in production economics, marketing and farm accounting. At NQF level 6, the second-year students should acquire knowledge for farm business management, keeping records, budgeting, and management of machinery and human

resource. At exit level (NQF level 7), the third-year students should be able to add value and to market the farm business effectively, to manage agriculture finances, human resource, external farm environment, and engage in personal risk taking.

For the Farm Infrastructure learning area, it is expected on NQF level 5 from first-year students to understand the basic information, meanings of terms, and principles around conservation structures, farm infrastructure and machinery. At NQF level 6, the second-year students should acquire knowledge to maintain farm infrastructure and machinery at a standard required for sustainable production. At exit level (NQF level 7), the third-year students should be able to manage the farm infrastructure and machinery.

Finally, for the Natural Resource Management learning area, the expectation on NQF level 5 from first-year students is to understand the basic information, meanings of terms, and principles around natural resources and environmental impact. At NQF level 6, the second-year students should acquire knowledge on site selection and planning, land preparation, climate, soil fertility, water and vegetation. At exit level (NQF level 7), the third-year students should be able to make informed decisions for sustainable land use.

3.4. Discussion and implications

In line with what AET is striving for in provision of quality education, the BAgricExt, as with other qualifications, is bound to follow the rules to keep the prescribed standards and deliver graduates that will successfully meet the demands of potential employers. Learning outcomes are the key for this. If students are equipped with what is needed to meet the first day competencies

(especially at exit level NQF7), employers are likely to be satisfied with their performance, which will have a positive effect on production as well the reputation for the academic institution where the graduate came from. This should increase the chances for graduate to be offered long-term or permanent employment in the company, as s/he will be considered as valuable asset.

Retained graduates will justify the throughput of the programme, because the programme will not only produce graduates, but will make sure graduates are placed and are performing to the expectations of the employers – this could generate more demand, especially from employers in production fields, to academic institutions producing such successful graduates, because most employers are more interested with employee who can do the job than the one having a qualification per se. This will give the intrinsic value to the qualification awarded and a good reputation to the academic institution.

BAgricExt learning outcomes need to be aligned with the five learning areas to facilitate acquisition of 'first day competencies' that will determine the future career of graduates in their work place (if they take the working route). If they decide to pursue further studies, the acquired competence needs to prepare them for that. It is understood that all students cannot achieve what the outcomes are stipulating to the same level, but they all work towards them at their own respective pace (hence different grades or points will be allocated to students indicating the level of their performance against learning outcomes).

BAgricExt goals for student learning have been translated into specific and measurable expectations, but the difficulty could be the implementation of these expectations (learning outcomes). If there is no clear mechanism to drive the Teaching and Learning with measures of quality insurance in place, these expectations are likely to be in vain. Therefore, the programme

(BAgricExt) needs to develop strategies to ensure teaching and learning leads towards acquiring the assigned learning outcomes which should reflect the first-day competencies required in the work place and should also prepare the graduate for further study.

References

Allais, SM (2003). The National Qualifications Framework in South Africa: a democratic project trapped in a neo-liberal paradigm?. South African Institute for Distance Education (SAIDE).

Allais, S (2010). The changing faces of the South African National Qualifications Framework. ILO Skills and Employability Department. NQF Country Study - e-version. Geneva.

Chakeredza, S., Temu, A.B., Saka, J.D.K., Munthali, D.C., Muir-Leresche, K., Akinnifesi, F.K., Ajayi, O.C. and Sileshi, G. (2008). Tailoring tertiary agricultural education for sustainable development in Sub-Saharan Africa: Opportunities and challenges. *Scientific Research and Essay*.Vol.3 (8), pp. 326-332. http://www.academicjournals. org/sre/PDF/pdf2008/Aug/ Chakeredza%20et%20al%20Pdf.pdf. Accessed August 2012.

Churches, A (2008). Bloom's Taxonomy Blooms Digitally. http://tlc.temple.edu/sites/tlc/files/ resource/pdf/1%20Bloom's%20Taxonomy%20Blooms%20Digitally%20_%20Tech%20Lea rning.pdf. Accessed September 2015.

Department of Agriculture, Forestry and Fisheries (DAFF) (2009). Annual report on the state of compliance to norms and standards for extension. http://www.nda.agric.za/doaDev/ sideMenu/educationAndTraining/extensionAnnualReport.pdf. Accessed June 2014.

Department of Education (2007). The Higher Education Qualifications Framework Higher Education Act, 1997 (Act No. 101 of 1997). Government Gazette, No.30353. http://www.saqa.org.za/docs/pol/2007/not0928.pdf. Accessed September 2015.

Department of Higher Education and Training (DHET) (2013). Higher Education Qualifications Sub-Framework. Notice 1040 of 2012; Government Gazette No. 36003 of 14 December 2012.

DoA (Department of Agriculture) (1995). White paper on agriculture. Department of Agriculture. Pretoria.

DoA (South African National Department of Agriculture) (2005). National Education and Training Strategy for Agriculture and Rural Development in South Africa (AET Strategy). Department of Agriculture, Pretoria. http://www.nda.agric.za/doaDev/sideMenu/education AndTraining/AET_strategy.pdf. Accessed August 2012.

FAO (2017). The future of food and agriculture: Trends and challenges. United Nations, Rome

Food Agriculture and Natural Resource Policy Analysis Network (FANRPAN) (2012). Current and Emerging Youth Policies and Initiatives with a Special Focus on Links to Agriculture: South African Case Study Draft Report.

Freer, TJ (2015): Modernizing the Agricultural Education and Training Curriculum. https://innovate.cired.vt.edu/wp-content/uploads/2015/09/Thematic-Study-Modernizing-AET-Curriculum_112415_-FINAL.pdf

Higher Education Qualifications Sub-Framework (HEQSF) (2013) Higher Education Qualifications Sub-Framework. Notice 1040 of 2012; Government Gazette No. 36003 of 14 December 2012.

Higher Education and Training (2013). The Higher Education Qualifications Sub-Framework as revised. Notice 1040 of 2012; Government Gazette No. 36003 of 14 December 2012.

Human Sciences Research Council (HSRC) (1995). Ways of seeing the National Qualification Framework. Pretoria.

Isaacs, SBA (2000) The National Qualifications Framework and the Standards Setting. Brooklyn, Pretoria.

Jackson, N (1998). Understanding standards-based quality assurance: part II – nuts and bolts of the "Dearing" policy framework. Quality Assurance in Education. University Press. Volume 6, Number 4. pp. 220–231.

Kidane T. T. and Worth S. (2012). A review of Agricultural Education and Training in South Africa. African Journal of Agricultural Research Vol. 7(18), pp. 2741-2750.

Lefkowitz, S. (2012). An Overview of the NQF. Alusani, Skills & training network. http://www.alusani.co.za/web_files/nqf.pdf. Accessed June 2014.

Maguire, C.J (n.d). Agricultural innovation systems: an investment sourcebook Agricultural Education and Training to Support Agricultural Innovation Systems. http://siteresources.worldbank.org/INTARD/Resources/335807-1330620492317/9780821386842_ch2.pdf. Accessed June 2014.

Masuku, B.T. (2010). The potential of integrating structured experiential learning into the curriculum as a means of improving the Agricultural Extension curriculum: a comparative study of two programs in KwaZulu-Natal. Masters' thesis. Faculty of education. University of KwaZulu-Natal, Durban.

SAQA (2011). Work-related qualifications and part qualifications registered on the NQF: trends 2002 to 2011. Analysis of the National Learners' Records Database Report 3.

South African Qualifications Authority (SAQA) (2012). Level Descriptors for the South African National Qualifications Framework. Waterkloof.

SAQA (2001) Criteria and Guidelines for Assessment of NQF Registered Unit standards and Qualifications. Policy document. Pretoria, South Africa.

South African Government (2007). The Higher Education Qualifications Framework. Higher Education Act, 1997 (Act No. 101 of 1997). Department of Education. Government Gazette Notice No. 928 of 5 October 2007. Pretoria.

South African Government (2013). The Higher Education Qualifications Sub-Framework Notice 1040 of 2012; Government Gazette No. 36003 of 14 December 2012 in terms of the National Qualifications Act, 2008 (Act No. 67 0f 2008) and as contemplated in the Higher Education Act, 1997 (Act No. 101 of 1997). Pretoria.

UCF (University of Central Florida) (2005). Program assessment handbook: guidelines for planning and implementing quality enhancing efforts of program and student learning outcomes.

UKZN (2013). College of Agriculture, Engineering and Science 2012: Handbook for 2012. p 85-86.

UKZN (2015). B Agric Key Competency Learning Ladder (2015). Unpublished internal Agricultural Extension and Rural Resource Management programme document.

Worth, SH (2008). An assessment of the appropriateness of Agricultural Extension education in South Africa. Doctoral thesis. Faculty of Science and Agriculture, University of KwaZulu-Natal, Pietermaritzburg.

Worth, SH (2014). The development of curricula for a diploma in agriculture in South Africa's colleges of agriculture. Proceedings of the 48th conference South African Society for Agricultural Extension. 10 June – 12 June, 2014, Tramonto, George, Western Cape Province.

Chapter 4: How best to learn in the Bachelor of Agricultural Extension qualification
*"Human beings are born geniuses and designed for success.
If they fail to display their genius or fail to succeed,
it is because their design function is being thwarted".*
(Barr and Tagg, 1995:13)

Based on the evidence of learning capabilities that all humans possess, higher education institutions should find ways to improve every student's vast talents and define the way each student could take to succeed (Barr and Tagg, 1995). This gives more attention to the teacher who is the learner's first instructor. But it is important to consider the fact that the quality of an education system cannot surpass the quality of its instructors. Therefore, a critical factor shaping the learning and growth of students is the quality of teacher's education. In this circumstance, it is important for the institution to know what teachers are able to do and what they should know to deliver a quality education (Chong and Ho, 2009). Measures need to be taken and new approaches (strategies) used to acquire knowledge via quality education.

Looking at the increase in competition among different sectors around the world and the demand for qualified people to service this demand, it is a reveille for higher education institutions to adjust and strategise new ways of teaching and learning to meet the demands. In South Africa, the Department of Higher Education and Training (DHET) has identified that improving teaching and learning is critically important for the development and success in different domains (Strydom et al., 2012) considered as pillars of country's economy. In addition, even though there has been transformation in higher education, educational developments in South Africa still has a long way to go to meet the desired depth (Leibowitz & Bozalek, 2014). Agriculture being one of

the most important sectors in the country, education for the sector (AET) needs, therefore, to be taken seriously. It is there to produce well-equipped graduates who will be able to lead the socio-economic development and sustainable growth in the country, and face the global challenges in the continent and in the world.

The BAgricExt, as an important qualification identified within AET for agricultural development in South Africa, needs to consider the quality of the education it provides. This chapter will establish a framework showing how better education (learning) can be acquired in the BAgricExt. It will cover the role of South African Higher Education in improving learning the new approach for learning, identification of critical areas of improvement for effective learning in the BAgricExt qualification, and quality assurance with important measures to maintain quality in higher education institutions.

4.1.   Role of South African Higher Education in improving learning

The South African higher education system has enormous potential to contribute to the economic and social development needs within the country and in the African continent. Nevertheless, the current system has a number of serious weaknesses and major problems as a result of its apartheid era. These weaknesses and problems severely hamper its ability to efficiently reach important national goals and serve different social and educational purposes (CHE, 2000). Higher education's primary role is "to develop the intellectual and skills capabilities of our society to address and resolve the range of economic (including labour market), social, cultural, political and other challenges faced by society" (CHE, 2000:31). Also, higher education must play a key role in dealing with difficult challenges of international competition in the context of globalisation (CHE, 2000; HESA, 2009). For this role to be achieved, the first step to be taken by

universities in South Africa is to overcome historical inequalities inherited from the apartheid system by offering high quality undergraduate education. This has two dimensions: expanding access to those who previously had limited access; and ensuring consistency of quality throughout the higher education system. This will lay the necessary academic foundations for those students wishing to further their studies and contribute to the country's development (Higher Education and Training, 2014). Because development and reconstruction depend on generating well-trained graduates with a variety of competencies and skills, it will be difficult to seize opportunities available for both young and adults' learners, or to attain socio-economic development and sustainable growth if there is no investment to develop human resource. Douglas (2000 cited by CHE, 299: 28) wrote: "as the global economy becomes more competitive, those states and nations that invest the most time and energy in expanding and nurturing their higher education systems, will likely be the big winners of tomorrow". Therefore, it will be an obligation for the South African government to invest more in quality higher education which will deliver the qualified and responsible graduates required for the economic growth and sustainable development in the country (Bologna Secretariat, 2012). It is in this regard that students who qualify for funding in South Africa are provided with loans and bursaries from the National Student Financial Aid Scheme (NSFAS) to cover academic expenses (tuition fees, books, accommodation and other living costs) (HESA, 2014). But it is not enough; the demand is higher than what NSFAS is offering, and, thus, it was recommended that government should reinforce NSFAS and help to reduce pressures on students by making their tuition fees more reasonable (HESA, 2009).

Quality education delivery is a defined condition of higher education institutions. It should start from recruitment through to the graduation of candidates (Institutional Management in Higher

Education (IMHE), n.d.). This brings in to focus the ultimate role of educators and the need for a new (or at least improved) approach to higher education.

4.2.   Shifting instruction to learner centred

In 1995, Barr and Tagg conducted an inspiring discussion in higher education circles by declaring that "there was a paradigm shift in American undergraduate education. Higher education is shifting from an *instruction paradigm* – characterized by an emphasis on delivering lectures and providing students with the means to learn – towards a *learning paradigm* in which the emphasis is no longer on the means but on the end" (Tremblay et al, 2012:35). It is possible that the shift from instruction paradigm to learning paradigm will not be sudden, it will take time as it involves a progressive change and experimentation in different components of the organisation (Barr and Tagg, 1995). In the learning paradigm, every method that works in terms of learning outcomes is supported and welcome to be used (Barr & Tagg, 1995).

From the learning paradigm, the prominent way of teaching has shifted to learner-centred focus, which needs to be promoted in higher education, as it is characterised by innovative approaches of teaching that implicate students as active participants in their own learning (Tremblay et al, 2012). It is assumed here that a degree would not represent the time spent or credit hours accumulated to learn, but it would certify that the student had demonstrated and attained specified knowledge and skills (Barr and Tagg, 1995) that are needed urgently, leading to job opportunities (IMHE, n.d). The strong emphasis on student-centred learning is to understand better the relationship between teaching and learning in order to identify effective teaching strategies to enhance students' learning outcomes (Tremblay et al, 2012). Students, on their side, they need to partake in the process to contribute on their own learning and success. It was

identified by scholars that students' success is promoted when students frequently "ask questions in class or contribute to class discussions; make a class presentation; prepare two or more drafts of a paper or assignment; work with other students on projects during class; work with classmates outside of class on assignments; tutor or teach other students (paid or voluntary); participate in a community - based project as part of a regular course; talk about career plans with a lecturer; discuss ideas from readings or classes with a lecturer outside class; receive prompt feedback on their academic performance; work harder than they think they can; work with lecturers on activities outside coursework (committees, student life, etc.); discuss ideas from readings or classes with others; spend time studying and preparing academic work; have serious conversations with students of a different ethnicity and with those who differ from themselves in terms of religious beliefs, political opinions, or personal values" (Strydom et al., 2012:7). These elements can be used by institutions to reflect on the extent to which high-impact practices exist in the teaching and learning experience. The idea here does not suggest or imply that every module on each level of undergraduate should engage students in all of these activities, but that when programmes are planned and curricula developed, these activities need to be integrated throughout the learning experience of an undergraduate qualification (Strydom et al., 2012).

4.3. Identifying areas for effective learning in the Bachelor of Agricultural Extension qualification

A learner obtaining the BAgricExt should be able to apply the philosophy and principles of Agricultural Extension in practice. Agricultural Extension is an applied discipline with emphasis of applying theory in practice for the positive change of behaviour and enhanced innovation of technology (SAQA, n.d.). This will depend on how the philosophy and principles are delivered

and how the learner is guided to be able to apply them in practice. In South Africa, the AET Strategy has targeted Agricultural Extension as a "key competency and skill set needed to meet the demands of the agricultural development agenda" (Worth, 2008:73). One of the reasons is because education in Agricultural Extension discipline has its unique scientific content, which is a combination of theory and practice in learning. The norms and standards for Agricultural Extension suggest that curricula should ensure that students are being equipped with knowledge and skills that will contribute for sustainable wealth creation and the transformation of agriculture in South Africa (Worth, 2008). Therefore, there is need for quality in the learning programme.

Quality is achieved through a combination of many elements, the main ones being: students' prior experience, their knowledge, conception and reason for studying; their perceptions about teaching and learning environment; teacher's pedagogical course knowledge and their conception of teaching; how course material is selected, organised, presented and assessed; and the approaches to learning and studying (Poon, 2013). In addition, "learner-centred education requires that teachers be curriculum designers; they are the only ones in the education system who know the learners directly, understand the contexts in which the learners operate and are aware of the resources available" (Worth, 2008:54). The common factor in the elements given above, which influence both the design of the course materials and the learning environment, is the pedagogical knowledge of university lecturers (Poon, 2013). These elements are included in the four main areas to consider when looking places that require improvement in the learning process: "(i) university teachers, (ii) student support and development, (iii) the learning environment, and (iv) course and program enrolment management" (HESA, 2013:2).

4.3.1. University teachers

Teaching is defined as offering lessons to students in a learning institution. It is also about demonstrating to students how something can be done so that they can be able to do it themselves in their own way. Therefore, teachers have large responsibilities to assist their learners through provision of knowledge, demonstrations to learn new things and to see them changing attitudes in preferred directions (Wambugu et al., 2013). Then, how can 'good' teachers can be identified? While the characteristics of a 'good' teacher have been widely debated, the main characteristics appear to be: teacher sensitivity to class level and progress; provision of clear explanations; clarity of course requirements; respect for students and encouragement of independent thought; sound pedagogical knowledge; taking full command of the curriculum; allocating appropriate workloads; empathy with students; and being open to the quality of the assessment procedures. Possessing such qualities and characteristics, can result in 'quality' teaching instead of 'ordinary' teaching (Henard & Ringuet, 2008).

Excellence in teaching is achieved primarily through individual effort, even though there are material conditions related to teaching and learning that are attached (IMHE, n.d). As Biggs (2001) mentioned in (Henard & Ringuet, 2008), "quality" can define an outcome, a process or a property alternatively. Thus, the term 'quality teaching' can have multiple definitions. It can refer to excellence, value for money, fitness for purpose and transformation (Luckett, 2006; Henard & Ringuet, 2008). This transformation could require teachers to use their daily activities and experiences to encourage creative learning and help students learn more. Creative learning needs dedication from teachers, enough time invested and effort in the process of developing and reinforcing students' creative thinking. If this is done, it will create positive attitudes in their

learners towards what is being taught, or illustrated (Wambugu et al., 2013). For teachers to get such enthusiasm and enhance creative learning, despite their self-consciousness and their commitment to teaching, the university management needs to take into account the fact that university teachers constitute the first area of focus for improvement in the learning process, hence the following elements need to be considered "professional development, reward and recognition, workload, conditions of service and performance appraisal" (HESA, 2013:2).

4.3.2. Professional development

Many governments worldwide are investing efforts in professional development with the ultimate aim to improve education in their countries (Andoh, 2012). Improved education can be reached through quality teaching, which can be strongly supported by "professional development activities (e.g. in-service training for faculty)" (Hénard & Roseveare, 2012:7). In-service training is intended to improve employees' knowledge, skills, and ability to take greater responsibility, and assisting them to become more capable in their jobs. Generally, this responsibility is given to the institution, to facilitate employees' training for the achievement of the institution's goals and objectives (Halim & Ali, 1998). Professional development is one of the ways to confirm the primary task of lecturers and to promote and support good practice within an institution (Luckett, 2006). It is about transforming lecturer's knowledge into practice, taking them in the process of learning how to learn, for the ultimate benefit of their students' growth (Avalos, 2010). Another form of doing this is to consider "probation leading to tenure" (Luckett 2006:19), by giving academic staff in-service training on provisional basis until they are qualified to take a permanent position.

4.3.3. Reward and recognition

Teaching excellence awards and competitions for substantial improvements are important activities to enhance the quality of teaching (Hénard & Roseveare, 2012). They can be established in the form of academic promotions and rewards, among others as a part of a programme to provide quality academic staff (Luckett 2006). They can be celebrated as public acknowledgements of distinction (Gallus and Frey, 2016b in Callagher & Smith, 2017). It is additional motivation given to staff to acknowledge their effort invested into teaching. The range of incentives for outstanding performance that can be used for academics includes: sabbaticals; awards; grants for further education; and remuneration (pay increases). Many staff expect such incentives within their institutions, assuming that: "good performance must be recognised and rewarded in accordance with public service regulations, norms and standards set by the Department of Public Service and Administration" (DoA, 2005:11).

4.3.4. Workload

Workload can be explained in the McClusky's Theory of Margin, which is "grounded on the notion that adulthood is a time of growth, change, and integration where an individual is in constant search for balance between energy needed to accomplish certain tasks and the load required to achieve those tasks" (Faduke, 2012:15). Based on this theory, it is established that the imbalance between load and energy to complete a specific work will lead to poor performance of a task to be completed. This margin needs to be monitored by academics because poor management of academic workload has been identified to have a negative impact on academic performance (Faduke, 2012) on both students and teachers. Hosain (2016) added that for academics to perform better, workload management should be appropriate and well-adjusted.

Therefore, an appropriate workload is crucial, and is one of the main characteristics of 'good teacher' recognised by scholars. Further, it goes with mastering the pedagogical knowledge, and taking full command of the curriculum (Henard & Ringuet, 2008; Wambugu et al., 2013).

On the students' side, it was identified that, in their transition from high school to university, most students will find it challenging to manage the academic workload in their new learning environment. Students who are able to cope with the academic and emotional demands of the university are likely to reach higher academic marks, while those who find academic requirements to be more demanding, up to the point of being unable to cope with the workload required, will achieve lower academic marks at the end of the year (Sommer & Dumont, 2011).

4.3.5. Conditions of service and performance appraisal

According to the Higher Education and Training Laws Amendment Act (2010:24) "the council must determine the functions, conditions of service and privileges of lecturers and support staff", including determination and review of their salaries in accordance with the rules. With regard to condition of service and performance, there is a range of elements to consider that are likely to influence positively the quality teaching. The most important are: teaching innovation funds; support to innovative pedagogy; and organisation and management of teaching and learning (Hénard & Roseveare, 2012). If these elements are attended, the conditions of service will be suitable and likely to impact positively on individual performance. But this performance needs to be monitored. In South Africa, the Performance Management System (PMS) was introduced in the public service with the aim of assessing performance, reviewing, developing underperformers, and recognising and rewarding good performance (Munzhedzi, 2011). It is a way of obtaining good results from an individual, team and organisation by understanding and

monitoring performance within an established framework of planned standards, goals, and competence requirements. Other scholars define performance management as "a formal and systematic process by means of which the job-relevant strength and weakness of employees are identified, measured, recorded and developed" (Munzhedzi, 2011:14). Once the performance appraisal is done, the results will be analysed at the institutions' management level, which will do the follow up. The supervisor will inform in writing his subordinates about the assessment outcomes. These results could be either positive or negative. If they are declared to be satisfactory (positive), good performance will be rewarded by giving recognition to good performers, for example paying performance bonuses or giving them non-financial rewards (Munzhedzi, 2011).

4.3.6. Student support and development

Student support and development is the second area of focus to consider when looking for places that require improvement in the learning process (HESA, 2013). Support services can be academic or non-academic. Academic student support is based on academic decisions linked to teaching and study difficulties faced by students, and it is given by academic staff; while non-academic support comprises centralised services, not directly associated to academic issues, they will provide students with important and appropriate study conditions that will support them throughout their career (Tamulienė, 2013).

The analysis of many scholars (Savickiene & Pukelis, 2004; Thompson & Mazer, 2009; Morgan, 2012; Prebble et al., 2004 in Tamulienė, 2013) identified a number of services that can provide academic and non-academic student support. For academic support includes academic counselling, career counselling, first-year students' orientation courses, library services,

language training services, and distance studies services. Non-academic support involves psychological counselling, financial support and law consultations, accommodation service, community feeling development activities, support for students with disabilities and health consultations. Some of these services depend with what is offered by the learning environment.

It is significant for educators to have an idea of how well- or ill-prepared recruited students are, based on their qualifications (Mlambo, 2011). Many learners with poor schooling backgrounds aspire to get higher qualifications, but they are less prepared academically than their class colleagues (National Planning Commission, 2012). Looking at the way under-preparedness is manifested, some academics and students can easily be tempted to equate it with lack of intellectual capacity, while it is primarily the result of the insufficient schooling the students went through. Therefore, under-preparedness will mean different things to different people. Some people will qualify underprepared students as 'weak' students, involving some level of cognitive shortfall, which will require remedial educational approaches. For others, under-preparedness is associated with lack of ability to grasp higher learning. Furthermore, given the poor quality of schooling experienced in most African communities, under-preparedness is usually associated with African students (CHE, 2013).

If the educators have an idea of the level of preparedness of their students, that will help determine the kind of intervention to put in place to allow every student to successfully complete the programme even if initially they have to move at different paces. The evident intervention will be to offer additional support as those described above, to learners who are struggling (identified as underprepared) so that they can cope with the demands of higher education or otherwise attain the academic skills required to complete their qualification (National Planning

Commission, 2012). Student under-preparedness is generally believed to be the main learning-related cause of the poor performance patterns in higher education. This is most commonly attributed to school sector; therefore "universities will have to continue to assist underprepared students to make the transition to a successful university career. This could involve foundation programmes, intensifying tutorial-driven models which enable small-group interaction, or increasing the duration of degrees" (CHE, 2013:29).

4.3.7. Learning environment

The third area of focus for improvement in the learning process is the 'learning environment' (HESA (2013:2). This is also referred to as classroom environment, which is the place or venue where student learning occurs. It is the physical environment with norms and values. It is one of the crucial predictors of student performance or achievement (Kemp & Mouton, 2009).

Quality teaching can be well supported and have significant impact on the teaching and learning process if learning environment is conducive. This comprises the libraries, facilities for computers (Hénard & Roseveare, 2012), access to ICT infrastructure, teaching and learning spaces, technology-enabled tools and other resources (HESA, 2013). The physical space provided for learning should support teaching by enabling certain crucial activities, for example moving tables around to facilitate forming groups of students that can work in the same space, and have supporting materials such as overhead/data projector (Parpala & Lindblom-Ylänne, 2007). The quality in education is sometimes threatened by the pressure to increase outputs without increasing resources (Barr & Tagg, 1995). In South Africa for example, university intakes have almost doubled since 1994, but the infrastructure has not kept the pace. This affects enormously the quality of teaching and learning (National Planning Commission, 2012).

There is a distinction between classroom-level environment and school-level environment. The school-level environment can be viewed as more than the sum of the classroom environments within the school plus non-classroom environments including administrative, social and recreational elements; it is more global and is distinct from the classroom environment. For example, "classroom climate might involve relationships between teacher and his students or among students; school climate might involve the relationship between teacher and his teaching peers, head of department and school principal. Similarly, while classroom environment is usually measured in terms of either student or teacher perceptions, school environment is usually (but not exclusively) measured in terms of teacher perceptions" (Choppin, and Postiethwaite, 1981:28). The significant characteristics of the school environment are the physical environment, relationships and interactions between heads, teachers and students, teacher and student morale, the existing social system, a sense of community, norms among peers, and safety. School environment is vital for the quality of teaching and learning. It affects students' academic success, and their comfort and social development (Kemp & Mouton, 2009).

4.3.8. Course and programme enrolment management

The forth area of focus for improvement in the learning process is 'course and programme enrolment management', which includes "admissions, selection, placement, readmission refusal, pass rates in gateway courses, and throughput rates" (HESA, 2013:2). Each enrolment has some conditions to meet often set by a regulating authority and further by a receiving institution (Mlambo, 2011). A person can register as a student only if s/he meets the admission legal requirements to study at the given institution, and any other requirements set for admission (Higher Education and Training Laws Amendment Act, 2010). Learning being a cumulative

process, a student admitted with higher entry requirements points will likely be better equipped for the course material compared to admitted with only the minimum requirement points (Mlambo, 2011).

Featherman et al. (2010:58) declared that "university should never consider race in admissions decisions, no matter how grave the problem it seeks to remedy". In the 'new' South Africa, the liberation movement (driven the ANC) prioritised an affirmative action strategy to rectify the inequities of the past by ensuring that access to opportunities would not continue to be determined by gender and race, but recognising that the law needs to step into the process to give everyone equal rights (Featherman et al., 2010). Enrolment documentation will provide potential student candidates with precise and sufficient information about admission processes according to the current legislation that governs the institution (CHE, 2004). But before recruiting, the institution should consider the programme's expected learning outcomes and its capacity to provide good quality education to the number of students selected (CHE, 2004).

Concerning placement of graduates, the South African government and employers are putting pressure on HE to produce employable graduates who have the attributes, capabilities and characters to work successfully (Griesel & Parker, 2009). It is therefore expected that HE should do more to prepare graduates for employment. HE should also pay attention to the quality, type and numbers of graduates needed to meet the socio-economic demands in the country (Griesel & Parker, 2009). At the same, time employers need to provide opportunities for work placements in meaningful jobs positions or apprenticeships that will benefit themselves and the graduates (Mayer et al., 2011).

A key challenge related to enrolment is that university enrolments in South Africa have almost doubled since 1994, but the resources available have not kept the pace (National Planning Commission, 2012). The question to investigate is the consequences of this imbalance and to find out if the cause of the poor graduation rates and quality can be related entirely to academic preparedness which could be detected during the enrolment process, or financial need, motivation, health, interest, or the institutional climate – including limited resources (HESA, 2013).

These four main areas described above are embedded in what quality assurance is pursuing in higher education institutions in the South Africa.

4.4.   Quality assurance

Quality Assurance in education has received rising interest. There is a need for educational institutions to pursue ways to constantly improve their programme design, academic staff, delivery, administrative, procedures and support services (Chong & Ho, 2009). Quality Assurance is a "processes of ensuring that specified standards or requirements have been met" (CHE, 2004:15), ensuring that all learners are regularly being measured against the same standards that are relevant, fair and effective (Lefkowitz, 2012). Its basic objective is to "safeguard and uphold the standards of higher education by publicly providing verified qualitative and quantitative information on programmes" (Chong & Ho, 2009:307). It deals with internal and external management procedures of the institutions of higher education to ensure the quality of systems, processes, products and outcomes (Luckett, 2006).

At the centre of quality assurance is a framework with five key strategies, each strategy having a key role to play in ensuring quality. For each strategy, there are performance indicators articulating the areas that need to be addressed and reviewed. These strategies are: admissions; teaching, learning and assessment; quality of graduands; human and operational systems and infrastructure; and student development. This framework of quality assurance is a systematic programme review, which is developed as an internal review tool destined to offer long-term quality strategy to improve and innovate the programmes' overall value (Chong & Ho, 2009). Additionally, there are different types of quality assurance processes in education, the prominent one run by External Quality Assurance bodies via accreditation, audits, inspection and external examination (Allais, 2009; Martin, 2018).

4.4.1. Accreditation

In South Africa, accreditation is the process where the institution called 'provider of services' will satisfy the requirements established by the Education and Training Quality Assurance Bodies (ETQAs) that it is capable and willing to provide services of the quality needed (SAQA, 2001). The competence of an educational and training provider is evaluated in terms of abilities to offer education and training that will lead to particular national standards. The process will ensure that learners gain quality training (Lefkowitz, 2012). In South Africa, the criteria for programme accreditation are set by the Higher Education Quality Committee (HEQC), which is a permanent sub-committee of the Council on Higher Education (CHE). These criteria are used as a foundation for an institution's self–evaluation of the programme, combined with additional standards that might be set by the institution itself (CHE, 2004).

Accreditation go through the following steps: "(i) Within one year of the first cohort of students graduating from the new programme, the institution must demonstrate that it has met the conditions set by the HEQC during the candidacy phase, which include conditions relating to the evaluation of the mid-term report from the institution. Acceptable reasons and relevant evidence have to be provided in instances where the conditions have not been met. (ii) The institution is also required to conduct a self-evaluation of the programme, using the HEQC's criteria for the accreditation phase, which include those for programme input, process, output and impact, and review. (iii) The institution must submit a programme improvement plan to address areas in need of attention as identified in the self-evaluation. (iv) A site visit may be conducted, if necessary. If the institution's submission is approved by the HEQC, the programme obtains accreditation status" (CHE, 2004: 15). This accreditation status will come with a number given by the ETQA to the provider (Lefkowitz, 2012).

4.4.2. Audit

Audit as a form of quality assurance is the process through which the ETQA will assure the accuracy and integrity of the reports submitted by the institution (provider). This will require the detailed analysis of the reports and visits to the institution to verify their accuracy and authenticity (SAQA, 2001). It is an external evaluation focusing on institutional improvement for quality in teaching and learning, community engagement and research (CHE, 2004; Allais, 2009). It is conducted in both public and private higher education institutions by outside assessors called 'auditors' from HEQC, who come inside an organisation to evaluate how well it is performing. It is a fairly traditional way of monitoring the quality of the organisation's activities (Allais, 2009). Further, an institution may have an internal reporting mechanism to

delegate quality assurance to departments or schools by establishing systems ensuring that there is a regular and effective quality assurance. For example, using an institutional research team to gather information on learners' satisfaction (SAQA, 2001).

4.4.3. Inspection

Inspection has been commonly used to monitor the quality of teaching and the general aspects of schools. Inspectors could be expert agents who will visit educators to check how they are teaching, and provide them support and advice. Inspectors can report to government about the standard and levels of educational quality found in schools. Then government can take initiative to assist if necessary (Allais, 2009). It is examining the services provided for quality control (Mishra, 2006). The critics around inspection in South Africa point towards the apartheid era when the state abused the inspection process for political reasons. The state "used inspectors to spy on teachers, and to report on any who appeared to be critical of the government or who were straying from the rigid curriculum. Because of this, inspection became seen by many teachers in South Africa as an illegitimate way of monitoring education" (Allais, 2009:19). Similarly, international experience also suggests that good teaching is not achieved through inspection. Hence, it is recommended to find alternatives to reaffirm, promote and support good teaching practice. This can be done by strengthening sound and innovative teaching practices and through opportunities for professional development (Luckett 2006).

4.4.4. External examination

External examination is a practice which is familiar in all British Commonwealth countries. It is broadly practiced in South Africa mainly in institutions that have a British colonial history. Silver and Williams (1994) in Luckett (2006) established that the practice is useful in a quality assurance system, provided that the role of external examiners is redefined to be more rigorous, comprehensive and explicit (Luckett 2006). In South Africa, external examination is one of the traditional ways of maintaining standards by monitoring and improving quality in education. It is done in this way: "the examination that is set by one university, an expert in the same field at a different university checks the question paper, as well as a sample of the students' scripts, external examiners also provide comments on the standard of the course which is taught" (Allais, 2009:16). Currently, universities rely intensely on peer review of their course content and external examination conducted by colleagues from well-established institutions (Smout & Stephenson, 2001) as a way to exercise a measure of control over what is happening in various institutions. The approach is known as 'peer review' by the fact that the review is done by an 'equal' colleague (a peer) within the same domain, (and not a government official or other agent of external quality assurance) (Allais, 2009).

There are various criticisms around external examination within higher education. The major criticisms are corruption, incompetence, lack of seriousness and lack of transparency. Corruption can happen when academics in a given institution select their friends in other institutions to review or moderate their exams, and in return review their friends' exams. They can agree mutually not to point out weaknesses in their exams. Incompetence can be manifest if peer reviewers are not adequately expert in their field; they may not notice the shortfalls or

weaknesses of the course and exam they are reviewing. For lack of seriousness, some academics do not put enough attention to the peer review system and do not consider it as serious as they should. Lack of transparency refers to the way the review system is established, it is not easy for the government to judge the performance of different universities (Allais, 2009).

Another view for external examination is that, programme and course review need to be based on self-evaluation, but at the same time endorsed by external colleagues (peer review). HEQC supports this the moderation practice which comprises a system of internal moderation (done at the institution where the exam is written) and external examination, but believes that if the system is to serve as means of quality assurance and improvement, the system must be more systematic, rigorous, explicit, and professional (Luckett, 2006). As a part of its guidance to HE institutions, the CHE (2008: 8) sets specific criteria for moderation of assessment. HE institutions are required to have "effective policies and procedures which ensure the quality, suitability and depth of training in assessment and facilitate the quality of the internal and external assessment and moderation of its assessment procedures and results, in order to ensure their reliability and the integrity of the qualifications it awards. Rules and regulations pertaining to assessment must be clearly documented – systems, structures, policies, procedures and processes that ensure reliability, fairness, validity and consistency".

In South Africa, there are two main organisations responsible for educational quality assurance. There is one for General Education and Training (GET) and one for Technical and Vocational Education and Training (TVET) and Higher Education (HE). The former operates under the Ministry of Basic Education, while the latter resorts under the Department of Higher Education and Training. The agency for GET is Umalusi. It monitors quality in general and further

education and training in the country (Allais, 2009), and has a legal obligation to verify the suitability and adequacy of qualifications and curricula and to moderate examinations at both primary and secondary levels (Umalusi, 2007). The second one (for TVET and HE) is the Higher Education Quality Committee (HEQC) (Allais, 2009), which has a mandate to promote quality in higher education institutions, conduct audits, provide programme accreditation (CHE, 2004 and Allais, 2009), and lead national reviews within particular disciplines or qualification areas (Allais, 2009).

The two Departments of Education also play an important role in monitoring educational quality (Allais, 2009). Beside these two, there are also organisations operating under the Minister of Labour. They are called Sectoral Education and Training Authorities (SETAs). Their work is to "conduct quality assurance in education programmes which are directly aimed at preparing people to work in specific industries or sectors of the economy" (Allais, 2009:21). In the same way, professional bodies, which are regularly created by statutes of law, check and monitor educational programmes within particular areas (Allais, 2009).

The criticism about quality assurance systems is that they can become protectionist; academic colleagues may discreetly protect each other from failure, assuming that their turn will be next to be evaluated. The whole process of evaluation may become too personalised in the way that some peers can look to cover for others and allow influence of power and personality issues to divert their sound judgment (Luckett, 2006). Also, assurance systems are expensive and complicated for educational institutions to run, and often they involve time consuming activities to comply with the audit criteria. Information needs to be presented in a very specific way that may take more time than can be spared given the lack of real incentive (Allais, 2009). Other

academics criticise quality assurance by pointing out that external evaluation is intimidating and no one enjoys it -- hence the general negative reaction to the process. To address this quality assurance should focus on critical self-evaluation, rather than peer evaluation, has been suggested (Luckett, 2006).

The ethos of quality should permeate the institution even before receiving external agent coming to check the quality of education in a given institution; measures should be in place to keep the quality culture alive in every aspect of the educational process. And if there is a need, improvement should accompany daily activities, starting by student learning. Figure 4.1 presents a framework for improving quality in the BAgricExt. It outlines the four main areas (university teachers; student support and development; the learning environment; and course or programme enrolment management), on which to focus when looking to improve the learning process. These four areas and their elements are embedded in what quality assurance is pursuing to monitor and to check in the higher education institutions in South Africa.

```
                  ┌──────────────────────────────────┐
                  │  Elements/factors for effective learning  │
                  │         (Quality Education)         │
                  └──────────────────────────────────┘
```

Elements/factors for effective learning (Quality Education)

Lecturer Support and Development

- Professional development
- Reward & Recognition
- Workload
- Condition of service & performance appraisal

- Teachers' pedagogy
- Approach to teaching and learning
- Combination theory & Practice
- Selection & organization of course material

Student Support & Development

- Academic/career counseling
- First year's orientation
- Library services
- Language training services
- Distance study services

- Psychological counseling
- Financial support/Law consultation
- Accommodation services
- Community development activities
- Support for students with disability
- Health Consultation

- Reason for studying
- Knowledge
- Student prior experience

Learning Environment

- Classroom/Teaching & Learning space
- Computer lab
- Access to ICT infrastructure
- Technology tools

Quality Assurance
Accreditation
Audits
Inspection
External Examination

Course & Programme Enrollment

- Admission/Selection
- Pass rate
- Throughput rate
- Placement

Figure 4.1: Framework for effective learning (Quality Education) in the BAgricExt qualification

99

4.5.   Conclusion

Best learning will take place in Higher Education institutions to accommodate BAgriExt students if all the measures are in place and the adequate resources (including human, material, and financial.) are available and used. For a quality education (learning) to occur, active involvement of teachers is required. Quality education will need a good foundation as well from students, which is why it was suggested for educators to continue assisting under-prepared students to make a good transition to a successful university career. This should be triggered by the institutions' management that should take into account teachers' professional development and motivation for better service delivery (in this case quality education). It was pointed that the areas or elements that will mostly influence acquisition or establishment of better learning are: university teachers; students support and development; learning environment; and enrolment. Each of these areas has specific elements to consider for quality education; and they are all controlled by the quality assurance which will ensure that quality is established in every area of the whole teaching and learning process. For affordability of studies at university, it was suggested that government should strengthen NSFAS and make tuition fees more reasonable as the majority of South African students cannot afford.

The quality assurance process was criticised as a form of external evaluation that can be protectionist and personalised; it is expensive to run and time consuming. For this an alternative of critical self-evaluation was suggested by some educationalists. Under similar criticism, inspection, as a way to monitor educational quality, was seen as illegitimate, hence not accepted by many scholars. It was recommended to find alternatives to ensure the quality of education; a key one being to promote and support good practice by lecturers.

Finally, discussion culminates with the proposal for assuring quality education for the BAgricExt. Support to lecturers, student support and development, the learning environment, and enrolment management together comprise areas of focus when striving to promote and/or evaluate the quality of education being offered and through which the learning process can be improved.

References

Allais, S.M. (2009). Quality Assurance in Education: Issues in Education Policy Number 5. Centre for Education Policy Development.

Andoh, C.B. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. Pentecost University College, Ghana. International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2012, Vol. 8, Issue 1, pp. 136-155.

Avalos, B. (2010). Teacher professional development in teaching and teacher education over ten years. Center for advanced research in education, University of Chile, Alsacia, Chile

Barr, R.B. and Tagg, J. (1995), From Teaching to Learning - A New Paradigm for Undergraduate Education, Change Magazine, Vol. 27(6), Taylor & Francis Group, Philadelphia, pp. 12-25. http://www.maine.edu/pdf/BarrandTagg.pdf. Accessed January 2015.

Bologna Secretariat (2012). Making the Most of Our Potential: Consolidating the European Higher Education Area - Bucharest Communiqué of the European Ministers of Education,
Bucharest, http://www.ehea.info/Uploads/%281%29/Bucharest%20Communique%2020 12. pdf. Accessed September 2014

Callagher, L. and Smith, P. (2017). Innovation awards: reward, recognition, and ritual. International Journal of Innovation Management. Vol. 21, No. 5 (June 2017)

CHE (Council on Higher Education) (2000). *Towards a New Higher Education Landscape: Meeting the Equity, Quality and Social Development Imperatives of South Africa in the 21st Century. Pretoria:* Council on Higher Education.

Chong, S., and Ho, P. (2009). Quality teaching and learning: a quality assurance framework for initial teacher preparation programmes. Int. J. Management in Education, Vol. 3, Nos. 3/4.

Choppin, B.H and Postiethwaite, T.N. (1981). evaluation in education: an international review series. Pergamon Press. Volume 5:1

Council on Higher Education (CHE) (2004). Higher Education Quality Committee, Framework for Programme Accreditation. Committee of the Council on Higher Education. Pretoria.

Council on Higher Education (CHE) (2008). HEQC Framework for Delegated Functions. Committee of the Council on Higher Education. Pretoria.

Council on Higher Education (CHE) (2013) Higher Education Participation 2011. Pretoria: Council on Higher Education http://www.che.ac.za/sites/default/files/publications/Higher%20Education%20Participation%202011.pdf. Accessed September 2014.

DoA (2005): Norms and standards for extension and advisory services in Agriculturehttp://www.nda.agric.za/doaDev/sideMenu/educationAndTraining/NORMS_AD_STANDARD_BOOKLET.pdf. Accessed September 2014

Faduke, X.S. (2012) Some Factors which Contribute to Poor Academic Achievement among Undergraduate Students at a Tertiary Institution. A dissertation for a Masters degree in Educational Psychology at the University of Zululand.

Featherman, D.L., Hall, M. and Krislov, M. (2010). The next twenty-five years: affirmative action in higher education in the United States and South Africa. University of Michigan, USA.

Griesel, H. and Parker, B. (2009). Graduate Attributes A baseline study on South African graduates from the perspective of employers. Higher Education South Africa & the South African Qualifications Authority

Halim, A. and Ali, M. (1998). Training and Professional Development. In B.E. Swanson, P.R. Bentz and A.J. Sonfranko (Eds.), Improving Agricultural Extension: A Reference Manual. Food and Agriculture Organization. Rome. http://www.fao.org/docrep/W5830E/ w5830e0h.htm. Accessed September 2013.

Henard F and Ringuet, SL (2008). The path to quality teaching in higher education. OECD.

Hénard, F. and Roseveare, D. (2012). Fostering Quality Teaching in Higher Education: Policies and Practices. An IMHE Guide for Higher Education Institutions. Institutional Management in Higher Education.

HESA (2009). Insight: Higher Education South Africa. Making a difference, Universities contributions to the Anti-Poverty Strategy.

HESA (2013). HESA response to the report of the council on Higher education task team on undergraduate curriculum structure. A proposal for undergraduate curriculum reform in South Africa – the case for a flexible curriculum structure.

Higher Education and Training (2014). Policy framework on differentiation in the South African post-school system.

Higher Education and Training Laws Amendment Act (2010). Further Education and Training Colleges Act 16 of 2006.

Higher Education South Africa (HESA) (2014). South African Higher Education in the 20th Year of Democracy: Context, Achievements and Key Challenges. http://www.hesa.org.za/sites/hesa.org.za/files/HESA_Portfolio%20Committee% 20Presentation_5%20March%20201 4Final.pdf. Accessed September 2014.

Hosain, M.S. (2016). (Teaching Workload and Performance: An Empirical Analysis on Some

Selected Private Universities of Bangladesh. International Journal of English and Education. Volume:5, Issue:3, July 2016

Institutional Management in Higher Education(IMHE) (n.d). Learning our lesson: review of quality teaching in higher education. OECD.

Kemp, M. and Mouton, L. (2009).Creating Effective Teaching and Learning Environments First Results from TALIS. Teaching and learning international survey. OECD Publications, Paris. France.

Leibowitz, B and Bozalek, V (2014).Access to higher education in South Africa: A social realist account. Widening Participation and Lifelong Learning Volume 16, Number 1

Lefkowitz, S. (2012). An overview of the NQF. Alusani Skills & Training Network.

Luckett, K.M. (2006). The quality assurance of teaching and learning in higher education in South Africa: An analysis of national policy development and stakeholder response. Dissertation presented for the Degree of Doctor of Philosophy at the University of Stellenbosch.

Martin, M. (2018). Internal Quality Assurance: Enhancing higher education quality and graduate employability. International Institute for Educational Planning, Paris, France

Mayer, M.J., Gordhan, S., Manxeba, R., Hughes, C., Foley, P., Maroc., Lolwana, P. and Nell, M. (2011). Towards a youth employment strategy for South Africa. Development Planning Division. Working Paper Series No. 28. Development Bank of Southern Africa.

Mishra, S. (2006). Quality Assurance In Higher Education: An introduction. National Assessment and Accreditation Council, india.

Mlambo, V. (2011). An analysis of some factors affecting student academic performance in an introductory biochemistry course at the University of the West Indies. Caribbean Teaching Scholar. Educational Research Association. Vol. 1, No. 2, 79–92.

Munzhedzi, P.H (2011).Performance management system and improved productivity: a case of the department of local Government and housing in the Limpopo province. Dissertation for the degree of Master of Administration. University of South Africa.

National Planning Commission (2012). National Development Plan 2030 - Chapter 9: Improving education, training and innovation. Pretoria: The Presidency. http://www.npconline.co.za/MediaLib/Downloads/Home/Tabs/NDP%202030-CH9-Imp roving%20education,%20training%20and%20innovation.pdf. Accessed September 2014.

Parpala, A and Lindblom-Ylänne, S. (2007). University teachers' conceptions of good teaching in the units of high-quality education. The Department of Education, University of Helsinki Finland. Studies in Educational Evaluation 33: 355–370

Poon, J. (2013). Blended Learning: An Institutional Approach for Enhancing Students' Learning Experiences. MERLOT Journal of Online Learning and Teaching Vol. 9, No. 2.

Smout, M. and Stephenson, S. (2001). Quality Assurance in South African Higher Education: A New Beginning. Rhodes University, Grahamstown, South Africa.

Sommer, M. and Dumont, K. (2011). Psychosocial factors predicting academic performance of students at a historically disadvantaged university. South African Journal of Psychology, 41(3), 2011, pp. 386-395.

South African Qualifications Authority (SAQA) (2001). Quality Management systems for Education and Training Quality Assurance Bodies (ETQAs). Brooklyn, Pretoria.

South African Qualifications Authority (SAQA) (n.d). Registered Qualification: Bachelor of Agriculture: Extension.

Strydom, J. F., Basson, N. & Mentz, M. (2012). South African Survey of Student Engagement-Enhancing the quality of teaching and learning: Using student engagement data to establish a culture of evidence. Council on Higher Education (CHE).

Tamulienė, R. (2013). Adjusting College Students' Support Services to Students' Type: Lithuania's Case. Procedia - Social and Behavioral Sciences 141: 438 – 446.

Tremblay, K., Lalancette, D. and Roseveare,. D (2012). Assessment of Higher Education Learning Outcomes AHELO: Feasibility Study Report. Volume 1- Design and Implementation.

Umalusi (2007). Making educational judgements: Reflections on judging standards of intended and examined curricula. Umalusi Council For Quality Assurance in General and Further Education and Training.

Wambugu, P., Barmao, A., Ng'eno, J. (2013). Student teachers' perceptions of teaching practice assessment in Egerton University, Kenya. Education Journal, 2(4): 169-175.

Worth S.H. (2008). An assessment of the appropriateness of Agricultural Extension education in South Africa. Doctoral thesis. Faculty of Science and Agriculture, University of KwaZulu-Natal, Pietermaritzburg.

Chapter 5: Results for intake process in the BAgricExt programme

This chapter presents the perceptions of students and administrative officers about the intake process at the University of KwaZulu-Natal (UKZN) as it is applied to the BAgricExt. Intake is one of the five major areas to look at when assessing performance of undergraduate qualification. The whole process starts with recruitment, admission and selection of students according to the programme's academic requirements and the programme's capacity to offer good quality education, and to achieve the intended learning outcomes (Council on Higher Education (CHE), 2004). In this chapter, only intake will be discussed, the other four areas (Teaching and learning, Access to facilities, performance and Placement) will be addressed in subsequent chapters.

The study examined how information about a place in BAgricExt programme is made available to students, the requirements to apply in BAgricExt, the reasons justifying the choice of BAgricExt by students, the steps to follow for application and registration; the funding of studies in BAgricExt, the strengths and weaknesses for intake process, and suggested recommendations.

5.1. Information about available places in the BAgricExt programme

The information about available places for students to apply for in the BAgricExt programme and the entrance requirements is sent to prospective students through different channels. According to the administrative officers, this information is formally or officially delivered through Central Applications Office (CAO) applications handbook, the UKZN undergraduate prospectus, and UKZN's open day (these are the literature that the University always sends out to inform students).

Students participating in the study confirmed that the information about the BAgricExt was delivered to them through the following channels: CAO handbook, UKZN handbook, high school programme, telephone, SMS, school's prospectus, email from UKZN, consultation with academic counsellor at UKZN giving advices to students for alternative choices of study, UKZN website, visit to Cedara, or through a recommendation from a potential sponsor ready to fund students in the rural development field.

The responses from the students suggested that they have a broader interpretation of the issue than the administrators. Administrators referred to the pre-application period, while students referred to both the pre- and post-application period. SMS, emails and consultations all occur after applications have been reviewed and offers made – consultations are generally done after a student has accepted an offer. For the student, finding out about a place in the programme appears to refer to finding out about the general possibility (for any student) as well as about the specific possibility (for a particular student).

From the students' perspective, this means that there are different ways students can get information about available places in BAgricExt, beside the traditional route of CAO handbook and undergraduate prospectus or open day. But this will depend again on how students are attracted to the programme. They might know many ways to be informed, but it could be more interesting if they could get attracted or motivated for the BAgricExt. The administrative officers suggested that, in addition to what the University is sending to students, there should be a person either from BAgricExt programme or from public relations at UKZN to physically go to schools and deliver the message about available places and what the programme entails. They noted that this initiative is done for other UKZN programmes and has been proven effective; it could be used by BAgricExt programme too. Details about the finding regarding the intake process are captured in Appendix 8.

5.2.   Entrance requirements for BAgricExt programme

According to the administrative officers, for a student to get accepted into any programme at the University of KwaZulu-Natal, there are number of entrance requirement to meet. BAgricExt entrance requirements fall under the College of Agriculture, Engineering And Science entrance requirements as stipulated in the table 5.1.

Table 5.1: Entrance requirements for BAgricExt programme

Programme Name	Campus	CAO Code	Entry Requirements	Minimum APS	Dura-tion
Bachelor of Agricultural Extension and Rural Resource Management	PMB		• Mathematics at level 4 (50%) • English at level 4 (50%) • Physical Science or Life Science or Agricultural Science at level 4 (50%) • Pass in Life Orientation at level 4 (50%) (Points not counted in APS)	28	3 Years

(Source: UKZN Academic Administration office)

The Accumulated Points Score (APS) is most frequently calculated from the marks achieved by the applicant as recorded on his or her matriculation certificate (National Senior Certificate) foe for each of six matriculation subjects (excluding Life Orientation). See Table 5.2. The minimum APS required for the BAgric is 28 points with a mark of at least 50% in Mathematics, English, Science and Life Orientation. Science can be Physical Science, Life Science or Agricultural Science. The Mathematics considered is "core" Mathematics (Mathematical Literacy is not accepted). The CAO code for BAgricExt is KN-P-BAC and the programme is located on the Pietermaritzburg (PMB) campus. The duration is 3 years.

The student who does not meet the above requirements will not be selected. And even if they meet the requirements but the selection will start from highest APS and limited by places available in the programme. In the case of the BAgricExt only 20 spaces are offered. This could result in a student with the minimum APS not being accepted because of the limited available places in the. One could find this 'unfair' to candidates who applied earlier, but were not accepted because another applicant who applied later, presenting a higher APS.

Why not use first-come-first-served? The downside of first come-first-served would be to leave behind potentially 'better' students (i.e. theoretically higher performers who would be able to finish the degree on time, generally obtain higher marks throughout, and more readily be absorbed by potential employers). This could be the reason behind the university's approach.

Table 5.2: National Senior Certificate (NSC) Points Calculation

Points are calculated in the best six subjects, excluding Life Orientation								
	90-100%	80-89%	70-79%	60-69%	50-59%	40-49%	30-39%	0-29%
Level	7	7	6	5	4	3	2	1
Points	8	7	6	5	4	3	2	1

(Source: UKZN Academic Administration office)

If a student has for example achieved 65%, 58%, 76%, 55%, 60%, and 70% for the six relevant subjects, these percentages will be converted in points to give 5 points for 65% (falling under the 60-69% category), 4 for 58%, 6 for 76%, 4 for 55%, 5 for 60%, and 6 for 70%. The sum of these points results in the APS of 30. Note, for a student to score the minimum of 28 points, s/he must have at least 4 subjects with more than 60%, otherwise the score will be below 28. Note also, that the highest APS possible is 48 (i.e. all 6 subjects at 90% or higher).

After the calculation is done for all applicants, the overall scoring is looked at from highest to lowest between 48-28 points; the highest score will be considered first and given preference over lower points. As the BAgricExt has 20 spaces to accommodate, the selection process will generally make 'firm offers' to the 30 applicants with the highest APS scores. Spaces are filled from among these 30 on a first-come-first-served basis – with offers being withdrawn if there is no response within 72 hours of the offer being made.

Students were asked to give their views about APS (Accumulated Points Score), the main subjects, the entrance requirements, and challenges faced in meeting the requirements. From

their responses, it was revealed that since 2010, the APS for students registering in

BAgricExt had varied from 28 to 40 points (table 5.3, Appendix 8).

Table 5.3: APS from students from 2010 to 2015

Level of students	APS (minimum and maximum)
First Year	29-38
Second Year	29-36
Third Year & Graduates	28-40
Employed	28-30

There were several students (27) who did not remember their APS or were not comfortable to

disclose it (table 5.4).

Table 5.4: Number of students who did not remember their APS

Level of students	Number of students
First Year	6
Second Year	5
Third Year & Graduates	12
Employed	4
Total	27

The minimum and maximum marks for the main subjects (English, Mathematics, Life

Sciences, Physical Science and Agricultural Science), as scored by all students, show that

students struggled the most with Mathematics to obtain the minimum of 50%. This is

followed by Physical Science. The highest scores obtained were in Life Science followed by

Agricultural Science and English (Table 5.5).

Table 5.5: Marks scored for main subjects

Level of students	English %	Math %	Biological Science %	Physical science %	Agricultural science
First Year	63-84	51-79	60-86	50-67	59-73
Second Year	50-87	51-70	50-84	49-65	65-85
Third Year & Graduates	50-83	41-71	50-75	52-69	61-75
Employed	58-82	42-59	64-72	48-60	65-76

The students confirmed that they met the entrance requirements. They said that to achieve

this, they had to work hard in order to pass with good marks in their matric, especially in the

subjects required by the programme. It appears that during their matric and, for some, even in grade 11, they are told about the requirements to be accepted at University. From there, students with ambition for a University career will focus and put more effort in their studies to meet the University entrance requirements. One student respondent said, "*I was more interested in getting good marks in matric so I can be able to have the opportunity to qualify for most programmes at the University*". This indicates that students get information about entrance requirements from their high schools; 80% of the student respondents were familiar with entrance requirements (table 5.6). For international students, meeting the requirements will involve sending the academic results to HESA (Higher Education South Africa) for SAQA evaluation, once approved; student will be invited to apply.

Table 5.6: Familiarity with entrance requirements (from students)

Level of students	Yes	No	Missing	Total
First Year	12	0	5	17
Second Year	11	2	1	14
Third Year & Graduates	20	3	0	23
Employed	9	1	1	11
Total	52	6	7	65
%	80%	9%	11%	100%

The challenges faced by students in meeting the requirements are: getting lower points in main subjects, especially in Mathematics; knowing, but not being confident about what are the subjects and marks that higher educational institutions will require; teachers responsible of main subjects (such as Mathematics), the University not being supportive to assist students in financial need; and for international students the evaluation from HESA not being fairly considered (modules completed in their home countries not being accepted).

5.3.   Reasons for choosing BAgricExt programme

Students were asked to give their reasons motivating their application for the BAgricExt programme. The following were the most common reasons given:

- BAgricExt programme is a multipurpose career which will enable one to open up great opportunities;

- the love of animals (as it will allow one to work with animals);

- love of agriculture; enjoying helping people, especially in rural areas;

- having a passion for agriculture and food security;

- being a condition for getting bursary sponsorship;

- seen as path to future career;

- considered as a degree that deals with familiar activities;

- it was the only alternative option remaining as a choice of study;

- being told there is more practical work involved than in other qualifications at UKZN;

- having manageable entrance requirements; and

- looking to pursue the passion of sharing knowledge to other people.

The above reasons suggest that students are motivated by one or more of four promptings:

- To study in a field that will sustain their future in term of job opportunities or income generation;

- To follow their passion to study the field they enjoy the most or that they are familiar with;

- To follow what society presents (dictates) as conditions to succeed in life; and

- Out of desperation and not having other options to take whatever is available or offered.

The implication of the above reasons would be: students who are coming in with good reasons of seeing the programme as the stepping stone to reach their target will probably motivate themselves regardless the difficulties or challenges in front of them, and would possibly work hard to succeed. On the other hand, those who are coming in because 'it was

the only option available' are likely going to struggle in the process because there is no personal motivation to push them, unless the academic institution comes to the rescue with mechanisms to motivate them. But chances are that they can still make it even if the motivation was not there at the beginning.

5.4. Steps for application in BAgricExt programme

It was confirmed by the UKZN administrative officers that first year students should go through the following steps to apply to any undergraduate programme at UKZN including the BAgricExt programme [this information applied to 2015, when the study was conducted]:
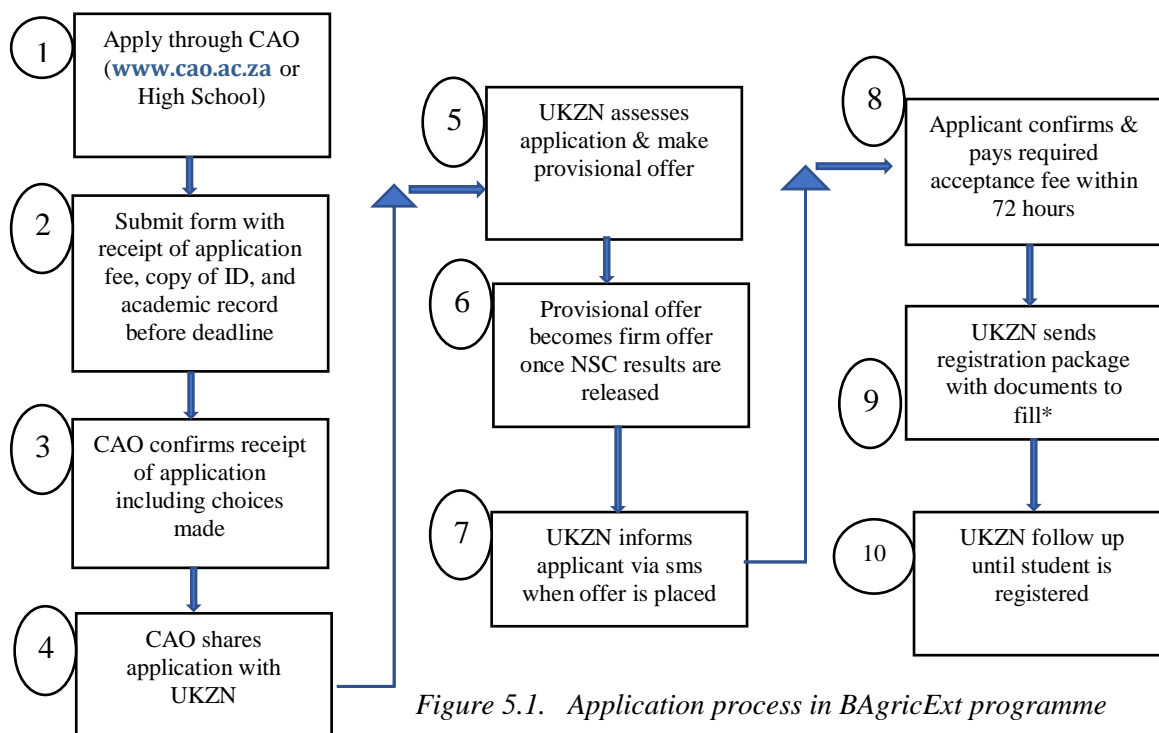
Figure 5.1. Application process in BAgricExt programme

* Acceptance of offer, consent & indemnity, copy of ID, certificate, proof of acceptance fee payment, and (for BAgricExt programme, information for registering at CEDARA College of Agriculture will be included).

From step 1 to 10, applicant has full responsibility to make sure every procedure is followed accordingly. After filling the CAO form, the submission of all documents (on step 2) can

done by post, electronically or by handing in at the CAO office. The application fee is structured to reward early application, with late applications paying double (e.g. the fee for applying for 2016 was R200 on or before 31 October 2015 and R400 from 1 November 2015. The fee is paid to the CAO by postal order, cheque or electronic transfer. After confirmation from CAO and sharing with UKZN (steps 3&4) the assessment will take place, where UKZN will make appropriate provisional offers (step 5) based on Grade 11 and/or Grade 12 mid-year or trial results. Provisional offers are withdrawn or replaced by firm offers (step 6) once the National Senior Certificate (NSC) results are released in January of the year following the matriculation examination. Applicants in possession of their NSC (i.e. those who completed matric at least a year earlier) can be offered places early. When offered a place, UKZN informs the applicant (most commonly by SMS/Text message) and requests confirmation within 72 hours, after which, the offer is withdrawn (step7&8). At this stage, applicant who accept the offer (for a place in the BAgriExt), pay the required R500 acceptance fee and notify UKZN of their acceptance (including proof of payment of the acceptance fee). Once confirmed, they will get a registration package comprising documents they need to submit (step 9). From here the applicant will be followed by UKZN until registration is complete by the final registration deadline – usually at the end of February (step 10).

Students confirmed the above process, and added that it is always wise for an applicant to follow up on each step. In terms of their views about the application process, 49% indicated that the process was easy, 12% said it was complicated, 34% said it was manageable, and 5% did not give their views (table 5.7).

Table 5.7: Student's perceptions about application process

	Easy	Complicated	Manageable	Missing	Total

	Easy	Complicated	Manageable	Missing	Total
First Year	**14**	**0**	**2**	**1**	**17**
Second Year	7	2	5	0	14
Third Year & Graduates	5	6	12	0	23
Employed	6	0	3	2	11
Total	32	8	22	3	65
%	49%	12%	34%	5%	100%

Each group provided reasons. Those who said the application process was easy (49%), gave the following reasons:

> The application form was easy to understand and processes were straight to the point; it didn't require much to fill and it didn't take too long to receive feedback; application form can be easily received, filled, and posted from high school; help is provided from BAgricExt staff; everything is well explained on UKZN webpage and on the forms; there wasn't a lot of paper work involved; the online system is clear, there is no need to visit the university; and CAO does the whole application for you; you just wait for the feedback and go to register.

Those who said the application process was complicated (12%) gave one or more of the following reasons:

> It is a long process with various channels to get acceptance; confirmation is delayed until school opened, putting students into too much stress; application can be withdrawn when containing error; and apply without keeping track of the progress could disqualify an applicant.

Those who said the application process was manageable (34%) gave the following range of reasons:

It was not very difficult to apply, just that a lot of administration had to be involved; help is provided by administrative officers at UKZN; the guidelines in the CAO handbook were helpful; they reply within a short period of time to the application; it involves submission of many documents and move up and down between UKZN and Cedara; the CAO application forms and guide booklets were given by the teachers who were ready to assist in the process.

From the above reasons, what appear to be helpful for students during application process is the assistance from administration or BAgricExt staff, the quick response from CAO if all documents were submitted on time, and ability to use the online process. Students found the process challenging when looking at the administration involved and if they don't know where to get assistance. Waiting for a final answer creates stress.

5.5. Steps for registration in BAgricExt programme

Registration is the process that follows accepting a firm offer to join the BAgExt programme. According to the administrative officers, the registration process in BAgricExt is done at UKZN and at Cedara College. The process starts at UKZN; it involves the following officials: Academic Leaders, Academics in the School; Academic Coordinators (who are available to assist students with enquiries about academic choices or progress), College

Administrators, and IT personnel. At Cedara, registration involves the Principal of the College, Lecturers to explain some content offered, and Administrative Officers.

For most students at UKZN, registration is the time when students will make the final decisions about the courses/subjects for which they want to register. For the BAgExt students, the programme is fixed for the full three years. In order to register, students must pay a minimum amount towards their tuition (at the time of the study it was R3250); this must be paid on or before the first day of registration (for the period of this study it was 21 January). Tuition fees are charged per subject per semester. After registration, the actual costs for tuition for the first semester will be calculated. This process is done online at UKZN; tuition is paid to UKZN.

The second part of registration takes place at Cedara. It involves completing various forms relevant to the Cedara part of the BAgricExt. The fees to pay at Cedara include the Student Union fee and accommodation. These are calculated by hand (they are the same for full-time, resident students). Student Union fees are paid to Cedara College; accommodation is paid to the Provincial Government. Students have until the 1st April to pay the Student Union fees (R5200 in 2015) and until the end of the first semester to pay for the first semester accommodation.

Students found that the amount to be paid upon registration is a colossal amount to ask for up front from poor parents. Further, they said it is comes as a surprise because, it is not clearly explained in the University/College handbook, especially the Cedara fees. They suggested that a clear explanation be provided in the handbook so that parents can get well prepared about it. They further suggested that because paying into multiple accounts is confusing, it should be arranged that they can pay only into one account (either at UKZN or Cedara), to

avoid confusion. Then UKZN and Cedara can take the responsibility of allocating the money to relevant institutions.

Administrative Officers confirmed that the University requires payment of the acceptance and registration fees up front because the philosophy is that making these payments ensures the students will take the place offered. This assumption was not verified by this study, but it was noted by student respondents that a small number of BAgricExt are changing from the UKZN BAgricExt to the Cedara diploma because of the high cost of the BAgricExt.

It is noted that the only difference between the costs of the two qualifications is tuition fees – they all pay the same Student Union and accommodation fees. In 2015, the UKZN (BAgricExt) annual tuition was R34390, while the Cedara (Diploma) annual tuition was R6784. Discounting annual increases, for the purposes of illustration, this implies a BAgricExt student will pay R103170 to complete his/her degree, while the Diploma student will pay R20352 over the same three years – a difference of R82818. The reason for this difference, albeit outside the scope of this study, is noted to be that UKZN is not fully subsidised by the state, whereas, Cedara College is wholly funded by the state.

Students gave their personal opinions about the registration process. Thirty seven percent (37%) of respondents said it was an easy process, 29% said it was complicated, and 32% said it was manageable (table 5.8).

Table 5.8: Student's perceptions about registration process

	Easy	Complicated	Manageable	Missing	Total
First Year	8	7	2	0	17
Second Year	5	4	4	1	14
Third Year & Graduates	6	8	9	0	23
Employed	5	0	6	0	11
Total	24	19	21	1	65
%	37%	29%	32%	2%	100%

Each group had different reasons. The following table (table 5.9) captures the reasons grouped by the perceived manageability of the registration process.

A key factor observed in the intake process is the timeframe. Provisional offers are made to potentially qualifying applicants from November in the year preceding the year of registration. Applicants receiving such offers are given detailed information about the fees, among other things. However, as the offers are provisional (i.e. depending on the final matric results), these applicants are observed to take little action until they know for certain they are going to be accepted into the programme. Firm offers can be made only once the matric results have been released by government, which takes place towards the end of the first week of January. UKZN administrators confirmed that firm offers are communicated only after the results are analysed – and that this takes 2-3 days. The net result is that potential students are informed of a firm offer, via SMS, only in the second week of January. Registration, which commences in the third week of January, requires mobilising in excess of R10000 as well as the other normal preparations for transitioning to university life.

Table 5.9: Perceived reasons for manageability of the registration process

	Easy	Complicated	Manageable

Reasons	- Officials helped during the registration; - Procedures were clear; - Financial clearance was received during the registration process; - There were no long queues; - After registration students are easily taken to Cedara college; - After payment of registration fee, everything is moving smoothly.	- Not knowing where to start or which account to use; - Confusing buildings at UKZN and getting lost; - Online registration was confusing; - Wasting too much money to travel to and from both campuses (Pietermaritzburg-Cedara); - Registering twice and pay two registration fees.	- Not knowing where to start or which account to use; - Good assistance provided by administrative officers and BAgricExt staff during registration; - The fact of arriving early made the process doable.

A second observation is that the incoming students need to adjust to the reality that, although they are registering as UKZN students, they will be studying at Cedara College. This implies duplicate processes and registration procedures. This adds to the timeframe pressure of raising funds with very little advance notice. Related to this is the perception that they are paying two registration fees. In fact, they pay only one registration fee to UKZN. However, they do make three separate payments; one to UKZN for registration, one to the Provincial Government for residence at Cedara, and one to Cedara College for the Student Union fee, which covers sports, recreation and other social activities.

5.6. Funding for study in BAgricExt programme

The administrative officers indicated that for a student to be allowed to register, the University must ensure how the school fees will be paid. There are different ways of paying, including cash from the student/parent/guardian, bursary and financial aid, or the combination of these.

Financial aid is offered primarily through the National Student Financial Aid Scheme (NSFAS) which aims to make higher education more accessible "to students from poor and working class families" (NSFAS, n.d.). It is attractive because the interest rate is subsidised and the repayment time is linked to one's eventual salary. At UKZN, it is awarded based on the quintile to which an applicant's school belongs. Priority is given to students from quintile 1 and 2 schools (meaning that applicants who are coming from very remote schools, with poor infrastructure and limited facilities will be considered first). Generally, people who are socially and economically disadvantaged are unlikely to gain access to higher education and if they do, they are less likely to complete it successfully. This is mostly prominent in developing countries where opportunities to access higher education are rare and poverty is prevalent (CHE, 2013). NSFAS is working to encourage those disadvantaged people to access higher education.

The quintile of one's school is not the only factor considered in determining awarding financial aid. The applicant must also meet other criteria. First NSFAS funding is only available to South African citizens. Further, to be eligible the applicant's family's gross annual income must be less than R150000. The system appears to be applied rather rigidly, and further appears to be looking for ways not to award financial aid. Citizenship and school quintile are the first eliminators, then the income status of the family. Thus, for example, an applicant who attended a quintile 3-5 school and who has a high APS is automatically excluded from financial aid, even if his/her family income is less than R150000 per year. It

was observed that there are some students whose families sacrificed to get their children into quintile 5 schools (which are presumed to be better schools academically), only to find that they are unable to obtain financial aid as a result. Potentially, the university may lose valuable students through the way its financial aid policy is applied. The stated caveat is that if funds are available, other deserving cases will be considered. NSFAS funding is available to five to six new BAgricExt students annually – this is about one quarter of the annual intake of 20 students. If there are many students from quintiles 1 and 2, the programme may get more funding packages.

The application procedure for financial aid is as follows:

1) The student must show the intention to apply for NSFAS funding when filling the CAO application form for admission to the University; this is done by indicating on the form that the applicant would like to be considered for financial assistance from UKZN. If the university offers the applicant a place to study and identifies that the applicant as a possible candidate for financial assistance in terms of the requirements, a NSFAS Application for Financial Assistance Form is forwarded to the applicant. Financial assistance will only be confirmed once the applicant has submitted the completed Application for Financial Assistance Form together with the required documentation and once the family income has been verified by the UKZN Financial Aid office.

Students who have been turned down for NSFAS financial aid have limited options, one of which is to approach Edu-loans which is a commercial but generally available, but requires the applicant (e.g. the student's parent) to be employed. Interest rates vary, depending on the higher education institution, but the general rate is 11.5% per annum.

The Administrators indicated that the College of Agriculture, Engineering and Science (under which the BAgricExt falls) does award bursaries to students. These are mostly geared toward

post-graduate or high achievers already enrolled in the university. Bursaries are normally awarded to needy students with excellent academic results who are seen to be capable of obtaining their degree within the minimum time outlined in UKZN's academic rules. Historically bursaries have been given to students with five As and above in their matric result, but the College is now targeting students with three and four As. If they perform well, they stand a good chance of continued support from the College's funds. The decision is made by the Academic Leaders, the Dean of school, Dean of Teaching and Learning and the Deputy-Vice Chancellor in the College). Administrators indicated that another bursary is also given to students who achieve high marks in their university modules -- the bursary will decrease (but not entirely cover) their tuition fees.

From the foregoing it is evident that the latter two bursaries are not for new first year students, as they are awarded after demonstrating a certain level of academic performance. Also the family's gross annual income must be less than R150 000 and "the average annual degree mark is greater than 65% with 100% of registered courses passed in the previous academic cycle" (UKZN, 2016:28). This is not unique to the BAgricExt, but applies to all UKZN programmes.

Based on student responses, it was discovered that they are using seven ways to fund their studies (table 5.10). However, 30,8% of respondents were not comfortable to disclose their source of funding.

Table 5.10: Source of funding for BAgricExt students

	NSFAS	Parent	Bursary	Parent & Bursary	Parent & NSFAS	NSFAS & Sponsor	Bank Loan	Missing	Total
First Year	10	1	1	0	0	1	0	4	17

	NSFAS	Parent	Bursary	Parent & Bursary	Parent & NSFAS	NSFAS & Sponsor	Bank Loan	Missing	Total
Second Year	7	3	3	0	0	0	0	1	14
Third Year & Graduates	6	4	0	1	0	0	0	12	23
Employed	2	2	1	1	1	0	1	3	11
Total	25	10	5	2	1	1	1	20	65
%	38.5%	15.4%	7.7%	3.1%	1.5%	1.5%	1.5%	30.8%	100%

Of those 69,2% of the respondents who did disclose their source of funding, the majority (38,5%) had used or were currently using NSFAS financial aid. It would also seem that the reliance on NSFAS is increasing as the rate of NSFAS use increased from just under 2% of the 'oldest' respondents (employed) to just under 59% of the 'newest' respondents (first-years). Bursaries do not appear to be a prominent source of funding with only 7,7% of the students using this source. Bank loans appear to be the least likely source of funding one's studies.

5.7. Intake numbers in BAgricExt since 2010

In 2010, when the BAgricExt shifted to Cedara, the intake was 8 students against a target of 20 students. In 2011 the number doubled to 16 students, getting closer to the target. In 2012 the number increased to 23 students, beyond the targeted of 20. In 2013, the exactly 20 students were registered. In 2014 and 2015 the numbers dropped respectively to 15 and 17 students (table 5.11).

The total number of registered students registered in BAgricExt from 2010 to 2015 is 99 students excluding students who withdrew or were academically excluded. This was against the target of 20 per year or 120 for the period of this study – 82.5% of the target.

Table 5.11: Intake numbers in BAgricExt from 2010 to 2015

Year	Number of registered students
2010	8
2011	16
2012	23
2013	20
2014	15
2015	17
Total	99

(Source: UKZN Student Management System – SMS)

5.8. Strengths and weaknesses for intake process

According to the Administrative Officers and students, the strengths and weaknesses of the intake process are as follows:

Application process: can be done online or manually and academic leaders with administrative staff are available to assist students. The BAgricExt programme is well prepared to handle the first year, the academic structure is set up very well, the curriculum well organised. But registration time frame is only one day which is not enough and applicants with poor computer background can struggle with the online registration.

Managing applications and matric results: There is collaboration between the CAO and UKZN; the CAO has the capacity to manage a large amount of data in an effective way within the limited time. Students get their application results efficiently through email and SMS. However, the 'standardised' code used by the CAO code does not match with the BAgricExt/AERRM code on UKZN system; this could be one of the reasons why the programme is struggling to get good number of applicants during intake because students are confused.

Entry requirements: accommodate variety of students and many subjects (6) are considered to calculate the APS; this broadens access for many students. But for the BAgricExt, the

challenge is that the Cedara requirements (e.g. additional fees) are not in the UKZN handbook; students get the Cedara information at the last minute. International students indicated that their academic records are not always recognised by Higher Education South Africa (HESA) or that there are delays in the process. They are required to submit their academic credentials for accreditation, but often some of the courses done back home are not recognised (i.e. they are not given credit for them). They will then must repeat what they had done before, which they feel is a waste of time, effort, and money.

Registration: During registration, the UKZN IT office provides all the logistic and technical support to facilitate the assisted online registration process. One difficulty was that, despite plans to the contrary, the University had not tested the registration process before registration, which resulted in technical glitches. The online system failed to register students or blocked access for unclear reasons. Electricity disruptions also caused the network to breakdown and requiring it to reboot. The banking system is slow; some students made payments as instructed, but the deposit did not appear on online system in time to allow registration. The creation of passwords for first year students (registering for the first time) also occasionally posed problems; causing a delay in the registration process and frustration among students and staff. Returning students also expressed difficulties using the online system. They indicated that is a problem to register from Cedara as the network is always a concern (e.g. slow internet access). Also, some online registration issues require a manual override to complete registration. For example, if there has been a change in modules or prerequisites for modules. In such cases UKZN administrative staff needs to personally, physically override the system (via a special code) – but those staff are not at Cedara. This necessitates transporting the students to the main campus (about 20 km) to complete registration. It is observed that although the system is designed to process approximately 8000 first year

students, the BAgricExt needs only to process 20 students. What should be a relatively simple process appears to be unduly complicated.

Financial aid: As discussed earlier financial aid is available for those who qualify for it (based on their school quintile and family income). Information is delivered to students about the documents they need to submit to support their applications. Students are able to study and finish the degree and start working before they have to start repaying the loan. The issue with financial aid is that the number of financial aid package is limited per programme. The BAgricExt receives 5 or 6 packages; the impact is that some students who are qualified to study (i.e. meet the entrance requirements) cannot carry on due to lack of funding. The NSFAS office is bound by number of regulations; as a result, colleges and universities cannot influence the system. Further, there are delays, shortage of resources, and too much bureaucracy. The students said there is a "very huge administrative process to deal with", which, according to the Administrative staff indicate is not in the hands of the University; the staff also have their own managers that have to liaise with external bodies to make sure the University complies with NSFAS requirements – which appear to be inflexible. Regarding bursaries, the KwaZulu-Natal Department of Agriculture regularly offers bursaries to students in the field of agriculture to promote and encourage food production to feed the nation. Many students and institutions are benefiting from it. However, it was highlighted that the BAgricExt students are not getting such bursaries.

Student accommodation and housing: The BAgricExt programme is guaranteed full accommodation for all 20 students; this by agreement between UKZN and Cedara. This is the only UKZN programme with guaranteed housing for all its students; if they were to be based at any other UKZN campus, there would be no such guarantee. The main concern raised about accommodation is that there is no accommodation provided before they are registered.

Students arriving from far (especially international students) have no place to stay while they go through the registration process.

The Administrators indicated that marketing of schools and programmes is done through the University Public Relations staff. They visit schools to talk about different programmes and what they are offering. Therefore, many of the University's schools and programmes are well known by students before they apply to study. The problem is, not all programmes and schools take part in this initiative; apparently the BAgricExt does take part in the marketing exercises, only in open days. The effect of this is that many potential students will not know enough about the programme before they apply.

5.9. Recommendations for improvement of the intake process

The following suggestions were recommended by administrative officers and students to improve the intake process:

Programme Code for application

Make it easier for students to know which code to use when applying and completing various forms. Make sure the terminology used by UKZN and CAO about the BAgricExt are the same in all documentation and marketing exercises. Otherwise students get confused; confusion discourages application.

Financial aid

Applicants need to know about quintile criteria before accepting a firm offer. Make the quintile criteria public, to inform parents and new applicants. Reconsider excluding poor

applicants who attended quintile 3-5 school and look at need as the only criteria. The financial aid application should be electronic, where students can submit online and check from distance if they qualify instead of the hassle of moving back and forth, necessitating transport, queues and managing the amount of papers to submit.

Cedara Student Union (CSU)

The CSU should be managed fairly and charge students based on what they have registered for (e.g. sport is not done by everybody, but all students are paying for it under CSU). CSU fee needs to be reviewed; students are paying for the services that they do not use.

Bursaries

The Cedara-BAgricExt management should take a lead to approach those agencies (e.g. the Provincial Department of Agriculture) that are funding Cedara's diploma students to motivate for BAgricExt students. Encourage and help students to contact Department of Agriculture directly for funding.

Online Registration

Test the system before the start of registration to make sure everything will work as planned and avoid hiccups in the system during registration.

BAgricExt Marketing

BAgricExt programme needs to be marketed in the right way to attract students, and avoid making offers to students who are taking chances (selecting the programme as their third or

fourth choice). The office that can assist with marketing is the 'Public Relation' of UKZN. They have responsibility to ensure that marketing and communication needs of the University are achieved. They always go out to different schools to talk about programmes offered at UKZN. Identify someone to go with Public Relation staff to schools for marketing so more detailed information can be given. This will increase the number of applications and it will help make sure the students are better prepared before they come for registration.

Cedara entry requirements

Include information about Cedara's requirements in the green UKZN handbook and specify the amount to be paid before registration. Clarify administration of the registration process. If one UKZN administrative staff (not a lecturer) could be placed at Cedara with an office to specifically deal with UKZN administration at Cedara, it can make a big difference.

Registration process, time and fees for first year (new) students

Follow-up needs to be done by applicants to avoid surprises; this could be mentioned somewhere so that they will know about their responsibility in the process. Clarity should be known at the beginning about what are the conditions for BAgricExt at Cedara. Specify activities they are entitled to do and their limitations. This can be done after registration to do a mini-orientation where the new BAgricExt will be told about the programme at Cedara and give them chance to ask questions, or call regularly some meetings like this focus group to discuss issues with the management. This will avoid students to keep complaining (e.g. they do not understand why they are not eligible to take short courses as diploma students do).

Registration date should wait after the pay day (after 25th January) because, before that, the parents are without cash to pay the fees required to register, especially after the year-end festivities. Also they need to be prepared (informed) up front about the fees to pay.

Registration for returning students

As the online registration is posing problems at Cedara and the issues of overriding the modules still occurs, transport needs to be available for returning students to go to UKZN for registration; or alternatively one administrator can go to Cedara for a day to sort out registration problems for returning students (all of them to register one day as it is done for first year students).

Names of modules should be simple, especially those related to production modules (i.e. animal production and crop production) should remain as they are, better keep Cedara names than UKZN because that is what students are doing at Cedara and employers would look for "production" modules than other keyword on the academic record, while selecting people as new employee.

Housing

Students who are coming from far could be given a place for one or two days to stay while waiting to complete their registration; it does not have to be a proper accommodation, it can be even an "empty room or a venue for lecture"; just someplace for them to wait for their registration.

5.10. Summary of results on intake process

Learners at KZN high schools are informed about programmes at UKZN before they finish matric. This is done by their teachers or by UKZN public relation staff. CAO forms and instructions are made available during this time and learners will get familiar to the process way before the time. The learners who are missing this opportunity are likely to find the process 'complicated' as it will appear as a new venture to embark on without sufficient explanation or assistance. This implies the necessity to encourage UKZN to visit high schools to talk about the programme, or getting close to school through teachers who could be invited for a workshop where they will get the key points of the programme that could be transferred to learners. The difficulty of this though is that it will not guarantee the message will be delivered to learners, hence best way remains a face-to-face between University staff and learners.

The reasons behind applying in BAgricExt are triggered by the impulse to follow one's passion and explore a field that is familiar; respond to what society presents as key to unlock success in life; search for job opportunities and lastly for not having other options. There are different ways to pay school fees: using cash from parents or guardians, obtaining bursary, getting bank loan, receiving NSFAS, or the combination of these.

As required by the Council on Higher Education in South Africa, the intake process must meet the programme's capacity to offer quality education to the selected number of students taken; the BAgricExt is abiding on this golden rule by targeting 20 students each year, arguing that 20-25 students is the ideal class size for the learning approach used. The total intake from 2010 to 2015 was 99 students. Application is done online or manually. Students must meet the entry requirements to be eligible. The minimum is to have passed the matric or have the NSC with at least 28 points with a pass of at least 50% in English, Mathematics, a Science and Life Orientation. The selection and registration will be based on the number of

places available within the programme and the APS obtained by the applicant (having 28 points or above is not a guarantee to have a place in BAgricExt, only 20 students will be taken with preference being given to applicants with a higher APS). Also, applicants must obtain financial clearance to register by paying an acceptance fee and a registration fee and giving an indication of how the balance will be paid for. Failure to do that will prevent the student from registering and thus losing his/her place in the programme. The number of financial aid packages is very limited and granted based on the student's high school quintile and family income. There are two registration processes for the BAgricExt, one at UKZN and another at Cedara College. Additional fees must also be paid at Cedara to complete the registration. The step-by-step process needs to be respected for application and registration. Along the way if there is a technical problem, there are people available to assist.

References

Council on Higher Education (CHE) (2004). Criteria for Programme Accreditation. Higher Education Quality Committee. Pretoria.

Council on Higher Education (CHE). (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Report of the Task Team on Undergraduate Curriculum Structure. Discussion Document. Brummeria Pretoria.

Higher Education and Training (HET) (2010) Draft Policy on the Minimum Requirements for Teacher Education Qualifications selected from the Higher Education Qualifications Framework (HEQF).

NSFAS (National Student Financial Aid Scheme) (no date). NSFAS Website (mission statement). http://www.nsfas.org.za/content/mission.html Accessed January 2016

University of KwaZulu-Natal (UKZN) (2016). Undergraduate Prospectus 2016. Accessed September 2015 http://applications.ukzn.ac.za/Prospectus.aspx

Chapter 6: Results for Teaching and Learning in the BAgricExt programme

Teaching and Learning is the core of the five major areas to look at when assessing performance of an undergraduate qualification. It incorporates learning activities and assessments to determine student progress (UCF, 2005; Moss et al., 2008; Cartwright et al., 2009). This chapter presents the perceptions of students and lecturers about the Teaching and Learning process in the BAgricExt programme based at Cedara College of Agriculture. The other four assessment areas (intake, access to facilities, performance and placement) are presented in other chapters.

This chapter presents the general perspectives for Teaching and Learning in BAgricExt giving specific attention to interactions among students, module interrelations, relevance of modules content, workload, time allocated to academic activities, and language issues. Assessment criteria will be presented in the five learning areas of the BAgricExt recording

for each area the students' views on the difficulty and ease of modules with respective reasons. Then it will give the views about academic support received (tutoring and counselling) and its influence in different modules; thereafter acquisition of competence in BAgricExt; quality assurance for modules; perceptions about BAgricExt programme and finally the strengths and weaknesses about Teaching and Learning in BAgricExt, with recommendations. More statistical detail about Teaching and Learning findings is in appendix 9.

6.1. General perspectives of Teaching and Learning in BAgricExt

Students and lecturers provided their perceptions about the process of teaching and learning as experienced in the BAgricExt. Serges et al (2003) in Gijbels & Dochy (2006) pointed that the main concern for today's higher education remains the development and implementation of learning and teaching process that foster in students skills to obtain and apply their knowledge efficiently, to think and analyse critically, and make interpretations.The main themes were promotion of interaction among students, interrelation of module content, relevance of module content, integration of theory and practice, student workload, challenges of working in English.

This aspect of the study is characterised by the complexity of the nature and concepts of teaching and learning, and the equal complexity of perceptions and perspectives related to teaching and learning that need to be improved to achieve a productive learning environment (Ramli & Zain, 2018).   Although all students were asked the same questions, there will naturally be a wide variation in perception based on the year of study of the respondent. First-year students, at the time of the study had completed first semester and were still in second semester, and, thus, had very little experience, and would obviously not be able to comment on second and third year modules. Third-year students have been through all the modules and have much more experience in studying – so their perceptions are going to be very different.

Interrelation and relevance of content: Fifty-five per cent (55%) of students strongly agreed that the teaching activities in BAgricExt promote interaction with one another, and 55% agreed that the content in different modules was interrelated. Regarding the relevance of module content to the degree, 49% 'strongly agreed' and 48% 'agreed'. None of them disagreed about the relevance of the module content. From the student perspective, what they are learning is relevant to the degree they are reading.

Integration of theory and practice: Lecturers indicated that theory and practice are integrated primarily by referring students to the real-world examples to illustrate theory – this is achieved through field trips to relevant farms and agricultural enterprises. Integration is also achieved through experiential learning, simulation games, farm practicals, assignments, project, research, presentation and tutorials.

Student workload: Thirty-eight per cent (38%) of students agreed that the workload was manageable; 42% were not sure (neutral); and 11% disagreed. This shows that less than 50% can easily cope with the work involved in the programme, and the rest are likely to struggle with it. The amount of time spent on lectures, practicals, research, assignments and tutorials depends on the level of study (first, second or third year). There are more lectures and practicals in first and second year, and many fewer in third year where more emphasis is place on self-study.

The time scheduled for lectures and practicals per week is the same for every student in a given module. All BAgricExt students follow exactly the same curriculum. Therefore, in theory, they all should spend exactly the same amount of time in their various academic activities. However, in practice, attendance will vary; some students routinely skip classes, others may repeat one or more practicals or tutorials, and some students may be taking an extra module because they failed it in a previous semester. Therefore, the actual time spent on scheduled academic activities will necessarily vary. Time spent on research and assignments

is not fixed and will, naturally, vary from student to student depending on capacity and how seriously they take the assignment.

Table 6.1. shows the range of student responses to the inquiry into the actual time spent in various academic activities. It is apparent from these responses that students perceive these activities differently. It appears that some students are referring to the fixed time allocated to lectures and practicals, while other appear to be referring to the time spent on matters related to lectures and practical (including the scheduled time). The results also suggest that there are two dynamics at play. First, by design, the lecturing hours decrease and the self-study hours increase over the three years. Therefore, one would expect to see an increase in the hours spent on assignments and research, and a decrease in the hours spent in lectures and tutorials.

Second, first-year students appear to be spending a greater amount of time on assignments than is intended by the learning design. This may be because they are new to university-level self-study (as reflected in assignments) and is takes them a 'long time' to do what are comparatively simpler assignments than they will find in third year. As is discussed later, this may also be affected by the required use of English.

Third-year students show that they spend greater amounts of time on assignments and research. The extreme hours of 20 for research and 40 for assignments seems disproportionate to the total number of 'working' hours in a week; this return suggests that more investigation is required to understand why some students spend so much time on these self-learning activities.

Table 6.1: Time spent per week for academic activity

	Time spent per week for academic activity (hours)				
Level	Lectures	Practicals	Research	Assignments	Tutorials
First Year	12 to 22	2 to 19	3 to 18	5 to 20	2 to 16
Second Year	2 to 22	3 to 13	2 to 10	2 to 8	2 to 4
Third Year & Graduates	3 to 35	2 to 15	3 to 20	5 to 40	2 to 15

The perceptions of lecturers about student workload was very different from that of the students. Lecturers perceived the workload in their respective modules on different levels as well-balanced, involving substantial reading, and reasonably heavy self-study. They acknowledge that the programme is not 'easy', but deliberately challenging. There was an indication that students are struggling to cope with the workload, especially in the modules where more than one lecturer is teaching.

All of this needs to be understood in the context of notional study hours. In short, if a student is carrying a study load of 128 credits, s/he should spend 1280 hours per year in all academic activities. That translates to roughly 40 hours per week in total. Thus, a student claiming to spend 40 hours per week just on research is either exaggerating, or is genuinely struggling with the research assignment.

Working in English: All academic activities are delivered in English, which is the official medium of instruction at UKZN. In the aggregate, the study found that 27.7% of the students indicated that they had challenges learning in English, but that 63.1% did not experience any problem with English. Some 7.7% expressed no opinion, one way or the other (table 6.2). This suggests that, while most of the BAgricExt students have no difficulty with English for any given module, up to about one-third of the students following a lecture or doing their academic activity could be struggling to perform to their best due to the language of instruction.

Table 6.2: Challenges in English language

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Missing	Total
First Year	1	4	0	8	3	1	17
%	5,9%	23,5%	0,0%	47,1%	17,6%	5,9%	100,0%
Second Year	3	5	0	3	3	0	14

	%	21,4%	35,7%	0,0%	21,4%	21,4%	0,0%	100,0%
Third Year	4	1	5	8	5	0	23
%	17,4%	4,3%	21,7%	34,8%	21,7%	0,0%	100,0%
Employed	0	0	0	5	6	0	11
%	0,0%	0,0%	0,0%	45,5%	54,5%	0,0%	100,0%
Total	8	10	5	24	17	1	65
%	12,3%	15,4%	7,7%	36,9%	26,2%	1,5%	100%

It was presumed that as, students' progress through the years, they become more proficient in English. However, the findings suggest another dynamic. The majority of first-year students (67.4%) indicated that they did not have challenges in English, while the majority of second-year students (57.1%) did have challenges using English in their studies. By third year and post-graduation, the number of students indicating they were struggling with English, disappears, with no students in the latter two categories indicating any difficulties with working in English, which still the principal medium of instruction in South African universities; but the Department of Higher Education is reviewing its language policy as this has been a challenge for students whose first language is not English (Carstens, 2015). Nyika (2014) added that students who have English as their mother tongue have an advantage over others at the Universities.

This should be viewed in the light of the UKZN requirement that students must obtain at least a 50% in matric-level English – raising questions about the relevance of matric English to studying in English at university. Lecturers noted the struggle for some students, and suggested that lecturers could be assisted by isiZulu tutors who will be able to translate the content for better understanding -- particularly after class for those students facing language difficulties or willing to get more explanation in isiZulu. This is consistent with current research being conducted elsewhere at UKZN to determine the value of providing tutorial support in isiZulu. Further, it is part of UKZN policy to promote the use of isiZulu in academic programmes.

6.2. Student perception about BAgricExt modules: Assessment preferences and easy/difficulty

Assessment is a "systematic and ongoing method of gathering, analysing and using information from measured outcomes to improve student learning" (UCF, 2005:2) with criteria established by the CHE in higher education institutions (CHE, 2008). It should be considered as a powerful tool to promote deep learning activities, but not as a simple activity separate from instruction, that is administrated at the end of learning process (Dochy & McDowell, 1997; Sambell et al., 1997 in Gijbels & Dochy, 2006).

BAgricExt students are assessed using different methods (tests, assignments, practical tests, and exams). Eight-two per cent (82%) of the student respondents indicated that the assessment criteria were clearly communicated to them in advance, and have received sufficient feedback on their assessment submissions. From the various assessment methods, students were asked to identify the one they represented the fairest way to demonstrate what they have learnt within each of the five areas of learning. Their responses are given below with their respective reasons. Responses are organised around the five learning areas: Agricultural Extension, Agricultural Production, Farm Business Management; Resource Management; and Farm Engineering.

6.2.1. Agricultural Extension

The BAgricExt has seven Agricultural Extension modules (two at first and second year; three at third year). They comprise 128 credits of learning.

6.2.1.1. Assessment

The aggregated responses show that the written assignment (58.5%) and practical tests (24.6%) were the methods identified as being the fairest way to assess Agricultural Extension. Tests and exams (respectively 7.7% and 1.5%) are not seen as fair representation of learning in extension. Looking at the types of assessments preferred per year of study, it was found that assignment was the most preferred in first, second and third year, but with decreasing rate (70,6% in first year, 64.3% in second year, and 60.9% in third year). As students progressed in the years of study, they become more familiar with other types of assessment (preference in test is taking the second position in both first and second with respectively 17.6% and 14.3%). Practical test is increasing beside first year with 11,8%, second year 7.1%, and third year 34.8%. Exam preference stayed the same (0%) in first and third year , beside in second year (7.1%). The combination of all types of assessment was not selected at all (0%) throughout the 3 years. It was noticed that at exit-level, test and exam scored 0%, suggesting that they are not relevant at all at that level (Table 6.3). This is not unexpected because, in its current form, there are no exams for extension in third year – only written assignments.

Table 6.3: Preferred assessment method in Extension area of learning

	Test	Assignment	Practical Test	Exam	All the above	Missing	Total
First Year	3	12	2	0	0	0	17
%	17.6%	70.6%	11.8%	0%	0%	0%	100%
Second Year	2	9	1	1	0	1	14
%	14.3%	64.3%	7.1%	7.1%	0%	7.1%	100%
Third Year	0	14	8	0	0	1	23
%	0%	60.9%	34.8%	0%	0%	4.3%	100%
Employed	0	3	5	0	0	3	11
%	0%	27.3%	45.4%	0%	0%	27.3%	100%
Total	5	38	16	1	0	5	65
%	7.7%	58.5%	24.6%	1.5%	0%	7.7%	100%

The assignment was found most relevant for various reasons: it gives time to research and to think about responses; it is not like tests that are too long and, therefore, hard to complete. The written assignment allows students to go into the field to do some research; it gives enough time to collect information and evaluate it; it helps students to learn to start something from the start (this makes things easier to remember); it brings better understanding; it is more practical; it allows one to read and explore more; it doesn't involve cramming information as always done for tests and exams, but permits more understanding. About a quarter (24.6%) of the students suggested that the practical test is the best way to assess in extension because it is easy to understand while enjoying group discussions; get the chance to learn more while observing; placements demonstrate what was learnt and it where self-confidence can be acquired. The test was preferred by 7.7% because it is an open book test; it helps students to showcase their understanding more easily; and it is a reflection of what was learnt. Exam was suggested by 1.5% with the reason of offering enough material to study.

6.2.1.2. Difficult and easy modules

Rural Wealth Creation (first year, first semester) was perceived as difficult because there was a lot of research to be conducted and assignments; the lecturer was strict with marking; it involved computer skills, while some students are coming straight from high school with no computer skills; it required students to write assignments in a way that was not taught in high school and there were too many submissions. Designing Extension Projects (third year, first semester) and Extension Placement (third year, second semester) were not very difficult, but more demanding in terms of research and assignments workload. The Agricultural Extension modules require too much typing, require a lot of work and give less time to do assignments; the language used in these modules was complex and hard to be understood.

However, in general, the extension modules are perceived to be easy for a variety of reasons: they involved research most of the time; students learn something that they are familiar with; most of the learning activities actively involve students; it is more practical and there are a lot of participatory tools used; the lecturer was good at explaining; the modules are well-presented and have manageable assignments; lecturers help students to understand well, giving guidance, allow students to think for themselves, explore and apply what they know; most of the extension modules lecturers always provided an environment that enabled easy learning and encouraged interactions; in these modules, it is easier to engage with theory and people; lecturers were always available to help and guide students.

6.2.2. Agricultural Production

The BAgricExt has six Agricultural Production modules; two in first year and four in second year. They comprise 96 credits of learning

6.2.2.1. Assessment

As shown in Table 6.4, tests and practical tests (respectively 30.8% and 29.2%) are the methods identified by students as the most relevant assessments for their agricultural production modules; thereafter assignment (12.3%) and exam (6.3%). Three per cent (3%) of respondents found all the methods to be equally relevant for production modules. About a half of the first-year students were not sure yet (i.e. "missing") about the best method at this point as supposedly they were still discovering what will work better for them.

Table 6.4: Preferred assessment method in Agricultural Production area of learning

	Test	Assignment	Practical Test	Exam	All the above	Missing	Total
First Year	1	3	3	2	0	8	17
%	5.9%	17.6%	17.6%	11.8%	0%	47.1%	100%

Second Year	5	2	6	0	0	1	14
%	35.7%	14.3%	42.9%	0%	0%	7.1%	100%
Third Year	13	1	7	0	2	0	23
%	56.5%	4.3%	30.4%	0%	8.7%	0%	100%
Employed	1	2	3	2	0	3	11
%	9.1%	18.2%	27.3%	18.2%	0%	27.3%	100%
Total	20	8	19	4	2	12	65
%	30.8%	12.3%	29.2%	6.2%	3%	18.5%	100%

In first year, assignment and practical test are taking the first preference with 17.6% each, followed by exam (11.8%) and test 5.9%. In second year, there was a bit of change, the practical test was the most preferred type of assessment (42.9%), followed by test 35.7% and assignment (14.3%). In third year, test was the most preferred (56.5%), followed by practical test (30.4%) and combination of all the 4 assessment types (8.7%). Assignment was the least preferred in their final year. Exam did not receive any preference (0%) in second and third year, only in first year (11.8%). Test is more preferred in all three years. As student progressed, their preference for test as type of assessment increased (5.9% in first year, 35.7% in second year and 56.5% in third year).

Throughout the three years of study, the reasons for their preferences were given. Test was chosen (30.8%) for the following reasons: it allows students to show their knowledge and can facilitates seeing where one is struggling; it allows lecturers to know how much information students have absorbed during lessons; repetition of theory and practice boosts understanding; it helps not to forget what is taught after test; in this area the tests are shorter and manageable; it has both practical and theoretical components. Practical tests were preferred by 29.2% because practicals are a much easier way to gain more skills; they clarify thought; field work helps to see and apply knowledge; they include a lot of work on the

college farm; employers will seek for students who theoretically know something and can actually do it practically. Assignment was chosen by 12.3% because it allows enough time to research and gain knowledge; it is hard to forget as for the test where someone will just cram, pass and forget; a lot of information is collected to demonstrate ability to apply what was taught to different situations. Exam was chosen by 6.2% because it puts together all the aspects into one. Some (3%) have indicated that the combination of all the methods as suitable to assess agricultural production because they all test the understanding and application of the module content.

6.2.2.2.   Difficult and easy modules

Introduction to Agriculture (first year, first semester) was perceived to be difficult by some students because the lecturer's voice is not audible when he is teaching; there are piles of notes to study; and marking was too strict. Crop production (second year, first semester) was challenging because of the workload, and at the same time no assignment is given to students; there is no connection between the lecturer and students; the lecturer sometimes tells a student that he/she is going to fail; and too many notes. Agricultural Production (year one, second semester) was perceived as difficult because the lecturers did not encourage a learning environment. Animal production (second year, both semesters) was difficult because it was not as organised and a lot of information was given at once making it was hard to understand; the lecturer was not teaching the module nicely, it fails to meet the learning style of students. Forage management/production was considered difficult because the lecturer was not good with the module, she was always busy with other things instead of going through the notes with the students and helping them with calculations.

Those who found production modules to be easy identified the following reasons: for Agricultural Production, biology and science were well understood in high school; most of the things covered in the module were more practical. For Crop production, the knowledge in biological science was the key; not too many assignments were involved, but a lot of practicals; the lecturer was straight to the point and encouraged learning. For Animal production, love of animals was a motivator and doing more practicals than many assignments. Field crop production was perceived as easy because the lecturer was good in explaining all the concepts.

6.2.3. Farm Business Management

The BAgricExt has three Farm Business Management modules (one in each year). They comprise 56 credits of learning.

6.2.3.1. Assessment

Test and assignment respectively were identified as most the most relevant methods of assessment by 26.1% and 23.1% of the students, followed by practical (12.3%) and exam (7.7%). No students indicated the combination of methods as most relevant. More than 50% of first year students were not sure yet (missing) about the best method. It is assumed that they were still learning about themselves and not having enough evidence to justify their choices (Table 6.5).

Table 6.5: Preferred assessment method in Farm Business Management area of learning

	Test	Assignment	Practical Test	Exam	All the above	Missing	Total
First Year	3	2	0	2	0	10	17
%	17.6%	11.8%	0%	11.8%	0%	58.8%	100%
Second Year	5	4	2	1	0	2	14

	Test	Assignment	Practical Test	Exam	All the above	Missing	Total
%	35.7%	28.6%	14.3%	7.1%	0%	14.2%	100%
Third Year	6	6	6	0	0	5	23
%	26.1%	26.1%	26.1%	0%	0%	21.7%	100%
Employed	3	3	0	2	0	3	11
%	27.3%	27.3%	0%	18.1%	0%	27.3%	100%
Total	17	15	8	5	0	20	65
%	26.1%	23.1%	12.3%	7.7%	0%	30.8%	100%

In first year, the test was the most preferred type of assessment (17.6%), then assignment and exam (both with 11.8%), students did not opt for exam (0%). In second year the order of preference started with test (35.7%), assignment (28.6%), practical test (14.3%) and exam (7.1%). As they get in third year, students' preference type of assessment was equally divided (26.5% in all, test – assignment and practical test. None of them pointed exam (0%). Over the three years, the need for all three assessments (test, assignment and practical test) kept on increasing as students moved forward, but exam was seen as less effective way of assessing students as they progressed from first to third year (decreasing rate from 11.8% in first year, 7.1% in second year, and 0% in third year).

Test was identified as the best method (26.1%) because it shows how much was gained during the class and if students know how to really manage the farm; in most cases the tests have scenarios for students to apply knowledge; a great deal of work can be dealt with at one time; this is where students' understanding is observed; it allows one to show how much they know about calculations. Assignment was preferred (23.1%) because assignments are done in groups which generates more understanding; the lecturer gets to know how much information was absorbed prior to test/exam; it gives sufficient time to drill in the work and increases

capacity in terms of organizing; it gives space to enough research and studying; helps one understand more about the agricultural business world, economy and book keeping; it gives a chance to be able to do critical thinking and logical thinking; there is more self-commitment in assignment than in writing a test/exam, where one tends to pass and forget. Practical were preferred by 12.3% of students because it allows application of theory learnt; it makes numbers easy; it involves a small group which gives easy access to the lecturer. Exam was chosen (7.7%) because economics and commerce is better learnt under examination; and includes a lot of calculations.

6.2.3.2. Difficult and easy modules

Farm Business management is perceived to be difficult because it deals with economics and some students do not have background in it. One respondent said "*it is confusing...., It comprised a lot of accounting and marketing which I was not exposed to in my high school years*", and it involves lot of calculations, which is not a strong point to others. Again, this must be seen in the light of the entrance requirement that students attained at least a 50% pass in matric mathematics.

Those who found this area of learning easy pointed that, in the first- and second-year Farm Business Management and Agri-Business modules, the lecturer showed passion, she was very enthusiastic, knowledgeable and knew how to make students understand; there are many exercises involved helping to comprehend; love of working with numbers; and the lecturer was always clear and available for queries. In Farm Finance Management (third year, year-long module), the lecturers were always available to help and guide students; it was well-structured and well facilitated in class, and assignments were manageable; it was clearly taught how to manage a farm by managing capital; it involved enough assessment to improve our knowledge, lecturer had enough time to prepare students for the exam.

6.2.4. Resource Management

The BAgricExt has five Resource Management modules (two at first year; one at third year). They comprise 64 credits of learning.

6.2.4.1.   Assessment

Practical Test is the most desired method (35.4%) followed by assignment (18.5%), test (16.9%) and exam (7.7%). In first year, close to a half of the class were not sure (missing) about the best method at this point. It is assumed that they were still discovering what will work better for them (See Table 6.6).

Table 6.6: Preferred assessment method in Resource Management area of learning

	Test	Assignment	Practical Test	Exam	All the above	Missing	Total
First Year	4	1	2	2	0	8	17
%	23.5%	5.9%	11.8%	11.8%	0%	47.1%	100%
Second Year	3	2	6	0	0	3	14
%	21.4%	14.2%	42.9%	0%	0%	21.4%	100%
Third Year	3	6	12	2	0	0	23
%	13%	26.1%	52.2%	8.7%	0%	0%	100%
Employed	1	3	3	1	0	3	11
%	9.1%	27.3%	27.3%	9.1%	0%	27.3%	100%
Total	11	12	23	5	0	14	65
%	16.9%	18.5%	35.4%	7.7%	0%	21.5%	100%

In first year test was considered the most preferred type of assessment, followed by practical test and exam (both 11.8%), and assignment (5.9%). In second year students preferred practical test (42.9%) more than other assessments (test 21.4%, assignment 14.2%, and exam 0%). In third year, practical test still taking the first place (52.2%), then assignment (26.1%), test (21.4%), and exam (0%).

Throughout the three years of study, the reasons for their preferences were given. Practical test was selected by 35.4% of the students as the best method because of the following reasons: it allows to see what you are working with; get better understanding of what was

learnt in class; involved team work; vegetation and soils are best learnt and understood through practical, and doing land use plan. Assignment was chosen (18.5%) because it encourages knowledge acquisition in research; there is personal engagement in assignment more than in test and exam; combination of theory and practice, student learn best if they communicate their understanding through an assignment. Test was chosen (16.9%) because it gives a challenging scenario and involves lot of work that students need to be used to. For exam there was no reason given.

6.2.4.2. Difficult and easy modules

The Climate section in the Resource Management modules was difficult because of lack of Geography background; for Resource Management the problem was bad marking of papers by the lecturer; for Environmental Impact (first year, second semester), the expected outcomes were not always clear and the workload was too much, study material not organised; the Soil-resource lecturer was not clear in what was expected. For Land Use Planning (third year; year-long module), the lecturer was too strict and feedback from assignment did not give much detail of things that need to be improved.

Other students found this area of learning easy because: for Environmental Impact the lecturer always explained properly; Natural Resources' lecturer checked for understanding; it is a combination of different topics; It was very interesting with enthusiastic lecturers this encouraged learning and hard work. Land Use Planning was similar to Geography subject, which was done in high school.

6.2.5. Farm Engineering

The BAgricExt has three Farm Engineering modules (one in first; two in second year). They comprise 40 credits of learning.

6.2.5.1.   Assessment

Similar to previous areas of learning, practical test is the preferred assessment method (52.3%) followed by assignment (15.4%), test (9.2%) and exam (6.2%). (See Table 6.7).

Table 6.7: Preferred assessment method in Farm Engineering area of learning

	Test	Assignment	Practical Test	Exam	All the above	Missing	Total
First Year	2	0	8	0	0	7	17
%	11.8%	0%	47%	0%	0%	41.2%	100%
Second Year	1	5	5	1	0	2	14
%	7.1%	35.7%	35.7%	7.1%	0%	14.3%	100%
Third Year	3	5	14	1	0	0	23
%	13%	21.7%	60.9%	4.3%	0%	0%	100%
Employed	0	0	7	2	0	2	11
%	0%	0%	63.6%	18.2%	0%	18.2%	100%
Total	6	10	34	4	0	11	65
%	9.2%	15.4%	52.3%	6.2%	0%	16.9%	100%

In first year only practical test (47%) and test (11.8%) were considered as the most preferred types of assessment. The other types (assignment and exam) were not chosen (0%). As student progressed, they started getting familiar and enjoying other types of assessment. In second year, the assignment and practical test were the first choice (both 35.7%), followed by test and exam (both 7.1%). I third year again, practical test was the first choice (60.9%), followed by assignment (21.7%), test (13%) and exam (4.3%).

Practical test was preferred (52.3%) because it allows an individual to gain knowledge about methods and equipment used in agriculture; students need to see machinery involved in farms; concepts can be applied practically; it is easy to remember when things are done physically; engineering is better understood on a hands on experience; it creates pictures in

mind which can be stored for a long period of time; working with animals and plants in farming requires more practical; given that the majority of student have not been exposed to farm engineering in their homes/background the best way to gauge their understanding will be through engaging them in practical assessments. Assignment was preferred (15.4%) because it allows to do research since most of students are not used to it; it needs thorough investigation as it is very broad. The reason given for test (9.2%) was related to the exposure to readings. For exam, no reasons were given.

6.2.5.2. Perceived difficult and easy modules

Farm Infrastructure/Farm engineering (first year, first semester) was difficult because students were not familiar with the subject, not having any background; being tested about things never seen/heard before; the lecturer used to mark not according to the university standards and not following the marking rubric; the way it was assessed by the lecturer was not appropriate; expected outcomes were not always clear and the workload was too much, and study material not organised; lot of calculations needed and sometimes without understanding the reasons behind.

6.2.6. Understanding student perspectives on assessment in the BAgricExt

Student assessment should inform teachers where to adjust teaching activities in order to comply with the program standards. On the other hand, program assessment, will be used to identify strengths and weaknesses on different levels (student, teacher, school and programme level) so approaches can be established to change or improve things as needed (CERI, 2008).

Student perspectives on assessment methods used in the BAgricExt, showed clear preferences. For modules where learning is seen as practical -- production modules, farm

engineering and Resource Management -- the Practical Test was more preferred. For Agricultural Extension assignment was the best choice and for Farm Business Management the test was preferred. This is consistent with the way in which these modules are designed.

6.2.6.1. Practical Test

Practical tests emerged as one of the most preferred method of assessment. It is noteworthy that from the reasons presented, the students were expressing preference for practicals as a mode of learning (including the concomitant assessments (practical tests)). Students found that learning by doing was very useful and made it easier to remember what they had learned. It was also more immediately confirming because they and their lecturers could "see" their ability. Practical tests, however, do not test theory – they test skills. And in higher education, skills are meant to be the application of well-understood theory.

6.2.6.2. Tests and Exams

Overall, tests and exams were not preferred methods of assessment. They are seen as *'make it or die'* scenarios where students are frustrated even though deep down they know they have mastered the subject, but struggle to perform well in the test or exam. Some of the terminology used by students when discussing tests and exams include '*cramming*' and '*do it, pass, and forget'*. This suggests that there little learning value in tests and exams for student; rather they are primarily about getting a pass. The student responses suggest their perspective due to the fact that time is very limited for exams and tests as compared to assignments and practical tests; students become nervous to confront the task, which overrides in their minds the value of the assessment other than the pressure to pass.

If learning is the ultimate goal it will be beneficial to focus more on assessment activities that will reinforce effective learning. In order to decrease or eliminate fear around test/exam, they could be called other names and set in a way that will give students chance to demonstrate

what they know instead of recall what they can remember. Time seems to be an issue as well for test/exam as compared to assignment and practical, hence enough time need to be allocated to respective assessment tasks.

6.2.6.3.   Discussion

In documentation supporting the BAgricExt, reference is made to a ladder of learning. The idea is that learning is structured and laddered across the three years. This is linked to the level descriptors discussed in Chapter 3 where there is meant to be an intentional and deliberate advance from memory to application to conceptualisation (and reflection). The BAgricExt, as can be seen from supporting documentation appears to follow this in terms of assessment. All first-year modules have tests and/or exams – but extension exams are 'open book' suggesting application of knowledge rather than memory of knowledge. This is consistent with these modules being at NQF level 6 which is essentially about applied knowledge. The second-year extension modules increase the weight of assignments, while the other modules retain significant emphasis on tests examination – but with major emphasis on practicals. This again is consistent with their being at NQF level 6. All of the third year modules are at NQF level 7; in these in all learning areas, there is little reliance on tests and exams, but more on lengthy assignments and 'real-world' projects.

6.2.7. Understanding student perspectives on ease and difficulty of modules

Nardo (2017:1) stresses that experientialists believe that "all human beings have a natural desire to learn, hence, when there is failure to learn, it is not caused by the person's inability to learn, but rather to problems present with the learning situation". This is why some students study really hard, without getting the best results, and others who do not even invest half the amount of time and effort into their studies, but will get outstanding results (Mueller,

2017). Students will interpret this as "difficult" or "easy" modules depending on the outcome obtained.

From the perceptions of students about the ease and difficulty of modules, it appears that same module can be seen differently by students depending on a number of factors: student capacity to understand the content; the teaching methods of lecturers and learning preferences of students; the familiarity of the subject to students; links to daily life, and the way the module was assessed.

This is a highly contested and debated area. Why students rate a module difficult or easy has been the subject of much research. Some argue that when a student receives what s/he considers a good mark, they tend to rate the module as easy. However, often it has more to do with expectation of difficulty and realty and whether the 'good mark' was earned in a class the student thought would be difficult (Addison et. al., 2006). It is significant to note that a number of the students connected the difficulty of a module with familiarity with its content, with specific reference to what they had or had not learned in high school. This suggests that being faced with new areas of learning is somewhat equated with difficulty of the module. This is important because of the intention of the level descriptors discussed in Chapter 3 where there is deliberate intention to increasingly expect students to learn (and gain competence) in increasingly complex and, more to the point, less familiar contexts. Applied very simply, learning in first-year modules at NQF level five should be in familiar contexts, whereas by third-year, students should be comfortable learning in unfamiliar contexts.

These findings are consistent with the findings of Bradley (1992:122-123) who found that courses were perceived as difficult when students had "little or no experience in a particular area, abstractness of concepts, and anxiety in a particular area". Conversely, "Subjects where the material was interesting or taught in an interesting manner was perceived as being less difficult". He also found that students relating "concepts to everyday events" were considered

easier. Social science courses were "perceived as less difficult, because many of the concepts covered in the classes were familiar to students". However, science and math modules "were difficult because they were not familiar with the concepts covered" (Bradley, 1992:122-123). Drawing on Addison, et al (2006) and Bradley (1992), this study suggests that there is more to be learned on this aspect of the BAgricExt programme.

Regarding student learning preference, lecturers should consider the fact that some students learn better when the information is offered verbally, whereas others will learn better when they see pictures or images (Mayer and Massa, 2003). As a result for the same module taught in one room, there will be students performing well and others poorly. It is not always the problem with students neither with lecturers. Programmes need to take this on board and be vigilant and ready to adjust and adapt as they determine the learning needs of their students.

6.3. Tutoring and counselling

Tutoring and counselling is part of the BAgricExt educational programme. It covers English tutoring, mathematics tutoring, academic counselling and personal counselling.

6.3.1. English tutoring

Seventy-two per cent (72%) of student respondents were aware that English tutoring was available. However, 25% did not know about it. Overall, 38% have participated in English tutoring as they felt there was a need. The perceptions of those who participated pointed that it was informative and beneficial through provision of English writing skills, academic writing skills; it provided good understanding about situations that occur in lectures and how to cope; and how to construct sentences when writing reports. Those who did not participate had passed the English Proficiency test, did not find the need to be part of it or had a clash with other modules. They could give no opinion about the tutoring.

Lecturers were requested to give their perceptions describing the extent to which the English tutoring process helped students perform better in their modules. They confirmed that: the tutoring was helpful in making students' assignments being of a better quality grammatically and in terms of expression; tutoring helped a lot and taught how to answer questions; and students with poor literacy perform better due to better understanding gained from English tutoring. They also suggested that still dictionaries should be allowed in exams.

6.3.2. Mathematics tutoring

The existence of Mathematics tutorials was confirmed only by 15% of third years and graduates (15%), the rest of the students did not confirm the availability of maths tutoring; only 9% had participated in it. The content focused on farm mathematics concepts rather than 'pure' maths.

Lecturers confirmed that maths tutoring was available. Those lecturers with modules involving calculations indicated that the maths tutorial assisted with the computational aspects such as break-even calculations, calculations of standard deviations and coefficients of variation. Tutoring helped improve accuracy of calculations.

6.3.3. Academic counselling

Almost all student respondents (92%) confirmed that academic counselling was available, among them, 52% participated in it. They indicated that the counselling was well organised, giving substantial advice to students on time and workload management, on obstacles faced by students, on coping strategies and motivation about academic life. However, views were divided among those who participated in the counselling; not all were in favour of the whole activity. One respondent said, "*Sometimes you feel like we are told things that have to be told to high school students*". Another one mentioned, "*it went well, but I attended because it was scheduled on the timetable. Apart from that I would have not attended the sessions; it was*

boring and waste of time, and I regretted for attending it". Curiously, it was noticed that for other students the decision to change (e.g. get more serious about studying) does not depend on attending counselling, but on personal choice. One student said, "*I did not notice any change; real change happened when I decided I needed to get serious*". This suggests that simply because students do not see the need or value in a certain activity, it does not mean that such activity does not have an effect; sooner or later something positive results from what was seen as useless.

Those who did not participate (40%) pointed different reasons: not being qualified to see the counsellor; the counsellor comes only once a week when there was other activity to do; not facing challenges that disturbs students academically; and being confident enough on what is required to know and to do as a student.

Lecturers generally felt that the academic counselling assisted students to study in a more disciplined and productive manner; it helped in time management; helped identify problems students are facing and suggest solutions; and helped to understand challenges students are facing so they can help them to perform well.

6.3.4. Personal counselling

Eighty-two per cent (82%) of student respondents recognised that personal counselling was available. However, among them only 18% have participated in it. They indicated that it went well and that there is feeling of having someone to talk to about everything that you feel; it is good for one's mind-set. Those who did not participate (57%) pointed that they had no serious problems that required going for counselling; this activity had a (scheduling) clash with other activities; being able to handle own problems; not willing to talk or share personal problems; still surviving with personal issues and able to deal with them personally; having a friend to talk to; and believing in sharing personal issues only with family and close friends.

Lecturers indicated, that, in addition to academic counselling, there is value in personal counselling as it should help resolve personal problems or assist students to explore potential alternative approaches to solving their personal problems; counsellors are important and need to be available for students because students with issues to deal with can perform poorly.

6.4.   Acquisition of competence in the BAgricExt

Acquisition of competence will depend on how learning is delivered to students, how it is absorbed by students, and the kind of influencing factors that exist. According to the CHE (2013), academic factors are the most influential on student achievement. And among them, the dominant cause of poor performance in higher education are the under-preparedness of students, limited access to learning facilities and "lack of motivation, anxiety about personal or financial circumstances, or alienation from the institution" (CHE, 2013:56). Personal causal factors include self-motivation, learning preference, and student age (Mlambo, 2011).

Students were requested to provide their perceptions about how well different key competencies were taught and acquired in BAgricExt. The rating possibilities included "excellence", "very good", "good" and "bad". Table 6.8 shows the competencies that students found were taught with excellence ranked according to percentage.

Table 6.8: Competencies delivered with excellence

Rank	Competencies	%
First year		
1	Research skills	88%
2	Capacity for analysis and synthesis	65%
	Teamwork	
3	Planning and time management	53%
	Producing and communicate information	
	Leadership	
4	Capacity to learn	47%
	Accessing, processing and managing information	
	Capacity for generating new ideas(creativity)	
	Capacity to evaluate agricultural systems	
Second year		
1	Research skills	
	Capacity for generating new ideas(creativity)	

Rank	Competencies	%
	Teamwork	43%
	Capacity to identify resources and production systems	
2	Capacity to learn	36%
	Leadership	
	Capacity for operational planning and evaluation	
	Capacity to evaluate agricultural systems	
	Third year	
1	Teamwork	61%
2	Capacity to apply basic production principles	52%
3	Capacity to plan and manage profitable farming system	48%
4	Capacity to identify resources and production systems	43%
	Capacity for operational planning and evaluation	
	Capacity to evaluate agricultural systems	
5	Capacity to learn	39%

Looking at the highest percentage of taught competency with excellence in each year, research skill was at the top in first with 88%, and same competency in second year scored 43%. In third year, team work was the first with 61%. Team work was found in other years of study, but not as the first competency taught with excellence (in first year team work was at the second position with 65%, and in second year it scored 43%, the percentage as research skill). Each year of study has specific competencies that students need to acquire, but there are some competencies that are found throughout the three years of study, others in two years. The table 6.8 displays the competencies that scored the highest percentage in each year of study:

Competencies taught in all three years of study: Students respondents selected team work as one of the best taught competency with excellence throughout the three years of the degree. In first year it scored 65%, second year 43%, and third year 61%. There was a drop in second year that got improved in third year. The second competency taught with excellence was the capacity to learn; it scored in first year 47%, second year 36%, and third year 39%. The third competency was the capacity to evaluate agricultural systems, which scored 47% in first year, 36% in second year, and 44% in third year.

Competencies taught in two years of study: Students respondents selected research skill to be among the best taught competency with excellence within two years of the degree. As said above, it scored the highest rate of 88% in first year, which dropped significantly in second year at 43%. The second competency was leadership, which scored 53% in first year, and 36% in second year. The third competency was the capacity to identify resources and production systems. It taught with excellence in second year at 43%, and third year at 44%. The fourth competency was the capacity for operational planning and evaluation. It was taught with excellence in second year at 36%, and in third year at 43%. The fifth competency was the capacity for generating new ideas (creativity). It scored 47% in first year, and 43% in second year.

Competencies taught in one year of study: Students respondents selected planning and time management to be among the best taught competency with excellence in first year at 53%, followed by producing and communicate information (53%), accessing- processing and managing information (47%). In second year, only one competency of capacity to understand the context and systems (36%) was identified; and in third year, capacity to apply basic production principles (53%), and capacity to plan and manage profitable farming systems (48%).

Teamwork, research, and capacity to analyse emerge as the best taught competencies in the BAgricExt. This is consistent with the intention of the programme to prepare students to work in collectives (which is a key part of the practice of extension) and to prepare them for post-graduate work (personal communication, S Worth).

The second scale after "excellent" was "very good". Table 6.9 shows the competencies that students ranked teaching as "very good", they are listed according to percentage.

Table 6.9: Competencies where teaching was rated "very good"

	Competencies	%
1	Accessing, processing and managing information	49%
2	Problem solving	48%
	Capacity to understand the context and systems	48%
3	Capacity to adapt to new situations	46%
4	Decision-making	42%
5	Capacity for applying knowledge in practice	40%
	Planning and time management	40%
6	Capacity for analysis and synthesis	38%
7	Critical and self-critical abilities	37%
8	Capacity to plan and manage profitable farming system	35%

The competence with the highest "very good" rating was "accessing, processing and managing information" (49%). This was followed by capacity for problem solving and understanding the context and systems (48%); capacity to adapt to new situations (46%); capacity for decision-making (42%); capacity for applying knowledge in practice, planning and time management (40%); capacity for analysis and synthesis (38%); critical and self-critical abilities (37%); capacity to plan and manage profitable farming system (35%).

There were no student respondents that identified competence for which the teaching that was less than "very good".

These are, in part, consistent with the learning plan for the BAgricExt. As noted in Section 3.1.1., in general, and Table 3.2 in specific, Teamwork, Research skills, Capacity to learn, Capacity to identify resource and production system, Capacity to evaluate agricultural systems, Capacity to apply basic production principles (which were all taught with excellence), and Capacity to understand the context and systems (rated "very good") are all included in the exit-level outcomes, particularly for Agricultural Extension

6.5. Quality assurance for modules

Quality Assurance as a process of making sure that specified standards and requirements have been met (CHE, 2004) is mostly the responsibility of the institution at the management level. Its basic objective is to "safeguard and uphold the standards of higher education by publicly providing verified qualitative and quantitative information on programmes" (Chong and Ho, 2009:307). For teaching and learning, the quality assurance can consist of inspection, external examination (Allais, 2009) and internal moderation. In the case of UKZN, the academic handbook indicates that all exit-level modules are subject to external examination. All other modules are subject to internal moderation. In both cases, at least 50% of the final mark of a module is moderated or externally examined.

6.5.1. Establishing quality assurance in BAgricExt modules

BAgricExt lecturers were requested to give their perceptions on internal and external moderation of assessment, procedures used for quality of their modules, use of review results into curriculum, and the kind of support provided to students with academic problems. First and second year BAgricExt modules go through the process of internal moderation. This is done by one colleague from the same institution (Cedara or UKZN) who is in the same field, will go through the papers to ensure consistency in marking. For the modules at exit-level (third year), external moderation (examination) is applied. The exam scripts are taken outside the institution (UKZN or Cedara) for consistency checking.

According to the lecturers, for quality assurance in modules, the procedures that are in place are: moderation; lecturer and course evaluation at the end of the module; a continuous updating and incorporation of the latest industry information in the module; the workshops to work on curriculum organised by the principal of Cedara College; using the form

"examination procedure and checklist" for exam moderation safeguarding the whole process; annual curriculum review; and talks with the module coordinator.

When there is a review or evaluation of the curriculum, the results are used for:

- Curriculum planning: update and streamline course content; focus on areas students find valuable and allocate more time for difficult sections; look at need of industries and general challenges out there that need to be incorporated into the curriculum; update the curriculum to respond to the needs of employers, farmers and industries; identify areas where students struggled, rework areas students do not understand.

- Delivery: try to include more hands-on learning, with better feedback, less lecturing, more supervising practical projects; make delivery more appropriate to learning styles; helps to change the curriculum, add what is required

Lastly, lecturers confirmed that the support provided to students with academic problems is done through: referrals to academic counsellor and learning psychologist; call student and interact face to face; after a talk, if need be they will be sent to the counsellor; as a policy lecturer should be in office to consult with students, but often students don't come; students at risk will do winter classes, revision sessions and make-up tests. On top of this there is a need to have Zulu speaking tutors in modules because language is a problem. All of this contributes to ensuring the quality of teaching and learning.

6.6. Perceptions about the BAgricExt programme

6.6.1. Students' general perceptions about the BAgricExt programme

To get their perceptions about the programme, students were asked to talk about what they like and dislike about the programme. Starting with what they appreciate, the following was highlighted:

- The BAgricExt is a multipurpose programme and gives an individual a great deal of choices; it gives knowledge in animal production, crop production and also extension methodologies, thus opening up opportunities for one in the real world; it teaches how to research and how to write project plan;

- It teaches how to face and fight against bad situations in communities, how to evaluate problems in community;

- Working in groups makes students able to interact with each other; the presentations done improve language and communication skills;

- It is a scarce-skill course aiming to help humanity;

- It gives exposure to rural settlement;

- It allows one to give their point of view and interact with others by sharing ideas;

- One gets the chance to write and get feedback before writing the final submission;

- It is participatory learning; it encourages love of agriculture and Extension;

- Guest speakers give valuable information;

- The field trips, placements and research symposiums provided good exposure and practical experience;

- It provides experiential learning to students while they are still at University;

- It is a subject (discipline) that is in demand all over the world; and

- It is a system-thinking improvement programme; and it helped understand farm operations.

Students did not appreciate the following in the BAgricExt programme:

- the resources are not well maintained, e.g. library closed while students are free to study;

- In first year there is no going out for research in communities to get people's views as a practical;

- Group work activities should have an element of individual focus;

- The workload involving too much research, referencing and citing;

- Some modules are not academically assessed;

- Too much notes;

- Paying high fees while not using the resources paid for;

- Lack of transport connecting UKZN and Cedara resulting in no access to UKZN resources;

- Group work forcing one to move out of own comfort zone;

- Very limited time in test/exam;

- Assignment typing takes weeks to submit;

- No production courses (in third year) limits what you can do after school (job wise);

- Deadlines are sometimes unreasonable;

- Not being able to choose modules of your choice; and the financial system is not well organised between Cerada and UKZN.

6.6.2. Lecturers' general perceptions about the BAgricExt programme

Lecturers were requested to give the extent to which they agreed or disagreed with statements related to BAgricExt programme on six aspects: Theory and practice; Academic work;

Motivation of students; Assessment; Cooperation among lecturers in developing and presenting their modules; and Discipline, facilities and administration within the programme.

Theory and practice in the programme

As the BAgricExt is a programme supposed to combine theory and practice, it was important to find out from lecturers their views about that combination. They were asked essentially the same question three ways: is there balance; is there more theory than practice; and is there more practice than theory? The results were inconclusive in term of the actual balance of theory and practice, with a slight leaning toward the programme being more practically orientated. In terms of balance, the majority of lecturers (55%) agreed that the BAgricExt programme deals fairly evenly with theory and practice/application (9% strongly agreed; 46% agreed). Eighteen per cent (18%) indicated that the programme does not deal fairly evenly with theory and practice. In terms of practice over theory 55% of the lecturers were not sure if programme deals more with practice than it does with theory, with 18% indicating the programme does and another 18% indicating the programme does not have more practice than theory. Similarly, in terms of theory over practice, 46% of lecturers indicated that the programme deals more with theory than it does with practice, 27% were not sure, and 27% (18% disagreed, and 9% strongly disagreed) indicated that the programme does not have more theory than practice. Beyond this, these responses suggest that, while lecturers may be certain about their own modules, they may not be overly familiar with one another's modules.

Academic work

Seventy-three per cent (73%) of the lecturers indicated that they set high expectations for the academic work in their modules. The majority of lecturers indicated (63% either agreed or

strongly agreed) that they are striving to keep a high standard of quality of education, and that they are expected to continually learn and seek out new ideas. At the same time, 92% of the lecturers expect students to complete every assignment. However, only 27% of lecturers indicated that students in this programme are focused and dedicated to their academic work; the rest (73%) were not sure (neutral) about the focus and dedication of the students. These contrasting responses suggest that the majority of lecturers do not know much about students' commitment or how serious they are with their studies. It further suggests that lecturers may feel that their responsibilities are limited to teaching and do not include finding more about the students. It clearly implies that there needs to be much more interaction between lecturers and students.

Motivation of students

Regarding motivation, 91% (27% strongly agreed and 64% agreed) of lecturers indicated that, in the BAgricExt programme, lecturers encourage students to keep trying even when the work is challenging. That indicates, at least from the point of view of the lecturers, even if the target is high and sometime appearing difficult for students to reach, lecturers expect their students to push harder because they know where they want to take students as far as learning outcomes are concerned.

Assessment

After each assessment, students are supposed to get their marks and feedback to see their performance and decide on what to improve. For this to happen, lecturers need to speed up the process. The lecturers' individual estimations indicated the average turnaround time for getting marks to students after an assessment varies from five to 21 days. Given this, 46% of the lecturers were uncertain if assessment marks are getting back to students on time, while the balance 27% each indicated that assessment marks were and were not getting back to

students on time. This, again, suggests that the lecturers may have had difficulty in talking about their colleagues or that the lecturers do not communicate with one another about feedback to students or turnaround times. It also suggests that there is wide variation in practice among lecturers, with some meeting the policy requirements of five days and others delaying as many as 21 days. Higgens, Hartely and Skelton (2002:55) citing MacKenzie (1976) argued, "If feedback is not timely, students might not make the effort to go back to the assignment, which may seem distant and remote (especially if a pass mark has been gained)".

It was important also to know from lecturers if they give a chance to students to review their assessment results once they are back. Ninety-one per cent (91%) [27% strongly agreed and 64% agreed] of the lecturers confirmed that students are given a chance to review the results of tests and assignments. This implies that students have recourse to their lecturers if they have questions about their results and that they have the opportunity to learn for the next assessment from the previous assessment. It also is some evidence supporting the claims that the programme supports iterative and constructivist learning.

Cooperation among lecturers in developing and presenting their modules

Because all the lecturers teach on the same programme, a certain level of collaboration among lecturers is expected. They were asked to give the extent to which that collaboration exists in BAgricExt programme. For example, if one lecturer needs to take over a module from another one, or continue from where another one left off, is there sufficient information given to the new lecturer by the previous lecturer? For this, most of the lecturers (46%) were not certain about this; 27% agreed and 27% disagreed that collaboration exits. This suggests that there is no formal process in place to collaborate. It may be that some lecturers do cooperate with each other, but it appears that this is an individual initiative. This is consistent with earlier responses suggesting that lecturers may not be aware of what their colleagues are doing.

Discipline, facilities and administration within the programme

Lecturers were generally positive about the discipline of students, facilities and administration relative to the BAgricExt. The majority (64%) of lecturers indicated that students in BAgricExt programme respect their lecturers and other staff members; only 9% disagreed. The remaining were unsure. All of the lecturers agreed that there are available facilities for smooth teaching and learning in this programme. The programme is taught in a facility that is fairly new. The lecture rooms are large, flat venues with movable desks and chairs (which facilitates group work) and equipped with computer-linked audio-visual stations, and set up for Internet connectivity.

There was marked uncertainty about administration allowing good service delivery for the BAgricExt; 55% of the lecturers were not sure; and 36% agreed, and 9% disagreed. This is relatively consistent with the finding from students who largely said that the administrative process, particularly around registration, was not helpful. And, it again highlights a general disconnection on the part of lecturers with students and, in this instance, with administrative processes.

6.7.   Strengths and weaknesses about Teaching and Learning in the BAgricExt

A key strength about Teaching and Learning in BAgricExt is that it is a well-structured academic curriculum that allows students to start and finish their qualification with an effective combination of knowledge and skills in Agricultural Extension, Agricultural Production, Farm Business Management, Resource Management, and Farm Engineering. This will help graduates to be more flexible and competitive on the field when looking for job and while start working. Because of this combination, in post-graduate studies, they can specialise in one area of interest depending on the demands on the field.

The key weakness is perceived to be in relation to the agricultural production area of learning. Students and lecturers expressed their concern about graduates' ability to advise farmers in this field due to the shortage of knowledge acquired in agricultural production, which could influence negatively their capacity to plan and manage profitable farming system. This suggests that there is a disconnection between the perceptions of the lecturers and students and the stated intention of the degree presented in its documentation. It also raises questions about the career objectives of the students and the perceived career objectives for the students by the lecturers. It further suggests that there is a disconnection between the teaching and learning philosophy on which the degree is premised (i.e. a focus on learning and process rather than content) and the perception of "good education" by lecturers and students who appear to value content over process.

Tutoring and counselling is available to students to support the Teaching and Learning process, which could impact positively on students facing problems in their studies as they have a place to get assistance. The teaching activities promote students' interaction, the content of modules is relevant to the degree, students were positive about what they are learning in relation to their learning expectations in the programme, and modules are interrelated. However, there is a scarcity of resources (especially Information Technology) for effective Teaching and Learning, and students feel that they are paying for more than what they are getting. An alternative suggested was to use UKZN facilities in Pietermaritzburg, but this would require regular transport connecting UKZN and Cedara which is not currently available.

In addition to the theory given in class, the Teaching and Learning is augmented through experiential learning in the form of practicals, field trips and placements. Experiential learning starts in first year with practicals and simulation exercises; field trips are

concentrated in second year. Thus, not surprisingly, the first-year students stated that they are excluded from the field trip while there is much to learn from it.

Assessment involves a variety of methods (test, assignment, practical, and exam). Student responses to these methods vary according to the nature and content of the various modules and the students preferred learning styles. Student responses suggest that they are aware of the purpose of assessments as a means of measuring learning, but also to facilitate additional learning. Assessment results are clearly communicated to students and sufficient feedback given, but timing is of feedback is inconsistent – sometimes taking three weeks. The workload is a challenge for the majority of students, which could negatively influence their performance. Lecturers feel the workload is manageable.

There is a quality assurance procedure consisting of moderation, evaluation at the end of the module, curriculum review, incorporation of the latest industry information in the modules, and a controlled exam procedure. But the moderation process is unclear to students. The concern raised about this is that only exams are moderated (first- and second-year modules are internally moderated and third-year are externally examined). Tests are not moderated, while students feel strongly that they need to be moderated because some modules are not appropriately assessed.

6.8. Recommendations from students and lecturers for improvement of the teaching and learning process

The students and lecturers made several recommendations to improve the Teaching and Learning process. These are presented largely without comment or filtering.

Teaching methods

Lecturers need to encourage more participation in class and be enthusiastic to reinforce learning. As some of the teaching venues are large, lecturers should make sure their voice are

audible, or be provided microphones. Review content and teaching methods or styles for more integrated learning, and to encourage student participation. Lecturers should stop frustrating students by telling them that they will fail. Include more hands-on learning, with better feedback, less lecturing, more supervised practical projects.

Academic support

Introduce the isiZulu tutorial to assist lecturers in different modules where students struggle to learn in English (this is not for lecturers to learn isiZulu, but for module content to be translated and explained in isiZulu for better understanding). isiZulu tutoring could be done after class for struggling students and students wanting more explanation in isiZulu. The starting point for this could be by using some of the senior students, technicians on the Cedara farm. English and Mathematics tutoring, and academic and personal counselling need to be reinforced. Dictionaries should be allowed in all exams.

Teaching environment / Resources

Increase access to machinery (tractors) and other equipment for students. This could be possible if more tractors and implement (tools) are purchased and well-monitored. The computer room needs regular maintenance to make sure computers are working all times and the Internet is up to speed. Library opening/closing time should be adjusted especially during exam period, or when there is a test. Alternatively, one large room in the Cedara Centenary Complex can be turned into study room from specific times.

Competence acquisition and Assessment

Extension needs to expose first-year students to more practicals (e.g. field trip for experiential learning). Students should be taught writing skills. Introduce computer skills/course to assist students facing computer problems. Review assignment workload and adjust time allocated to tasks (assignments).

Agricultural production needs more "panel beating" (i.e. revision) in some modules, and the number of lecturers teaching the same module should decrease. Lecturers need to stop intimidating and frustrating students. The animal section needs to cover more on different aspects: the delivery and layout needs to be changed to relate to the steers project and to include important aspects of intensive animal production that are currently lacking; this may require reducing detail, or changing learning methods (e.g. self-study instead of lectures). Link content more with practices, use actual production data instead of hypothetical information, and increase field visits.

As BAgricExt students do not learn enough production knowledge in the current curriculum, it will be difficult for them to advise farmers in this field (e.g. livestock production) because not prepared enough to do that. The programme needs to be restructured to incorporate production for BAgricExt as it is done for diploma. The alternative for this could be on their third-year placement they can take one week prior placement to spend it at a certain production facility/unit (poultry, goat, piggery or cattle) to learn and 'get their hands dirty'.

For crop production, there should be a nursery (green house) for practicals so crops can grow to maturity. Currently crops practicals are done in an environment where the end results of crops are not seen/obtained because one cannot control the weather. The timetable should take into consideration that students doing Animal Production and those doing Crop Production should be considered separately, they are operating in two different environments (e.g. when it is raining, the crop students are not doing anything, while animal students are busy working. Crop students will then have to catch up in their own time, even on weekends or after hours when the weather is favourable. These factors should be considered by people setting the timetable. Crop Production modules should not be compulsory for all students; it should be optional especially for students doing Animal Production because they learn things

that they do not need in this module, or they can only learn crops relevant to Animal Production.

Farm Business Management needs to identify students with a poor background in economics to be provided extra class in the afternoon to catch up. For Farm Infrastructure and Farm Engineering, the assessment needs to be reviewed or moderated by another lecturer.

Resource Management needs to review the marking of papers. Specifically, for Environmental Impact, the lecturer should involve students; in third year, students should be allocated formal farms (not merely plots or virtual farms) to be able to carry out the third-year Land Use Planning and Risk Management modules.

UKZN-Cedara Management

Management should develop and establish mechanisms to monitor if lecturers are doing their duties (e.g. if they are teaching the right content, if the assessment is appropriate, if notes are available and reflect originality). The recommendation comes from students indicating that notes sourced from the Internet (which are in colour) are copied in black and white which reduces detail in pictures. They suggest the use of 'Turnitin' (an online Internet system to prevent plagiarism) for some lecturers' notes. They also suggest that somebody be briefed and empowered to check and monitor the Teaching and Learning process in the programme. The procurement from the Department of Agriculture takes too long to respond; someone needs to do a follow-up. The vacant lecturing posts need to be filled.

The nature of the recommendations is perhaps more telling than some of the responses to the questionnaires. An example of this is the recommendation that there should be a mechanism to monitor lecturers, covering content and assessment. A review of UKZN policy documents

clearly shows that such a mechanism has existed for many years. These recommendations suggest that either the system is not working, or that there is insufficient communication about the results of the monitoring processes. Filling of vacant posts is a continuing problem at both Cedara and UKZN – largely due to recruitment policies (personal communication S Worth).

6.9. Summary of results on Teaching and Learning process

Students found that what they are learning is relevant to their learning expectations in the programme, even though there were some concerns about the teaching methods. The teaching methods appreciated by students are those involving learners in the process, focus on experiential learning and expose students to practicals and field trips. The ones not appreciated are those where lecturers are giving notes to students very late (e.g. one day before the test with consequence of getting students failing), the lecturers' voice not audible, frustrating students with unhelpful comments, and not being organised in the delivery.

Lecturers indicated that students should bear in mind that each lecturer has his/her own teaching style/method and it is their responsibility to adapt themselves to the teaching methods of the lecturer. On the other hand, lecturers should know that students have their own learning style preference that needs to be accommodated. While the majority of lecturers (55%) agreed that the BAgricExt programme deals fairly evenly with theory and practice, 45% do not agree – showing uncertainty and suggesting a lack of collaboration and interaction among lecturers regarding their respective modules. The teaching environment was acknowledged to be appropriate with few areas of improvement, such as Information Technology resources, machinery and library closing time.

The study workload in the programme is perceived to be heavy; 38% of students found it manageable, but the balance was struggling to cope. There are various assessment methods,

but the majority of students found assignments to be best for Agricultural Extension, a combination of Tests/Exam and Practical Tests for Agricultural Production, and Practical Tests for Resource Management and Farm Engineering.

Regarding acquisition of competencies acquisition nothing was rated "bad" or "good"; everything was either "very good" or "excellent", intimating their overall satisfaction with the teaching and learning taking place in the BAgricExt. Teamwork and research skills were considered the best taught and acquired competences. The capacity for analysis and synthesis, critical and self-critical abilities, and capacity to plan and manage profitable farming systems, while all considered very well taught, are the areas most needing improvement.

Academic tutoring and counselling had substantial impact in the process of Teaching and Learning and should be encouraged for future with an addition of isiZulu tutors to assist lecturers in translation of the content to students in need. Some qualified tutors are available currently working in Cerada farm; they can be helpful for this task.

There is a procedure for quality assurance for the programme. It consists of moderation (internally and externally), evaluation of modules at the end of the semester, curriculum review workshops, integration of the latest industry information in the modules, and exam procedure to follow. In addition to this, there is a need to add the moderation of tests; students felt there is urgent need for this because some modules are not assessed appropriately.

6.10. Implications

This aspect of the enquiry into the performance of the UKZN BAgricExt focused on its Teaching and Learning processes and its impact on student performance. Student performance depends on two factors: the students' capacity to absorb what has been delivered

to them; and the teaching and learning function of the educational institution. Student capacity, as discussed earlier, has a number of influences. A key factor found in this study was students being under-prepared even though they meet the entrance requirements for the programme. It is also a function of learning preferences in the context of teaching and learning approaches employed on the programme.

Teaching and Learning is a complex process taking account of teaching methods, student learning preferences, the resources available to facilitate learning, methods of assessment, and the appropriate academic and personal support for the learner. This study has suggested that while the BAgriExt programme has a reasonably effective Teaching and Learning process, but that there are areas that need attention. Of note, is that several of the lecturers indicated that students must adapt to lecturers' individual teaching styles. While it can be reasonably expected for university students to be able to adapt to different settings – as is called for by the level descriptors – most educationalists agree that learning materials and teaching programmes should reflect the lecturer's teaching style and "should be designed for all kinds of students and all kind of learning styles" (Franzoni & Assar, 2009:15).

The findings of this part of the study also highlight the need for good communication between lecturers and students, and among lecturers. The challenge is that students often are more interested in communication relating to their marks, while lecturers are more concerned about letting students know where they need to improve. Given that students are reluctant to communicate their learning problems, the onus is on the lecturers to create the environment for good communication including taking the lead in communicating and in fostering the students to be "more active participants in their learning" – part of which is communicating freely with lecturers (Fofana, 2016).

Finally, cooperation among lecturers emerges as uncertain on the BAgricExt programme. This needs to be strengthened. Cooperation is essential to ensure lecturers "support each

other as colleagues in their efforts to bring effective and high-quality learning about among the students" (Andersson & Roxa, 2003:76).

References:

Addison, W. E., Best, J. & Warrington, J. D. (2006) Students' perceptions of course difficulty and their ratings of the instructor. *College Student Journal*. 40(2) ISSN: 0146-3934 http://www.freepatentsonline.com/article/College-Student-Journal/147389147.html

Allais, S.M. (2009). Quality Assurance in Education: Issues in Education Policy Number 5. Centre for Education Policy Development.

Andersson, P. and Roxa, T. (2003). The Pedagogical Academy – a Way to Encourage and Reward Scholarly Teaching. Paper presented at SEFI 2003 Conference - Global Engineer: Education and Training for Mobility, 7-10 September Faculdade de Engenharia da Universidade do Porto Portugal.

Carstens, A (2015): University language policies: Frameworks for opening up implementational spaces. University of Pretoria.

Cartwright, R., Weiner, K. and Veneruso, S.S (2009). Student Learning Outcomes Assessment Handbook. Montgomery College, Maryland.

Chong, S., and Ho, P. (2009). Quality teaching and learning: a quality assurance framework for initial teacher preparation programmes. Int. J. Management in Education, Vol. 3, Nos. 3/4.

Council on Higher Education (CHE) (2004). Criteria for Programme Accreditation. Higher Education Quality Committee. Pretoria.

Council on Higher Education (CHE) (2008). HEQC Framework for Delegated Functions. Committee of the Council on Higher Education. Pretoria.

Council on Higher Education (CHE). (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Report of the Task Team on Undergraduate Curriculum Structure. Discussion Document. Brummeria Pretoria.

Fofana, M. (2016). How to Improve Effective Communication Between Professors and Students at Concordia University-Nebraska. Concordia Journal of Communication Research. Summer 2016. ISSN 2470-9786

Franzoni, A. L., & Assar, S. (2009). Student Learning Styles Adaptation Method Based on Teaching Strategies and Electronic Media. *Educational Technology & Society*, *12* (4), 15–29.

Gijbels, D., Dochy, F. (2006). Students' assessment preferences and approaches to learning: can formative assessment make a difference? Educational Studies, Vol. 32, No. 4, December 2006, pp. 399–409.

Mayer, R.E and Massa, LJ (2003).Three Facets of Visual and Verbal Learners: Cognitive Ability. Cognitive Style, and Learning Preference. University of California, Santa Barbara. Journal of Educational Psychology. 2003, Vol. 95, No. 4, 833–846.

Mlambo, V. (2011). An analysis of some factors affecting student academic performance in an introductory biochemistry course at the University of the West Indies. Caribbean Teaching Scholar Vol. 1, No. 2, November 2011, 79–92.

Moss, P. A., Pullin, D.C., Paul Gee, J., Haertel, E.H., and Young, L.J. (2008). Assessment, equity, and opportunity to learn. Cambridge University Press, New York.

Mueller, S. (2017). How to Study Smart not Hard. http://www.planetofsuccess.com/blog/2012/how-to-study-smart-not-hard/

Nardo, T.B. (2017) Modular Instruction Enhances Learner Autonomy. American Journal of Educational Research. 2017, 5(10), 1024-1034.

Nyika, A (2014): Mother tongue as the medium of instruction at developing country universities in a global context. Research Office, Faculty of Health Sciences, University of the Witwatersrand Medical School, Johannesburg, South Africa.

Ramli, A and Zain, R.M. (2018). The impact of facilities on student's academic achievement. Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, City Campus, Pengkalan Chepa.

UCF (University of Central Florida) (2005). Programme assessment handbook: guidelines for planning and implementing quality enhancing efforts of programme and student learning outcomes. University of Central Florida.

Chapter 7: Results for access to facilities and performance in BAgricExt programme

Access to facilities within an academic institution is crucial to support the process of Teaching and Learning, while the purpose to provide adequate facilities at a given school is to improve the learning activity, and boost students' achievement (Ramli & Zain, 2018). It is part of the inputs that will determine or enable to produce good results (outcomes). In this case the results will be seen through performance of academics (students and lecturers). For a lecturer to deliver the knowledge and student to absorb it, there is an implication of available resources such as suitable venues, library facility, information technology, laboratory and other practical facilities (CHE, 2004) that should be in place to drive the whole process. Competencies of students can be hidden behind a lack of resources, which means students might be intelligent but perform poorly because of limited access to facilities. In the same way, their competencies can be enriched or flourish if adequate resources are available. For this, it was determined by CHE (2013) that academic factors are the most influential on students' success. Once having completed a learning programme (e.g. the BAgricExt), the performance of graduates and competencies acquired will determine whether graduates will manage and be successful in the workplace. Employers have expectations to meet; the core of it is grounded in work to be done.

This chapter is organized into two main sections. The first section discusses access to facilities, it presents results on how BAgricExt students have access to available resources at Cedara (e.g. computer room, internet, library, venue and equipment). The second section discusses performance of students. It will cover performance in the key competencies of BAgricExt, the assessment of performance against level descriptors, student performance in the five learning areas, and content to add or remove from BAgricExt modules. The chapter

will end with a brief summary of the two sections, followed by some recommendations for improvement. More statistical detail about access to facilities is found in Appendix 10, and for performance is in Appendix 11.

7.1. Access to facilities

7.1.1. Access, use and values of facilities for Teaching and Learning in BAgricExt

For students to perform to the best of their ability, many factors are to be considered; among them access to facilities or resources. These resources are part of the inputs relevant to the programme and are considered as a minimum requirement to enable the programme to operate and to deliver its intended outcomes (Council on Higher Education (CHE), 2004). The CHE (2013) determined that of the factors that influence student achievement, limited access to learning facilities is one of the dominant causes of poor performance in higher education. Ramli & Zain (2018) added that teachers and students have school facilities as important resources to improve their learning and teaching process. Reason why, for the academic leaders to support effectively the reform that will boost students' performance, they need to understand the existing relationship between school facilities and students' achievement. This section will present the findings from students and lecturers regarding use of facilities pertaining to good performance of students under the BAgricExt programme.

The computer room is where students type their academic work, print their assignments and can do some research on internet. Students were asked how access to resources at Cedara had contributed to their learning. Starting with access to computer room, 58% of student respondents confirmed that access to the computer room was valuable and facilitated their learning. (82% in first year, 64% in second year, and 39% in third year); 23% were uncertain about its value, and 13% did not find access to the computer room valuable to their learning. While this confirms that the students did have access to the computer room, it raises a

question about the students' perception of its value to learning given that it had academic value to just over half of the students. However, the study also found that 62% of students confirmed that access to the Internet facilitated their learning, while 18% were uncertain about the Internet's influence on their learning, and 9% indicated the Internet did not facilitate learning.

That more students valued access to the Internet for learning than valued access to the computer room, suggests that some students access the Internet in other ways (e.g. through handsets or Internet capable laptops). This was confirmed. Students indicated that access to Internet takes place mostly in the LAN (computer room) (74%), then in the library (69%), in the hostel (22%) or other (14%) (e.g. using smart phones).

The library also gives access to a variety of reading materials, among them the agricultural science books. Most students (44%) indicated that the materials the library are sufficient, 18% were uncertain and 28% felt the materials were not sufficient.

The lecturers in the study felt that access to facilities was satisfactory, but sometimes the data projector posed problems and during 'load shedding' (deliberate electricity shutdown by the electricity company), there was no back up. The tractors and tools for practical are not enough, and Internet access also is slow.

Students suggested numerous improvements to facilities: create greater and efficient access to the Internet (including Wi-Fi) and printing at all times; increase the variety and update books related to Agricultural Extension available in the library; shift all extension related book from the UKZN library to the Cedara library (because extension students are attending at Cedara); adjust the library closing time because some students study there because of noise levels in the lecture venues (they often study in vacant classrooms); maintenance of computers in LAN; improvement of the study area; organise regular transport connecting Cedara to UKZN

to use resources there. Related to this, the students indicated that placing students at Cedara (instead of the UKZN Pietermaritzburg campus) has deprived them from access to better facilities. They suggested, therefore, that UKZN must make an effort to provide at Cedara what the students are missing for not being part of the regular UKZN campuses.

Most of the students (69%) felt the size of the classrooms was adequate for the intended learning; 17% were uncertain and 7% did not feel the classes sizes were adequate. Similarly, 61% of the students also indicated that the other learning workspaces at Cedara were adequate; and 20% felt they were not adequate and 11% were uncertain. It was observed that the students generally study in vacant classrooms. Students noted that it is the only place to study after the library closes late in the afternoon. The classrooms and other rooms in the lecture building are often used by the provincial government for other functions – and students are put out. To improve on the working space/study area, it was suggested to formally designate a study area that would always be available to students particularly at critical times such as when they need to study for tests.

The lecturers indicated that the class space was adequate and good enough for teaching and learning. They noted that some lecture venues are too big and in others there is often "musical chairs" where students had to fetch chairs and tables removed from venue previously for another function elsewhere.

7.2. Performance

7.2.1. Performance in the key competencies of BAgricExt

Academic performance is affected by many factors including previous education, student effort, and class attendance (Mlambo, 2011). It is also strongly influenced by both school climate and family environment (Kamaruddin, et al., 2009). BAgricExt students were requested to share their perceptions about how well they have performed in different key

competencies of the programme. After evaluating themselves, the students identified the following results classified on sliding scale, representing number of students performing well in that particular competence throughout the 3 years of study. Performing well was considered from very good to excellent in the scale of 1= Bad; 2= Good; 3=Very Good; 4= Excellent (See Appendix 11, Section C). The performance in key competencies is presented per year of study in Tables 7.1 to 7.4.

Table 7.1: Performance in key competencies for first year

Rank	Competence	Percentage of students indicating they were preforming well
1	Teamwork	82%
	Decision-making	
	Accessing, processing and managing information	
2	Critical and self-critical abilities	71%
3	Problem solving	65%
	Capacity to adapt to new situations	
	Capacity to understand the context and systems	
	Capacity for operational planning and evaluation	
4	Capacity for analysis and synthesis	59%
	Interpersonal skills	
5	Research skills	53%
	Capacity to learn	
	Capacity for applying knowledge in practice	
6	Planning and time management	47%
	Capacity to identify resource and production systems	
	Capacity to plan and manage a profitable farming system	
	Capacity for generating new ideas (creativity)	
7	Leadership	41%
	Capacity to apply basic production principles	

Table 7.2: Performance in key competencies for second year

Rank	Competence	Percentage of students indicating they were preforming well
1	Research skills	64%
	Capacity to learn	
	Capacity to identify resource and production	

Rank	Competence	Percentage of students indicating they were preforming well
	systems	
2	Teamwork Decision-making Problem solving Capacity to adapt to new situations Capacity for generating new ideas(creativity)	57%
3	Capacity to plan and manage a profitable farming system Leadership Capacity to apply basic production principles	50%
4	Accessing, processing and managing information Capacity to understand the context and systems Capacity for operational planning and evaluation Interpersonal skills Capacity for applying knowledge in practice	43%
5	Critical and self-critical abilities Capacity for analysis and synthesis	36%
6	Planning and time management	29%

Table 7.3: Performance in key competencies for third year

Rank	Competence	Percentage of students indicating they were preforming well
1	Capacity to identify resource and production systems	70%
2	Interpersonal skills Leadership Capacity to apply basic production principles	57%
3	Capacity for applying knowledge in practice Capacity to plan and manage a profitable farming system	52%
4	Problem solving Capacity for generating new ideas(creativity)	48%
5	Teamwork Decision-making Critical and self-critical abilities Capacity to adapt to new situations Capacity to understand the context and systems Capacity for operational planning and evaluation	43%
6	Accessing, processing and managing information Capacity for analysis and synthesis	35%
7	Planning and time management	30%
8	Research skills Capacity to learn	26%

Table 7.4: Performance in key competencies for employed students

Rank	Competence	Percentage of students indicating they were preforming well
1	Interpersonal skills	100%
2	Capacity to understand the context and systems	82%
	Capacity for applying knowledge in practice	
	Leadership	
3	Teamwork	73%
	Decision-making	
	Accessing, processing and managing information	
	Capacity for generating new ideas(creativity)	
	Problem solving	
4	Capacity to adapt to new situations	64%
	Capacity for analysis and synthesis	
	Capacity to identify resources and production systems	
	Capacity to apply basic production principles	
	Research skills	
	Capacity to learn	
5	Capacity for operational planning and evaluation	55%
	Capacity to plan and manage a profitable farming system	
6	Critical and self-critical abilities	45%
	Planning and time management	36%

Table 7.1 shows that the competency about which first-year students expressed the greatest confidence was 'teamwork, decision-making, and accessing and processing and managing information' (82%), followed by 'critical abilities' (71%). Next were 'problem solving', 'capacity to adapt to new situations', 'capacity to understand the context and systems', 'capacity for operational planning and evaluation' (each at 65%), followed by 'capacity for

analysis and synthesis' (59%), 'research skills', 'capacity to learn', 'capacity for applying knowledge in practice' (each at 53%). Those competencies about which the students expressed the least confidence were 'planning and time management', 'capacity to identify resource and production system', 'capacity to plan and manage a profitable farming system', and 'capacity for generating new ideas' (each at 47%). The low rated competencies with 41% were 'leadership' and 'capacity to apply basic production principles'.

Table 7.2 (displaying the key competencies for second year students) shows students expressing the greatest (64%) confidence for 'research skills', 'capacity to learn' and 'capacity to identify resource and production system'. Second were 'teamwork', 'decision-making', 'problem solving', 'capacity to adapt to new situations', 'capacity for generating new ideas' (each at 57%). Third were 'capacity to plan and manage a profitable farming system', 'leadership', and 'capacity to apply basic production principles' (each at 50%). The lower rated capacities were 'accessing, processing and managing information', 'capacity to understand the context and systems', 'capacity for operational planning and evaluation' interpersonal skills; and capacity for applying knowledge in practice (each at 43%), followed by critical and self-critical abilities and capacity for analysis and synthesis (both at 36%), and the last on was planning and time management (at 29%).

Table 7.3 indicates that third-year students are most confident (70%) about capacity to identify resource and production system, followed by interpersonal skills, leadership, capacity to apply basic production principles (each at 57%), and capacity for applying knowledge in practice, capacity to plan and manage a profitable farming system (52%). The competencies rated below 50% were problem solving and capacity for generating new ideas (both at 48%); teamwork, decision-making, critical and self-critical abilities, capacity to adapt to new situations, capacity to understand the context and systems, capacity for

operational planning and evaluation (each at 43%); accessing, processing and managing information, capacity for analysis and synthesis (each at 35%). The lowest rated competencies were planning and time management (30%), research skills and capacity to learn (each at 26%).

Table 7.4 shows how employed students expressed more confidence in almost all the key competencies rated from 100% to 55%, except for critical and self-critical abilities (45%), and planning and time management (36%). This confidence is a good indicator for learning and acquisition of competencies. Among these lower rated competencies, planning and time management scored less than 50% throughout the third-years, indicating poor confidence in planning and managing time. This could be the area of further investigation within the BAgricExt degree, as it is one of the key competencies that students need to master at a certain level while studying.

The highest rated competency – rated at 100% – by employed students was the interpersonal skills. This competency was rated at 59% in first year, 43% in second year, and 57% in third year. All those who are working have identified this competency as the area where they had more confidence.

Table 7.5 shows the trajectory of each of the assessed competences over the course of the three years of study and as perceived by the employed graduates. The change in the students' perceptions of their performance over the three years of learning does not present the pattern of progression expected. Of particular concern is the capacity to learn, which is meant to be the hallmark of the BAgricExt. The trajectory for the capacity for critical thinking and self-critique is also concerning. It starts out high and ends up low, even with employed graduates. There is no steady progression in building this capacity over the three years of study, and

shows no advancement as a result of employment; rather, aside from a spike in second year, confidence in this competence generally declines. Similarly, competence in planning and time management make no substantial positive change. Conversely, the capacity to identify resources and production systems shows a general increase over the course of the three years of the programme (47%, 64% and 70%), and drops slightly (64%) amongst the employed graduates. Interpersonal skills, while having an unsteady trajectory during the study years, peaks with 100% of the employed graduates indicating that they were performing well.

Table 7.5: Trajectory of Competences of BAgricExt students

Competence	Percentage of students indicating they were preforming well			
	First year	Second year	Third year	Employed Grads
1. Teamwork	82%	57%	43%	73%
2. Decision-making	82%	57%	43%	73%
3. Accessing, processing and managing information	82%	43%	35%	73%
4. Critical and self-critical abilities	71%	36%	43%	45%
5. Problem solving	65%	57%	48%	73%
6. Capacity to adapt to new situations	65%	57%	43%	64%
7. Capacity to understand the context and systems	65%	43%	43%	82%
8. Capacity for operational planning and evaluation	65%	43%	43%	55%
9. Capacity for analysis and synthesis	59%	36%	35%	64%
10. Interpersonal skills	59%	43%	57%	100%
11. Research skills	53%	64%	26%	64%
12. Capacity to learn	53%	64%	26%	64%
13. Capacity for applying knowledge in practice	53%	43%	52%	82%
14. Planning and time management	47%	29%	30%	36%
15. Capacity to identify resource and production system	47%	64%	70%	64%
16. Capacity to plan and manage profitable farming system	47%	50%	52%	55%
17. Capacity for generating new ideas (creativity)	47%	57%	48%	73%
18. Leadership	41%	50%	57%	82%
19. Capacity to apply basic production	41%	50%	57%	64%

	Percentage of students indicating they were preforming well			
Competence	First year	Second year	Third year	Employed Grads
principles				

Drawing on the data presented in the preceding tables, the following seven (7) competences start out relatively high, dip during the study period, and then rebound to more or less the starting level during employment:

- Teamwork

- Decision-making

- Accessing, processing and managing information

- Problem solving

- Capacity to adapt to new situations

- Capacity for operational planning and evaluation

- Capacity for analysis and synthesis

'Capacity to understand the context and systems' and 'interpersonal skills', start high, dip during the study years and then escalate to substantially higher confidence levels than in first year. Similarly, 'research skills', 'capacity to learn', and 'capacity for applying knowledge in practice', start out moderately, have unstable trajectories, and end up relatively improved in the employment year. The following five competences started out low, generally improved during the study years, and ended with substantially improved confidence in the employment year:

- Capacity to identify resources and production systems

- Capacity to plan and manage profitable farming system

- Capacity for generating new ideas (creativity)

- Leadership

- Capacity to apply basic production principles

While most students are known to have passed the BAgricExt, and thus met the minimum learning requirements and are thus 'competent', these outcomes strongly suggest that there is a disconnection between the laddering of learning discussed in Chapters 3 and 4 and the perceptions of the students about that same laddering. The general improvement of confidence levels expressed by the employed graduates further suggests the need for introducing more work-based learning to increase confidence levels in the competences prior to completing the BAgricExt programme.

7.2.2. Assessment of performance against NQF level

Students were asked to indicate to what extent they achieved the key learning outcomes relevant to their NQF level at the time of the study. Performance was assessed for each of the five learning areas of the BAgricExt (Agricultural Extension, Agricultural production, Business Management, Natural Resource Management, and Farm Engineering) presented on NQF 5, 6 and 7. For ease of reference, the key learning outcome for each learning area and NQF level are set out in Table 7.6. In the presentation of these data, the percentages will not always add to 100%. Not included in the data presented is the percent of students who did not answer a particular question – in most cases, only one student did not answer a given question.

Table 7.6 Learning outcomes by learning area and NQF level

Key learning outcomes			
Learning area	NQF 5	NQF 6	NQF 7

	Key learning outcomes		
Learning area	**NQF 5**	**NQF 6**	**NQF 7**
Agricultural Extension	Starts at NQF 6	**First year:** conduct a basic research process and articulate rudimentary critical research related to agricultural development	Understand and apply extension approaches and tools in a complex setting aiming to build farmers' capacity in his farming enterprise.
		Second year: understand and apply different extension approaches and tools in simple setting in order to initiate a process that will strengthen farmer's capacity to improve the situation	
Agricultural Production	Understand meaning of terms and principles on plant and animal health, physiology and reproduction of plants and animals	Manage principles of crop and animal production system, feeding systems available and nutritional requirements for livestock production	Plan and manage a selected production system in a sustainable manner to optimise economic return.
Farm Business Management	Understand basic knowledge of production economics, marketing and farm accounting.	Acquire knowledge for farm business management, keeping records, budgeting, and management of machinery and human resource.	Add value and to market the farm business effectively, to manage agriculture finances, human resource, and external farm environment
Natural Resource Management	Understand and apply terms and principles related to the use of natural resources in the context of environmental impact	Acquire knowledge on site selection and planning, land preparation, climate, soil fertility, water and vegetation.	Make informed decisions for sustainable land use.
Farm Engineering	Acquire basic information, meanings of terms, and principles around conservation structures, farm infrastructure and machinery	Acquire knowledge to maintain farm infrastructure and machinery at a standard required for sustainable production	Manage the farm infrastructure and machinery

7.2.2.1. Agricultural Extension

As noted in Table 7.6 Agricultural Extension starts on NQF level 6 and advances to NQF 7 in third year. Ninety-four percent (94%) of the first-year students confirmed that the BAgricExt programme has enabled them to be able to conduct a basic research process and articulate rudimentary critical research related to agricultural development (6% were uncertain, none disagreed).

Among the second-year students, 78% indicated that the BAgricExt programme enabled them to understand and apply different extension approaches and tools in simple setting in order to initiate a process that will strengthen farmer's capacity to improve the situation. Some 14% were uncertain, and 7% felt the programme did not enable them to apply extension approaches and tools.

At exit-level (NQL 7 corresponding to third year), 70% of students indicated that the BAgricExt programme had enabled them to understand and apply extension approaches and tools in a complex setting aiming to build farmers' capacity in his farming enterprise. Some 26% of the students were uncertain, and 4% disagreed that the learning programme has prepared them as intended. These results show two things. First, they show that the vast majority of the students do successfully progress in their learning over three years. However, given the nearly 100% pass rate for the programme since its inception, the fact that 30% of the students do not feel they are competent in Agricultural Extension suggests a disconnection between assessment and perceived learning. This is consistent with the findings in the previous section showing the disconnection between 'passing' and confidence.

7.2.2.2. Agricultural Production

Referring to Table 7.6, Agricultural Production starts at NQF level 5 and continues until NQF level 7. It should be noted, however, that the BAgricExt does not offer any Agricultural Production modules at NQF level 7. Thus, the learning in this area is related to applying the content learned in second year (NQF 6) to their Farm Business Management and Land Use Management modules where they are expected to develop farm plans that cover production choices, optimal land use and assessment of profitability and risk.

On level 5, 76% of first year students indicated that the BAgricExt programme has enabled them to acquire knowledge, meaning of terms and principles on plant and animal health,

physiology and reproduction of plants and animals; 13% indicated that they had not acquired the intended agricultural production knowledge and skills; and none was uncertain.

In second year (NQF level 6), 79% agreed that the BAgricExt programme has enabled them to manage principles of crop and animal production system, feeding systems available and nutritional requirements for livestock production. Seven percent (7%) indicated that the programme did not help them to manage principles of production. Another 7% was not sure.

In third year (NQF level 7), 65% indicated that the BAgricExt programme has trained them to be able to plan and manage a selected production system in a sustainable manner to optimize economic return. Nine percent (9%) felt the programme had not trained them as intended. A substantial number (26%) was uncertain. From these results, there is an indication that on the three NQF levels (5, 6 & 7) students have performed well (above 60%), but the higher performance was in second year (NQF level 6) with 79%. Also, the number of those who were sure (26%) at exit level suggests further investigation. This is consistent with concerns raised by students that there were no Agricultural Production modules offered in third years. They felt they were not as well-trained in this area as were the students reading the Diploma in Agriculture offered at Cedara College. Designed for a different purpose (see Chapter 3), the Diploma offers additional Agricultural Production modules in third year, (at NQF 6), but does not offer any of the Agricultural Extension modules.

7.2.2.3. Farm Business Management

In first year (NQF level 5), 65% of students have indicated that BAgricExt programme has enabled them to acquire knowledge in production economics, marketing and farm accounting. Twenty-six percent (26%) felt the programme had not prepared them as intended. None was uncertain.

In second year (NQF level 6), 86% of students confirmed that, as intended in the BAgricExt programme, they had acquired the expected knowledge for farm business management, keeping records, budgeting, and management of machinery and human resource. None felt they had not acquired this knowledge, and 7% was uncertain.

In third year (NQF level 7), 70% indicated that they were be able to add value and to market the farm business effectively, to manage agriculture finances, human resource, and external farm environment. Nine percent (9%) indicated they were not adequately prepared to do this. A substantial number (22%) was uncertain.

The above results show that more that 60% of students were confident in their performance in Farm Business Management throughout the degree. The highest performance was in second year (86%), and more felt to be more competent on exit level comparing to first year. However, the level of uncertainty at the end of third year needs further investigation.

7.2.2.4. Natural Resource Management

In first year (NQF level 5), 94% of students were confident that the BAgricExt programme enabled them to acquire basic information, meanings of terms, and principles around natural resources and environmental impact. Some seven percent (7%) did not agree, and none was uncertain.

In second year, 86% of students were confident that they had acquired the intended knowledge on site selection and planning, land preparation, climate, soil fertility, water and vegetation. Seven percent (7%) indicated they had not adequately acquired this knowledge. None was uncertain.

In third year, 87% of students were satisfied that they were able to make informed decisions for sustainable land use. Only four percent (4%) felt they were not sufficiently able to do this. Nine percent (9%) was uncertain. From these results, it was observed that the confidence in performance throughout the 3 years of study was high (above 85%) and students started in first year with close to 100% of confidence, but as they moved forward this rate decreased a bit. This could be due to the fact that the learning process in all the NQF levels is designed to shift focus from simple definition of terms and understanding of principles to more complex decision making and application of terms.

7.2.2.5. Farm Engineering

The BAgricExt programme does not offer any Farm Engineering modules in third year. As with Agricultural Production, students are expected to apply what they learned in the previous two years to their farm plans in third year.

In first year, 82% of students have indicated that they had acquired basic information, meanings of terms, and principles around conservation structures, farm infrastructure and machinery. Twelve percent (12%) indicated they had not sufficiently achieved this. Six percent (6%) was uncertain.

In second year, 71% felt they had acquired the expected knowledge to maintain farm infrastructure and machinery at a standard required for sustainable production. None felt they had not acquired this knowledge. And a substantial number 21% were uncertain.

In third year, 74% of students indicated that they were able to manage the farm infrastructure and machinery. Thirteen percent (13%) indicated they were not able to do this adequately. Another 13% was not sure.

The results about farm engineering indicate that the confidence in performance was high (above 70%) throughout the three years of study. However, the high level of uncertainty at

second year and the fact that 26% of the third-year students were either uncertain or felt they had not achieved the learning outcome (despite having passed the programme), needs further investigation.

The findings on key learning areas are captured in Figure 7.1 which shows the trajectory of the students' perception of their learning across the three years of study.

NQF Levels	Key Learning areas				
	Agricultural Extension	Agricultural Production	Farm Business Management	Natural Resource Management	Farm Engineering
NQF level 5 (First Year)	94	76	65	94	82
⬇	⬇	⬇	⬇	⬇	⬇
NQF level 6 (Second Year)	78	79	85	86	71
⬇	⬇	⬇	⬇	⬇	⬇
NQF level 7 (Third Year)	70	65	69	87	74

Figure 7.1: Achievement of learning outcomes in BAgricExt programme

Common in all of the responses across the three years is the issue of confidence in the learning acquired – represented by the student who felt they had not acquired the intended knowledge and skills and the students who were uncertain about it. The issue of student confidence has been the subject of some research. Among these is Shoemaker's (2010:687) research among horticultural science students. She noted that knowing "refers to performance accuracy" whereas "knowing how much they know relates to confidence". She argues further that "confidence is a measure of one's belief in one's own abilities". While it has been argued that a little knowledge often leads to over confidence and greater knowledge often leads to

under-confidence (Lichtenstien & Fischoff, 1977), it could also be argued that when a student knows there must be more (especially as he is coming to the end of his formal studies, but that knowledge is not yet available), the student may feel under-prepared and therefore under-confident. Further investigation is warranted to determine more clearly the roles of academic confidence and self-confidence in developing competence as they are found in the BAgricExt programme.

7.2.3. Content to add or remove from BAgricExt modules

The lecturers identified critical content, knowledge, skill or learning outcome that they consider to be missing from the current BAgricExt curriculum. Table 7.7. sets out their recommendations and rationale.

Table 7.7: Missing content, knowledge, skill and learning outcomes in BAgricExt modules

Module	Detail	Content to add	Reason to add
Risk Management in Agriculture (Farm Finance)	Greater technical knowledge of production subjects	Commercial cropping: field and horticultural crops	Technical knowledge in addition to socio-economic, cultural and community knowledge
Farm Business Management	Agricultural calculation	Production planning financial analysis	More accurate records
Natural Resources	Geology	Basic identification / recognition of rocks	It is not enough to say rocks are rocks, need more detail on rocks because soil inherit characteristics from rocks
Animal production I	Create a more direct link to steers project	Link to steers project	Better context for module content
	Intensive farming systems-general	Intensive farming systems-general	Better context for module content
	Selection of fat stock	Selection of fat stock	Better related to steers project
Animal production II	Veld management	Veld management	More from first year relevant to extensive animal production
	Grass/fodder species collection (species identification)	Grass/fodder species collection (species identification)	Important to grazing management

These additions highlight a tension inherent in an integrated learning programme that is necessarily limited in terms of notional study hours and total credits. There is clearly a desire for additional production content; there is no suggestion to add content to the Agricultural Extension learning area. This is not surprising because, as noted earlier, the Cedara Diploma in Agriculture does offer more production content – it does not have to accommodate the extension content mandated by the nature and naming of the Degree. To add the suggested content may require removing core learning from other learning areas.

Lecturers did not have any specific recommendations for removing content. Their responses were of a more general nature and have been included in the following section on recommendation for improving student performance.

7.2.4. Recommended changes to teaching and learning processes

The lecturers recommended the following changes to the teaching and learning process to improve student performance:

- **Environmental Impact:** Overall content needs to be revisited because it is too high level for first year;

- **Crop Production II:** Not specific content change, but the module itself should not be compulsory for all students; it should be optional especially for students doing animal production. The rationale is because students doing animal learn things in this module that they do not need. An alternate suggestion is that animal production student learn crops relevant to their animal production; and

- **Animal Production I:** Delivery and layout needs to be changed to relate to the steers project and to include all important aspects of intensive animal production; this may

require reducing detail, or changing learning methods (e.g. self- study instead of lectures).

The findings regarding Crop and Animal Production appear to be in the same line of focus on agricultural production. It suggests that the lecturers making such suggestions may not readily differentiate between production orientated qualification (such as the Diploma in Agriculture) and an education/development orientated qualification (such as the BAgricExt). It may further suggest that these lecturers see extension primarily as the transfer of (specialist) technology rather than an educational/learning process.

Students and lecturers were also asked to suggest more general changes to the teaching and learning process to improve student performance. They made suggestions regarding teaching methods, academic support, teaching environment/resources, competence acquisition and assessment, UKZN-Cedara Management, and discipline.

Teaching methods

- Lecturers need to encourage participation in class and be enthusiastic to enforce learning.

- As venues are large, lecturers should make sure their voice are audible, or be provided microphones.

- Review content and teaching methods or styles for more integrated learning and to encourage student participation.

- Lecturers to stop frustrating students that they will fail. [Apparently, some lecturers openly say to students that they will fail]

- Include more hands-on learning, with better feedback, less lecturing, more supervising practical projects.

200

Academic support

- Introduce the iSiZulu tutorial to assist lecturers in different modules where students have language problem (this is not to lean iSiZulu, but translate and explain modules content to students for better understanding), it could be done after class for only those students facing language difficulties or willing to get more explanation in iSiZulu. The starting point for this could be by using some of the technicians on the Cedara farm who are the senior students able to assist in tutoring.

- All other tutorials (English, Mathematics), and counselling (academic, personal) need to be reinforced and dictionaries should be allowed in all exams.

Teaching environment / Resources

- Increase access to machinery (tractors) and other equipment for students, this could be possible if more tractors and implement (tools) are purchased and well monitored.

- Computer room needs regular maintenance to make sure computers are working all times and internet is up to speed.

- Library opening/closing time should be adjusted especially during exam period, or when there is a test. For this the management can send the timetable to the librarians so that they can accommodate students preparing their tests. Alternatively, one large room in the Quad-C (main lecture building) can be turn into study room from specific times.

Competence acquisition and assessment

- BAgricExt overall programme

- Students don't learn enough production knowledge in the current curriculum. This will be difficult for them to advise farmers in this field (e.g. livestock production) because they are not prepared enough to do that.

- The programme needs to be restructured to incorporate production for BAgricExt as it is done for diploma. The alternative for this could be before their third-year placement they can spend one week at a production facility/unit (poultry, goat, piggery or cattle) to learn and 'get their hands dirty'.

- Agricultural Extension

  - Expose first year students to more practicals (e.g. field trips for experiential learning).

  - Students should be taught writing skills.

  - Introduce computer skills/course to assist students facing computer problems.

  - Review assignments workload and adjust time allocated to tasks (assignments).

- Agricultural Production

  - Some modules need 'panel beating'

  - The number of lecturers teaching one module should decrease.

  - Lecturers need to stop intimidating and frustrating students.

  - The animal section needs more review on different aspects. The delivery and layout need to be changed to relate to the steers project and to include all-important aspects of intensive animal production. This may require reducing detail, or changing learning methods (e.g. self-study instead of lectures).

  - Link content more with practices, use actual production data instead of hypothetical information, more field visits.

- Crop Production

  - There should be a nursery (green house for practical) to facilitate crops to mature/grow until the end. Currently crops practicals are done in an environment where the end results of crops are not seen/obtained because it is hard to control the weather.

  - The timetable should take into consideration that students doing animal and those doing crop should be considered separately. They are operating in two different environments (e.g. when it is raining, the crop students are not doing anything while animal students are busy working. Crop students will catch up at their own time, even on weekend or after hours when the weather is favourable. This should be considered by people setting timetable).

  - Crop production modules should not be compulsory for all students. They should be optional, especially for students doing animal because they learn things that they do not need in this module; or they can only learn crops adapted to their subject (animal).

- Farm Business Management

  - Needs to identify students with poor background in economics to be provided extra class in the afternoon to catch up.

- Farm Engineering

  - The assessment needs to be reviewed or moderated by another lecturer.

- Resource Management

  - Needs to review the marking of papers.

- Environmental Impact

- The lecturer should involve students

- In third year, allocate students formal farms to be able to carry out FAIP and Risk Management modules.

UKZN-Cedara Management

- Management should come up with mechanism to monitor if lecturers are doing their duties (if they are teaching the right content, if the assessment is appropriate, if notes are available and reflect originality.

- Students have pick up some notes copied black and white from internet and given to them; they, therefore, suggested use of 'Turnitin' for some lecturers' notes.

- Somebody needs to check and monitor the teaching and learning process in the programme.

- The procurement from the Department of Agriculture is taking long to respond, someone needs to do a follow up; the vacant posts need to be filled.

Discipline

- Students should be more disciplined and demonstrate a level of maturity to be able to cope with different attitudes and teaching methods or styles from lecturers.

7.3. Summary of findings on access to facilities and performance

7.3.1. Access to facilities

Access to the LAN (computer room) was considered valuable in facilitating learning by 56% of the students, and the Internet by 62% of the students. There was an indication of the need for maintenance and upgrading this facility for better learning. As the internet access is available in the LAN and at the Cedara library, both places need to be accessible. Therefore,

the library closing time should be adjusted to allow students, not only to use the Internet but also to study in a quiet environment – especially before tests and exams. For books, it was suggested that as there is a shortage of Agricultural Extension books in Cedara library, to shift all extension related books from the UKZN library to the Cedara library because extension students are attending at Cedara. Alternatively, regular transport should be organised from Cedara to UKZN so that students can access the resources at UKZN.

The size of the classrooms was considered adequate by 69% of the students to support learning. The main concern was the working space for studying. The students suggested that one venue could be turned into a permanent study area to be used after classes because the library closing time is early and venues in the main study building are sometimes used for functions and events, even if students are preparing tests.

7.3.2. Performance of BAgricExt graduates in the workplace

The progression in performance of students relevant to learning outcomes at the three NQF levels on the BAgricExt: Agricultural Extension is 81%, Agricultural Production 73%, Business Management 74%, Natural Resource Management 89%, and Farm Engineering 76%. This means that the achievement of learning outcomes in all the five areas of learning was satisfactory, but there still room of improvement for all of them.

Suggestions from students and lecturers for improvement in performance were presented in different sections:

For teaching methods: lecturers need to encourage participation in class and be eager to foster learning; review the content and teaching methods for more integrated learning; stop frustrating students; use less lecturing but more practicals;

For academic support: introduce isiZulu tutorial (in addition to the existing English ones) to facilitate better understanding;

For teaching environment: increase access to machinery (tractors) and other equipment; the computer room needs regular maintenance; and library closing time should to be adjusted;

For Competence acquisition and Assessment: first year students to be exposed to more practicals; introduce computer training to assist students facing computer problems; and review assignments workload; and

For UKZN-Cedara Management: to come up with mechanism to monitor if lecturers are doing their duties.

7.4. Conclusions

This aspect of the study suggests that the BAgricExt has generally adequate facilities to which the students have reasonable access and which they generally feel facilitate learning. Access to the Internet is important to the students, a substantial number of whom access it via handsets and/or non-university systems. This fact and student awareness of the need for better access, dedicated study areas, maintenance of equipment and concerns about the relevance of their learning and the performance of lecturers all suggest that the students are conscious of the learning processes supporting them, of their importance and the impact they have on their ability to learn and the ultimate acquisition of the intended learning outcomes.

References

Council on Higher Education (CHE) (2004). Criteria for Programme Accreditation. Higher Education Quality Committee. Pretoria.

Council on Higher Education (CHE). (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Report of the

Task Team on Undergraduate Curriculum Structure. Discussion Document. Brummeria Pretoria.

Kamaruddin, R., Zainal, N.R., and Aminuddin, Z.M. (2009). The Quality of Learning Environment and Academic Performance from a Student's Perception. International Journal of Business and Management. Vol. 4, No. 4

Lichtenstien, S., Fischoff, B. (1977) Do those who know more also know more about how much they know? *Organizational Behavior Human Performance,* 20:159–183.

Mlambo, V. (2011). An analysis of some factors affecting student academic performance in an introductory biochemistry course at the University of the West Indies. Caribbean Teaching Scholar Vol. 1, No. 2, November 2011, 79–92.

Ramli, A and Zain, R.M. (2018). The impact of facilities on student's academic achievement. Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, City Campus, Pengkalan Chepa

Shoemaker, C. A. (2010). Student Confidence as a Measure of Learning in an Undergraduate Principles of Horticulture Science Course. *Hort Technology*. 20: 683-688.

Chapter 8: Results for Placement of BAgricExt graduates

Agricultural sector offers the easiest path to industrialisation and economic transformation in many countries (African Center for Economic Transformation, 2017), yet in most African economies (including South Africa), informal sector remains a major employer of youth, with a large number of youth entering the labour market, despite the weak transformation of the economy (Foxa, et al., 2016). Pressure has been put on HE by the South African government to produce employable graduates, with attributes and capabilities to be successful on work place. Consequently, it is expected that HE would do more work to prepare graduates for employment (Griesel & Parker, 2009). By the meantime, employers are required to provide opportunities where graduates could be placed either in internships or meaningful jobs positions (Mayer et al., 2011).

This chapter discusses placement of BAgricExt graduates. It reviews job availability for BAgricExt graduates, how employers' expectations for fist-day competencies were met, skills identified as valuable by graduates based on their work experience, missing skills to perform duties and possible remedies, performance assessment and problems experienced by current graduates. The chapter will end by giving some recommendations for improvement and more statistical details about placement on Appendix 12.

8.1. Placement of BAgricExt graduates

This section presents the results from employed BAgricExt graduates and employers from different organisations. In total 15 graduates were employed at the time of the study; 11 of them were part of the study. The following seven (7) employers were interviewed: Mahlathini Organics; SaveAct; Lima Rural Development Foundation; WESSA (Wildlife Environment Society of South Africa); African Conservation Thrust (ACT); Institute of

Natural Resources (INR), and Umfolozi Sugar Mill. The findings address availability of job offers, meeting first-day competency expectations, important skills identified by graduates, modules used in the workplace, lack of skills to perform duties, and problems experienced by recent graduates. The section ends with recommendations for improving placement of graduates.

8.1.1. Availability of job for BAgricExt graduates

The study found that 48 students have graduated from the BAgricExt since 2010; 9 from the 2010 intake, 16 from the 2011 intake, and 23 from the 2012 intake. Of these, 15 (31%) were employed at the time the study was conducted. The timing to get their first job varied from 1 month to 15 months from the day of graduation. Positions occupied included: agricultural advisory (intern); graduate in training (agronomy); research intern-extension (Land Use Planning); assistant manager; extension intern; and supplementary instruction (SI) leader for animal production. They all work under contract from 1 to 2 years.

Opinions about employability of BAgricExt graduates

The respondents were asked to consider the statement, *"Students who finish in BAgricExt programme are easily employed".* The responses varied:

- If there were many opportunities in the corporate world and no corruption, yes they will be easily employed;

- Most people know about extension, but do not know much about the programme which makes them doubt to employ someone with the BAgricExt degree;

- It is very difficult to get a job out there; even if one does get a job they settle for minimum wage, all in the name of getting work experience;

- The problem is that most of graduates from this programme are employed in other fields, other than the one they studied for;

- Graduates can be employed in a lot of fields within the agricultural sector (extension, agronomy, farm supervision and management); and

- Those who were uncertain but said it depends on an individual, how they sell themselves on interviews and show what they have leant, also it depends on job opportunities.

The respondents suggested that the programme should make means to link students with the right organisation that enable student to practice what they learnt. This suggestion will also prevent knowledge and skill lost because the more time student take to get a job or doing something not relevant to their qualification will result student losing interest in the field of Extension.

From the above it appears that graduates are struggling to get a job once they have finished. It might be because of the jobs scarcity in their field of study, or not meeting the criteria set by employers (e.g. not having certain number of year of experience to qualify), or other factors. This could justify why all the graduate respondents are willing to pursue their postgraduate studies, to increase the chances of employability and while doing that they can keep on looking for jobs. The programmes they are intending to study are: Honours in Agricultural Extension, and Masters in Agricultural Extension at UKZN or University of Pretoria.

UKZN documentation about the programme commonly refers to the programme as the first three years of a five-year Masters. There is very clearly pressure on the undergraduate students to at least complete their honours before seeking employment. The study did not include graduates who were in or who had completed the honours programme.

8.1.2. Meeting the first-day competency expectations

First-day competency refers to the knowledge and skills (what they know and can do) an employer can reasonably expect from a graduate on the first day on the job after graduating. The employers interviewed in this study mentioned the following as the first-day competencies expected from new graduates:

Knowledge: Graduates must have:

- Basic knowledge of agricultural fields;

- Knowledge in research;

- Knowledge of good communication; and

- General sugar cane knowledge (from sugar employers)

Skills: Graduate must be able to:

- Write well;

- Conduce research and communicate results;

- Communicate well; and

- Work with different people (e.g. advice growers).

Attitude: Graduates must:

- Be keen to learn;

- Be willing to take instructions;

- Have good attitude; and

- Have good work ethic.

Behaviour: Graduates must:

211

- Be enthusiastic;

- Be committed to learning new things;

- Have good behaviour; and

- Have and show respect.

In response to how these first-day competencies were met by graduates, employers indicated that, in general, expectations were met, but with a few remarks.

Knowledge:

- The graduates are good, reasonable on most counts, but knowledge on actual farming is limited; and

- They have good background in research.

Skill:

- Some have limitations

- Using Excel is limited

Attitude:

- Graduates are willing to do tasks assigned, but not self-motivated enough;

- They are shy.

Behaviour:

- They need to take internship seriously;

- They need direction rather than being able to learn the needed knowledge or skill;

- Graduates are unable to relate their performance to payment received;

- Poor time-keeping, cannot do timesheets properly;

- Cannot undertake complex tasks;

- They expect to be very well treated graduates without being able to provide any real service;

- They do not take initiative with planning;

- They have business skill but they need to show it;

- They have a job mentality as opposed to entrepreneurship mentality; and

- Some graduates know they are on a short contract that will end in soon, therefore they are less motivated to demonstrate effort; they forget that there might an opening in another term.

8.1.3. Important skills identified as valuable by graduates

Employed graduates were asked to rank the five most important skills, which they learned on the programme, placing them according to their level of importance in their workplace (where 1 means most important, and 5 the least important). There were some repetitions (for example some graduates will rank communication as most important (first), but others will rank it on second or third place). The results of the ranking are set out in Table 8.1.

Table 8.1. Ranking of important skills in BAgricExt

Rank	Skills	
1	• Planning and time management • Production skills • Critical analysis	• Communication • Researching
2	• Facilitation • Soil tests • Communication	• Data collection skills • Presentation • Leadership
3	• Research skills • Fertiliser calculations	• Extension practice • Formal report writing

4	• Problem solving • Conservation works • Land use planning	• Application of knowledge to practical situation • Leadership and management • Observation
5	• Learning skills • Tractor driving • Stakeholders analysis	• Environment assessment and risk management skills • Adaptability and flexibility

From this ranking exercise, four skills emerge as exclusively ranked as most important:

- Planning and time management;

- Production skills;

- Critical analysis; and

- Researching.

The latter three, production, critical analysis and research skills are specific learning outcomes of the BAgricExt. Planning and time management are not assessed learning outcomes, but are part of the overall learning framework of the degree.

8.1.4. Modules used in the workplace

To explore further the relevance of the programmes knowledge and skills to the workplace, the employed graduates were asked to identify which modules from the BAgricExt programme they found helpful in their work environment, and the reason why they think so. Table 8.2 presents modules the respondents found helpful in the workplace.

Table 8.2: Modules found helpful modules in the workplace

Module/learning area	Reasons
Extension	• Working with farmers, giving extension and advisory services, conducting study groups

	• Work for an extension department, so it helped to apply principles and methods acquired from all extension modules • Has helped to gain self-confident in facilitating, leadership, communication and observation.
Agricultural production	• Agronomy and vegetable production because work on the field requires a combination of all to come up with a solution • It makes life easy when having an understanding of agricultural production both animal and crops.
Resource management	• Knowledge of soils is important • Need to know the impact of agriculture on the environment.
Land use planning	• Job is essentially land use planning • It provides a good background
Animal production	• Helped to understand the module better

8.1.5. Lack of skill to perform duties

Employers were requested to provide any shortage of skill observed or felt from graduates. The following were highlighted:

- Life orientation skills (for example the way to present yourself on a workshop, not wearing slippers at work);

- The attitude/behaviour to be clock watchers (which is a misunderstanding in terms of the 'letter of the law' and the spirit of the job; clock-watchers are not going to make a farmer, they need to show the spirit of going extra mile);

- Limited knowledge in chain supply and sugar cane agronomic side;

- Lack of ability to plan a proper agenda for a meeting or workshop;

- Reporting ability (some cannot lay out a report in a proper manner, wrong use of paragraphs, section headings or use logical outlines for reports);

- Their knowledge is steeped in the general larger-scale agriculture and has not been translated into physical implementation on the ground [e.g. where production scales may be smaller];

- Not recognizing the state of urgency on job in some cases;

- Sometimes insensitivity toward community members;

- Spend more time in the office than on field (misinterpretation of task).

8.1.5.1. Skill development available in the workplace

Some graduates had a chance to participate in skill development programmes within their respective organisations. The students indicated that these programmes covered:

- Irrigation training; permaculture training course;

- How to succeed an internship;

- How to facilitate a session; refresher courses on composting, worm building, bed making; and

- Training in Computers, business skills and life skills.

The additional support offered by employers includes:

- Various tasks and follow-up mentoring until tasks are completed adequately;

- In-service training in extension, community development;

- Facilitating a driver's permit;

- Holding regular workshops for the community members; and

- Weekly planning meeting allows for discussion about attitude/behaviour.

Some organisations, however, offered skill development only to those who are permanently employed.

8.1.5.2. Graduates' performance assessment from employer

Employers go through an annual performance assessment process of graduates that will come out in a report to be analysed after each term. They look at different areas of performance in term of attitude, behaviour, performance, skill, time. Some set targets per group (for example in terms of how many gardens graduates have established each month, or seedlings sold). Performance assessment is done also by sitting down with the graduate, telling him/her what to do, and raising specific issues. One example giving the elements of focus for graduate performance assessment is as follows:

Knowledge:

- Check if graduate can they engage with farmers, can contribute to discussions, and can interpreting results of experiment/trial

Skills:

- Check if graduate can provide translation, can write reports, and can engage in a group discussion with farmers

Attitude:

- Check if graduate is positive about his/her activities, is s/he willing to try something new?

Behaviour:

- Check if graduate takes the job seriously, coming to work on time, requesting to take time off, and keeping timesheets properly.

Mentorship was found to be done differently depending on the position of graduate and the arrangement made by the organisation. In some organisations, graduates (interns) are working with more than one person, and therefor mentorship is shared. In other organisations, the senior manager mentors by working closely with the graduate and showing him/her what to do and how to do it. In other organisations, it is just the direct manager or coordinator who will mentor the graduate.

Some of these mentoring employers identified specific examples of significant growth and development of the graduates. Some developed over time the ability to self-manage, to plan work in a reasonable fashion, to conduct surveys and to run workshops. Others were found to have integrated well into the communities and to be generally reliable (although not scrupulously so). Some employers explained that the graduates were starting to learn how to find information that they need for themselves and became confident enough to handle themselves in most stakeholder interactions, assisting with deliverables (e.g. literature reviews for Water Research Commission projects). One employer said: "*When we have, for example, people coming from different corners of Africa and South Africa, ...she will go fetch them at the airport on weekend, just to make our visitor specials and to feel welcome. She went beyond the call of duties (sic), and she is a quick learner as far as the project management is concern*". Another, commenting on graduates' engagement at a Project Management Officer training session, noted "*We have one or two graduates who are definitely going to be part of our longer future; they are sharp on tasks - doing almost all our translations from English into isiZulu; and that has been of incredible value to the organisation*".

8.1.5.3. The relevance of acquired competences in the workplace

Graduates were asked to evaluate the relevance on how the acquired competences in their workplace. Ratings varied mostly from good to excellent relevance with a specific percent

allocated. Table 8.3 presents the competences with a relevance rating of 'very good' or 'excellent' by at least 50% of the graduates interviewed.

Table 8.3: Self- assessment on relevance of competence in the workplace

Competences	Percentage (%)	Category
Capacity for applying knowledge in practice	73	Excellent
Decision-making	73	Excellent
Planning and time management	64	Excellent
Teamwork	64	Excellent
Producing and communicate information	55	Excellent
Problem solving	55	Excellent
Capacity to learn	55	Excellent
Accessing, processing and managing information	55	Very good
Capacity to understand the context and systems	55	Excellent
Interpersonal skills	55	Excellent
Leadership	55	Excellent

These findings suggest that the modules with these competencies as learning outcomes are offering relevant learning for students.

Table 8.4 presents the relevance rating for competencies scoring 'very good' or 'excellent' by less than 50% of the respondents.

Table 8.4: Self- assessment on relevance of competence on workplace (Medium score)

Competences	Percentage (%)	Category
Capacity to adapt to new situations	45	Excellent
Capacity for operational planning and evaluation	45	Very good
Research skills	45	Very good
Capacity for generating new ideas(creativity)	36	Excellent
Capacity for analysis and synthesis	36	Excellent
Capacity to apply basic production principles	36	Excellent
Capacity to evaluate agricultural systems	36	Excellent
Capacity to plan and manage profitable farming system	36	Excellent
Capacity to identify resources and production systems	27	Excellent

This aspect of the findings reinforces the overall relevance – although to a lesser extent – of those modules in the BAgricExt programme carrying these competencies in their learning agendas.

8.1.6. Problems experienced with recent graduates

Employers were concern with some problems experienced with the recent graduates. Some of the concerns were:

- Not understanding how serious certain misbehaviours are (such as driving hired vehicles when not being assigned as driver; not being punctual at work);

- Being scared to ask questions and assuming that they are doing the right thing, without realising that it might be wrong – leading to serious consequences;

- People skills/attitude issues; one employer said *"...she was assigned to be assistant [to] our main coordinator. She misunderstood her role and responsibilities. Then conflict of insubordination with [her] coordinator arose. Then she took some time off, and literally took a month off. Then I had to shut her down; it was too much for the organisation. She has lot of potential, she is smart, but something wrong in her attitude. She need to learn people skills";*

- Lack of communication and scared to expose weaknesses while still learning; and

- Misunderstanding organisation structure and the 'mentor-mentee' relationship.

8.1.7. Recommendations for improvement of placement

Employers suggested the following recommendations to academic institutions about critical areas of skills improvement for effective performance in the workplace:

- Graduates must:

- be confident to engage with farmers and staff, must be willing to admit when they do not' know something, and must be willing to go and find the answer and come back with a response;

- be able to write a report that is well structured;

- be willing to get into the field and get dirty (must be fit enough to be active in the field);

- know how to use basic tools so that they can undertake tasks such as soil sampling;

- be able to lay out simple trials;

- be able to co-develop experimental designs with farmers (especially smallholder farmers);

- be exposed to understand the structures of organisations and the mentor-mentee/ supervisor-learner relationship; and

- be exposed to more practical (e.g. have a dairy, beef herd, pig herd, chicken projects); they should do practical where they are responsible for everything, such as clean the buildings, clean the ground, the store, etc.

- People with animal science degrees must be able to assist with basic tasks such as clipping hooves, giving injections, treating wounds;

- Clearer understanding of research skills for graduates; how to define their research question and what types of questions to ask in which contexts to gather the information;

- Rigor in quantitative methods as well as qualitative methods. Some sense of statistical analysis of responses, even if only average means etc.;

- Practical knowledge of farming practices and rural development issues (including a stronger understanding of the livelihoods, food security, micro finance, sustainability etc.;

- More practiced skill in application of participatory principles, processes and methods;

- Prepare graduates to work for minimum wage and learn practical skills on a farm,

- Focus on smallholder farmer development; in particular intensive 1 to 5 ha plot development, intercropping and biological farming;

- First year students should spend weekends and the mornings on the farm in their boots;

- Initiate a system where students can spend a month doing a particular discipline and then move on to another one, expose them to what is actually happening in farms (running the farm at school like it was their own);

- Teach them respect for the institution and for people/farmers;

- Teach them about rainfall, water conservation, etc.;

- Do more practicals in sugar cane, especially to understand the agronomic part of it and chemical control.

8.1.8. Summary on placement of BAgricExt graduates

Only 31% of graduates were found to be employed, suggesting a scarcity of job opportunities for BAgricExt graduates. Suggestions to improve on this included linking students with the right organisations during their study period to enable students to practice what they learnt thereby increasing their employability.

Employers indicated that the fist-day competency expectations were met, but with some areas of concern such as limitations in Excel, not being sufficiently self-motivated enough,

shyness, not taking their internship seriously; unable to relate their performance to payment received, and time keeping).

The most valuable skills identified by graduates: Planning and time management; production skills; critical analysis; communication; and researching.

The modules or learning areas found to be most useful in the workplace were: Extension, Agricultural production, Resource management, Land use planning, and Animal production. Farm business management was noticeably absent.

Aspects lacking among employed graduates included: life orientation skills, attitude and behaviour (e.g. being clock-watchers, undervaluing the job); limited knowledge of the supply chain supply, organisational skills including drafting agendas report. It was found that some organisations have skill development programmes and mentorship to assist graduates in these and other areas.

8.1.9. Conclusions

The findings on graduates' placements suggest that the learning outcomes of BAgricExt programme are generally relevant to the workplace, but that the students may not be adequately prepared in terms of work ethic and understanding the seriousness of entry-level employment and the learning base that it offers. This is particularly relevant in terms of the students' academic confidence levels.

More concerning is the fact that only one-third of the graduates were found to be employed. This requires greater investigation – including interrogation of the rate of employment of those students who have gone on to complete the honours programme as well as, as suggested by students, creating links with potential workplaces earlier in the programme to

give them more work experience and to accustom them to the requirements of the workplace well in advance of seeking and obtaining employment.

Recommendations from employers focused on ensuring graduates are confident to engage with farmers and staff, able to write a well-structured report; lay out simple trials; understand the structures of organisations; and understand the research skills involving quantitative and qualitative methods. They also suggested that graduates should be prepared to work for minimum wage and have respect for the institution and for people/farmers they are working with. These recommendations suggest that there would be value in establishing closer ties with potential employers, perhaps to the point of including them in curriculum review, guest lecturing and establishing short-term field trips into the workplace – particularly for first- and second-years.

References

ACET (African Center for Economic Transformation) (2017). African transformation report 2017: Agriculture Powering Africa's Economic Transformation. ACET

Foxa, L., Senbetb, L.W., and Simbanegavib, W. (2016) Youth Employment in Sub-Saharan Africa: Challenges, Constraints and Opportunities. University of California, Berkeley, Berkeley, CA, USA, and b African Economic Research Consortium (AERC), Nairobi, Kenya

Griesel, H. and Parker, B. (2009). Graduate Attributes A baseline study on South African graduates from the perspective of employers. Higher Education South Africa & the South African Qualifications Authority

Mayer, M.J., Gordhan, S., Manxeba, R., Hughes, C., Foley, P., Maroc., Lolwana, P. and Nell, M. (2011). Towards a youth employment strategy for South Africa. Development Planning Division. Working Paper Series No. 28. Development Bank of Southern Africa

Chapter 9: Discussion, Conclusion and Recommendations

This chapter presents the general discussion, conclusion, recommendations and suggestions for future research. The discussion will cover all the five elements of the framework ITAPP. They will be presented chronologically to show the implications and correlations between the elements of the framework. ITAPP will also be used to structure the conclusion; presenting a brief summary on findings for each element of the framework, and addressing the research question and research objectives. The chapter ends with suggestions for improvement for each element of the framework where applicable and propose topics for future research.

9.1. Consolidating results and the ITAPP model

The BAgricExt at UKZN was launched in 2010 as a result of long period of research and a long-standing relationship between UKZN and Cedara College. The two institutions have worked together on various technical aspects in the agricultural field. This laid the foundation to establish a formal agreement around the offering of BAgricExt degree. After 5 years of implementing the degree, there was a need to do an evaluation to examine to what extent the degree has met the target assigned. A theoretical framework for the study was developed resulting in the development of the ITAPP model to be used as the main tool of analysis. This section will present and discuss the key findings for each element of the framework to determine the main issues, disconnections, priorities, coherences, and links between learning areas of BAgricExt.

9.1.1. Intake process

UKZN is in contact with various high schools around KwaZulu-Natal province, where the information about entry requirements is delivered to learners before they are ready to apply at the UKZN. This is under the awareness programme done by Public Relations officers at

UKZN. The Public Relations Service is under Corporate Relations in the structure of UKZN. It deals with strategic communication, marketing activities and link the University with key stakeholders and partners. The BAgricExt programme is not part of this initiative, therefore it is not reaching out to high schools to inform learners about the entry requirements. Students are supposed to receive sufficient information about the programme to help them prepare for the intake process. The implications of this on the BAgricExt programme often registers students who are not prepared for the programme, students who are taking chances, and those who have selected BAgricExt as an alternative (second or third choice). This has consequence of students drop out, changing their mind at the last minute, or even fail due to under-preparedness. Such unpreparedness is one of the dominant causes of poor performance in higher education (CHE, 2013). Thus, to address the issue, it is recommended that the BAgricExt programme formally join and actively participate the UKZN awareness programme to fill the gap.

The framework proposed by this study initially did not consider 'programme awareness' as critical component of intake, but the findings reveal how significant it is in the intake process. It is not only important to BAgricExt programme, but also to any other programme currently disconnected from Public Relations within UKZN. It can also assist the programmes that do not have their own awareness mechanism to reach out high schools before intake. It is, therefore, another avenue to explore for the intake process and will modify the initial framework (figure 2.2).

Given that universities are overwhelmed with applications every year, one might rightly ask: "Why try to attract more learners when universities already have more applications than they can accommodate?" The answer to this question is that those who apply to the university need to have the right information about the qualifications for which they are applying. They also need know how to prepare, where to go, and what to do during the intake period. It is not

about increasing the number of applications, but about refining the process so fewer students apply for qualifications they later drop, and more students are prepared for both the intake process and the requirements of the qualification they have chosen.

Students indicated incoherence between the fees paid and the services received from the Cedara campus, especially in term of IT and equipment. Students see the payments to Cedara (accommodation and the Student Union fee) as an additional registration fee. This fee does not make sense to students, even though they are aware that there are two different institutions involved, each responsible for different aspects of their programme. They also claimed that the fees are very high.

Looking at their sources of funding, the study found that NSFAS is the main source utilised by most students (56%). Others are financed by family members. NSFAS loans require the students to repay the money back with interest. Family funding also comes with expectations of 'repayment'. The response of student to this is to look for employment as a mean of repaying their debt, rather than building a career or profession. They are less likely to be willing to start at the bottom, with a lower income. And they are less likely to stay in one job. S/he may accept an available job, but as soon as another one offering more money comes along, s/he will pursue it just for the sake of accumulating income. It is a challenge for graduates as their chances of getting employed will diminish if keep on changing jobs. Also, it is a challenge for employers too. One employer mentioned that: "*during jobs interviews, we will check how many times the candidates have changed the jobs within a semester or a year*". This to determine if they can keep the job and grow with it. This implies that a candidate who has been in one position for a year will be given preference over another candidate who has been in 2 or 3 positions in a year, even when the second candidate seems to have acquired enough experience. This directly corresponds with the observation may by employers that "*graduates are not prepared for minimum wages*". This suggests there is a

need for the BAgricExt to include clearer career guidance and life skills in the programme, to better equip students for the realities of the working world.

The study also found that there was no direct link between intake and the provision of Teaching and Learning. The number of students coming in did not directly influence the Teaching and Learning process (the way lecturer will deliver or students absorb) as long as the appropriate resources are there. However, this finding is to be expected, because the programme is capped and only takes in a maximum of 25 students. It is likely that if the numbers were to exceed the limited intake that the T&L process would be affected. An example of this is the University of Mpumalanga which started the same BAgricExt programme in 2014, but had an intake of in excess of 40. The UMP academic staff reportedly struggled to maintain the T&L processes as designed (personal communication with S. Worth).

9.1.2. Teaching and Learning

The study found that the students and lecturers felt that theory and practice was dealt with adequately in the programme, but teaching method was the concern. The way the knowledge is delivered to students was questioned – particularly by students. Some of the concerns raised were: lecturers frustrating students by stating that they will fail; the voice of some lecturers not audible; the method of teaching does not engage students to participate; and lecturers giving handouts one day before the test. Students felt these factors limited students in reaching their full potential in learning. Sometimes they see that the subject matter, even though simple and easy to understand, but it is delivered by a 'wrong' person, hence not understood. In the focus group discussion, students suggested that some lecturers are hiding their weaknesses behind intimidation. Students are afraid to ask questions or engage with them, to avoid being targeted by the lecturer and face the consequence failing even though

they did well. This is one of the reasons why students suggested moderation of tests and monitoring of content delivery to be initiated.

In all the five learning areas, the assessment methods found by students to be the fairest representation of their learning were either assignments, practical tests or theory tests. Students did not feel the exam assessment was a fair way to demonstrate what was learnt. Students said that during exam they cram the knowledge for the sake of passing it, but not to learn, whereas for practical and assignment they felt that it is where the real learning occurs.

Looking at this on both sides (student and lecturer), students are saying that exams and the requirement to recall 'correct' answers under time pressure does not reflect what they have learned – only what they can recall under pressure. It makes them feel like they are forced to memorise (not learn) and that recall is meant to demonstrate that they have learnt something. This approach does not work well with students. Most of the lecturers, on the other hand indicated that using exams is how assessment should be done. This is a disconnection between the two main parties in learning. The common denominator here is the concept of assessment (or demonstration of learning acquired). Both students and lecturers alike agree that assessment is necessary.

The factor to adjust for students is the requirement to recall under time-pressure which creates an image of 'doing it now; if you don't, you fail'. They want a genuine opportunity to demonstrate their learning, one that reflects how they would be expected to perform on the job.

The factor to adjust from the lecturers' perspective is to consider whether students cannot better demonstrate what they have learnt outside exam/test room. This option is a reality because in third year, only the Farm Business Management has an exam, the other four

modules do not – and that one exam is only part of the assessment for that module. Thus, the question to be explored is whether exams are needed in first and second year modules. Further, as determined by Gibbs and Simpson (2004:6-7), there is ample evidence showing that "examinations are very poor predictors of any subsequent performance, such as success at work". They noted three key things: modules using only continuous assessment resulted in higher final marks than modules; that "there were three times as many failed students on modules where there were only examinations"; and that continuous assessment marks predict better "long term learning of course content" than examination marks do (Gibbs & Simpson, 2004:6-7).

Tutoring support in isiZulu was identified as important in Teaching and Learning, as a substantial number of students struggling learning in English language (28%) especially in agricultural production modules – even though they met the minimum standard of a 50% pass in Matric English. Offering technical tutoring in isiZulu would likely boost student performance and increase their confidence.

According to 63% of the lecturers, BAgricExt graduates are supposed to be able to advise farmers about agricultural production (animal and crop), but the lecturers feel that the production learning is too limited knowledge in this regard. Their view was that if production modules could be given to BAgricExt as it is given to diploma students, it could make a huge difference in their careers. This was supported by the fact that students in the focus group discussions raised interest in attending short production courses provided by Cedara College. They believe that this will allow them to fill the gap felt. Students also felt they should have more agricultural production content – similar to that of the Cedara Diploma students. Students further suggested that the names for production modules they do have in common with the Diploma students should use the Cedara name for the modules. They argued that employers will be looking at certain keyword such as 'production' rather than anything else.

The concerns raised by the students and the lecturers highlight a number of things. First, there is no difference between how the Cedara Diploma students and the UKZN BAgricExt students learn their production because for first and second year, the two groups of students take the same modules together. They are assessed at the same time with the same assessment instruments. Second, as shown in Table 9.1, the only production module that does not include "production" in its name is the Plant Propagation module – which for the Diploma is called Crop Production 1. This is being raised as a point of concern, and the assumptions made by students and lectures about what is needed on the job, is related to this concern.

Table 9.1: Comparison of module names at UKZN and Cedara

UKZN Modules	Cedara Modules
Farming Systems	Farming Systems
Agricultural Production	Agricultural Production
Introduction to Animal Production	Animal Production 1
Forage Livestock Production	Animal Production 2
Plant Propagation	Crop Production 1
Field Crop Production	Crop Production 2

As discussed in Chapter 2, the BAgricExt was designed to train students to serve as Agricultural Extension workers among smallholder, resource-challenged farmers who generally have mixed farming operations. Learning is premised on the understanding that knowledge is contested at exit-level and that what is important is not the extent of content, but the capacity to create or find, interpret and apply knowledge, and to help farmers to do the same (Worth, 2009). That after five years of implementing this approach, students and lecturers continue to equate extension with 'having and giving technical knowledge', raises serious questions about how the programme is being delivered and how it is being perceived by the non-extension trained academics teaching on the BAgricExt. It suggests that more work needs to be done to clarify the learning framework, the intended employment space, and the purpose of the qualification.

To assure quality of T&L, a monitoring mechanism was suggested to check if lecturers are doing their duties accordingly. Students feel that sometimes they do not get good delivery of content and fair assessment. This is connected to other concerns raised about students being intimidated by lecturers. Both Cedara and UKZN require student evaluations for every module. These were done, but the concerns about quality of teaching and intimidation persists suggests that the evaluations are either not being used or that the interventions are not effective. This requires further investigation.

9.1.3. Access to facilities, Performance and Placement

Access to facilities was found to be crucial for T&L and performance. As discussed in Chapter 7, students value accessing and using the Internet as an important part of their learning. It suggests that students will learn more and better when they have access to the Internet. This is also consistent with the NQF descriptors for NQF 7 which support self-directed learning and expect students to be able to discern credible sources and information, and to operate in complex, unfamiliar setting where knowledge is contested. Using the Internet facilitates these things, for example through their personal research to explore subject matter and understand it better using different methods (literature, images, demonstration clips, animation, and discussion via email or other social network). The converse is also true, learning is impeded by a lack of Internet access, technical problems with internet connection, network speed, or hardware breakdowns. Access to facilities will facilitates better T&L, which will ultimately influence student performance.

The other area of access facilities is access to practical equipment and machinery such as tractors, implements, GIS software, and tools for working with livestock. For the BAgricExt at Cedara, the issue lies on maintenance of resources (e.g. computers maintenance, upgrade of Internet connections, and purchase or replacement of additional equipment for field practices). Attending to these issues will have a direct bearing on learning and student

performance. Looking at the ITAPP framework, there is no direct link between access to facilities and placement, the relation between the two pass through performance in the way that the quality of resource will determine the quality of performance. However, the study has shown that access to facilities does have a bearing on learning, confidence and performance in the workplace.

One outcome of the study that is of particular concern is that only 32% of the graduates were employed after graduation. It is understood that many of the students go on to complete their Bachelor of Agriculture (Honours) in Agricultural Extension and Rural Resource Management, and this may have skewed the results. It would be important in future studies of this nature to look at the post-graduation pathways taken by the students. That said, further investigation is needed into the actual job market for the BAgricExt as well as the opportunities for self-employment. Both of these suggest the need for greater career counselling and linking of students to potential employers earlier in the programme.

In terms of the ITAPP framework, this suggests the need for tighter coherence between T&L and Placement, and further suggests that "Placement" needs to be expanded beyond employment to developing livelihood strategies. A key element of the degree should be centred on where the graduate is going and how the graduate will gain a living using the competences acquired in the programme. There is a clear connection between T&L and Placement; and Performance and Placement. There is a less clear connection between Intake and Placement. However, the aspect of intake process that shares information with potential students could give greater emphasis on the employment/livelihood potential of the degree. Overall, what these findings suggest is that Placement (including various livelihood strategies) should be at the centre of the ITAPP framework to reinforce the idea that one of the key purposes of taking the BAgricExt (or any qualification) is ultimately to be able to earn a living.

9.2. Conclusions and recommendations for the BAgricExt

This section consolidates the findings from the five components of the framework ITAPP as presented in the study, consisting of Intake, Teaching and Learning, Access to facilities, Performance, and Placement. It will also revisit the primary research question: What is the effectiveness of Bachelor of Agriculture newly implemented at Cedara College?

The secondary research question: What is the framework to assess an undergraduate qualification of any kind? Is discussed in Section 9.3.

The secondary research question regarding the learning outcomes required for a Bachelor of Agricultural Extension qualification in South Africa, has been covered in Chapter 3.

The secondary research question regarding how better learning can be acquired in the BAgricExt is addressed in Section 9.2.4.

9.2.1. Summary of findings on Intake process

Intake process starts from the high school where learners need to get information about the available places in Universities and how to apply. This initiative is championed by the Public Relation service at UKZN, and teachers in high schools are involved to inform their learners prior intake period. This step was found to be crucial for the intake process as it is preparing learners in different aspects (career path, money needed to pay tuition fees, and other requirements to be accepted in the preferred qualification). It was found that learners who are exposed to this initiative are likely to find the intake process easy and could be able to precisely choose the field of study without attempt of changing their mind at the last minute. It is, therefore, recommended that the BAgricExt programme partake in this awareness programme to improve the intake process. Another alternative is to invite teachers from different schools and give them through a workshop the awareness message to take to their

learners, but this approach presents uncertainty about the message to be delivered to learners accurately and timely, hence a face to face between University officials and learners remains the best way to do intake awareness.

9.2.2. Summary of findings on Teaching and Learning process

It was found that the modules content was relevant to the degree. Students enjoy and benefit (in terms of learning) from the teaching methods that are participatory and which encourage experiential learning. However, a few areas of improvement with regard to teaching methods were highlighted. The teaching environment was found suitable despite the fact that information technology and other facilities (machinery and library) still need particular attention from the school management.

In terms of assessment methods, students prefer only one or two that represent the fairest way to display what was learnt, but the more preferred were assignment and practical. This is consistent with other research indicating that learning lasts longer using continuous assessment. It was noted that exams feature primarily in the first two years of the BAgricExt and are largely discarded by third year in favour of continuous assessment. It may be of value to consider removing exams from other years of study.

Students were satisfied with the way they were helped to acquire the designated competencies and feel confident about the degree to which they have acquired the majority of the competencies. They acknowledged high confidence in acquiring the following competencies: Teamwork, Decision-making, Accessing, processing and managing information, Problem solving, Capacity to adapt to new situations, Capacity for operational planning and evaluation, and Capacity for analysis and synthesis. These skills started high, drop a bit during the study period, and then recovered at the end (during employment). Those that started low and ended with substantial confidence improvement in the employment year

are: Capacity to identify resources and production systems, Capacity to plan and manage profitable farming system, Capacity for generating new ideas (creativity), Leadership, and Capacity to apply basic production principles. Academic tutoring and counselling were found of great value to the programme, in addition of existing tutoring another one was suggested (iSiZulu tutoring) to assist in translation of content to students in need. The existing quality assurance consist of moderation, evaluation of modules and curriculum review.

9.2.3. Summary of findings on access to facilities; performance; and placement

Access to resources such as computer room, internet, venues, library and machinery facilitated students learning in the BAgricExt programme, and they were found to be crucial for teaching and learning in the programme. Due to this significance, there was an indication and concern for resources maintenance and upgrade as well as good management.

For students' performance against learning outcomes applied in the workplace, it was found that in the five learning areas of BAgricExt students' performance was satisfactory scoring between 73% and 89%. The suggestions for the improvement of learning outcomes included more engaging teaching methods, academic support in isiZulu, increasing practical learning opportunities, and closer monitoring of lecturers' T&L performance.

About the placement of BAgricExt graduates, it was found that 31% of graduates have been placed since 2013. In order to improve that rate, it was suggested that BAgricExt should step in to assist graduates in the process of placement by making arrangements with different organisations where qualified graduates can be placed for internship or permanent positions. Career guidance should (including the possibility of self-employment) be strengthened during the course of the three years of study.

Employers were moderately satisfied with the expectations of first-day competencies. They indicated areas that need attention were primarily in the area of soft-skills, not technical knowledge: ability to use Microsoft Excel; self-motivation (in particular with respect to taking their internships seriously; overcoming shyness; payment expectations; and time keeping. These suggest that employers are expecting students who graduate to have greater personal maturity than they expressed in their employment.

Graduates ranked their learning competencies against their importance in the workplace. The following skills were found to be very important: Planning and time management; production skills; critical analysis; communication skills; and research skill. The ones considered less important were: tractor driving; stakeholders' analysis; environment assessment and risk management skills; adaptability and flexibility and learning skills. Similarly, when linking their work experience with content covered in their modules, graduates found the following modules and learning areas to be useful in the workplace: Extension, Agricultural Production, Resource Management, Land Use Planning, and Animal Production.

Employers observed the following deficiencies in the graduates they employed: life orientation skills; professional attitude and behaviour; knowledge in chain supply and sugar cane agronomy; planning an agenda for a meeting or workshop; writing a report; and ability to recognise the state of urgency on job.

9.2.4. Conclusions: What is the effectiveness of the UKZN BAgricExt implemented at Cedara College of Agriculture?

From the above findings based on the ITAPP framework established to assess undergraduate programme, the BAgricExt is essentially successful with regard to 'Teaching and Learning' and 'Performance', which arguably could be considered the core of any educational programme. There are various opportunities to improve these; notably using methods that

engage students better in learning, increasing practical learning and reviewing assessment processes so that real learning is assessed and long-term learning is supported. However, these two elements are not ends unto themselves. They affect and are affected by the other elements (Intake, Access to Facilities, and Placement), which, according to this study, need improvement as outline in Chapter 7 and 8. There is need to better inform potential students about what to expect in the degree (including employment/self-employment prospects) and how to prepare for registration. There is a need to increase the number of students who list the BAgricExt as their first choice and reduce the number who withdraw before registration when they realise what the degree entails.

Access to facilities needs to be more consciously linked to learning, and not just to completing assignments. Similarly, access to equipment for practical learning needs to be improved as this has a direct impact on future performance on the job. As will be discussed in the next section, placement needs to be given more prominence in the entire students' experience.

The findings from graduates further suggest that the BAgricExt is adequately preparing students for the workplace in terms of the intended learning areas and competencies. However, the programme does not seem to be maturing the students sufficiently to perform the first-day competencies with the level of competence and confidence expected by employers. This supports the concerns about the assessment processes and whether passing exams are a true reflection of learning. It also supports concerns about the need for more practical learning; in 'effect practice makes perfect'. As argued by Fortune, et al (2007:239) "More frequent practice" is "associated with greater satisfaction with field education and greater self-evaluation of performance", and "Frequency of practicing" leads to better

evaluation of students' performance, indicating that "repeatedly practicing skills" improves competence and confidence in field education.

The suggestion to improve post-graduation employment rates is to look into setting up internships earlier in the programme by approaching potential employers (organisations) and making formal agreements. This agreement needs to take into consideration the fact that employers are not training institutions and have financial and business commitments, hence they would prefer to get graduate candidates who will not be a burden for their organisations, but who will genuinely add value. Effort should be made to link this to the third-year placement module which already has some elements of an internship, but which is less structured in terms of it being a 'job'.

Internships would be taken as trial run and would benefit students and potential employers. It will afford students more real-world exposure and better prepare them for work. It will also help address issues of "taking internships seriously" and contribute to the life skills and behaviour issues raised by employers. Whether the internships result in post-graduation employment or not, graduates will be better prepared for when they have to look for jobs or venture into self-employment.

A secondary question considered inn this study was: How better learning can be acquired in the BagricExt? If the additional investigations suggested are made and the changes recommended to the five elements of ITAPP as well as given more attention to the coherence among the elements, then it is anticipated that learning in the BagricExt will be improved and that this improvement will be reflected particularly in performance and placement. For each of reference, the detailed recommendations have been captured in Section 9.2.4.1.

9.2.4.1. Recommendations to improve the BagricExt

Recommendations are presented following the ITAPP framework. These have been amended based on discussions in Chapters 7 and 8.

For intake process, students suggested the following elements for a smooth procedure: the registration date should be after the January pay day to allow parents make the necessary cash payments required to register; housing or accommodation should be available at least one day before registration day to accommodate students who are coming from far including international students; marketing of BAgricExt programme should be initiated through Public relation service of UKZN to attract students who are willing to study in the extension field; make available at Cedara administrative staff who will be deal exclusively with UKZN administration at Cedara; Confirm that the correct degree code appears in the CAO forms and that code is included in any documentation for prospective students to facilitate the application for the correct degree; and names of modules should be standardised between UKZN and Cedara, especially those related to production modules should remain as they are at Cedara.

About Teaching and Learning, students suggested that academic support should consider introducing iSiZulu tutorials to assist students who struggle with English; resources for T&L need regular maintenance and old equipment (e.g. tractors, tools, computers system, study room, library, etc.) should be upgraded; lectures need to use microphones when teaching in large venues; first year students need to be exposed to field trips, writing skills, and computer skills; initiate a green house facility for practical in crop production; organise extra classes for students with poor background in economics to improve performance in Farm Business management modules; the assessment in Farm Infrastructure and Resource Management needs to be reviewed or moderated by another lecturer; third year in Environmental Impact module need to allocate formal farms to facilitate learning in FAIP and Risk Management;

and finally the UKZN-Cedara management should implement mechanisms to monitor if lecturers are doing their duties.

For access to facilities, it was suggested an upgrade for computers and the internet network; increase number and quality of books on agricultural extension in the Cedara library; keep the library open in the evenings and on weekends to allow studying 'after hours'; and transport between Cedara and UKZN Pietermaritzburg campus needs to be organised on a regular basis to support students in completing required administrative tasks.

Concerning placement, it was suggested that academic institutions must ensure that graduates are confident enough to engage with farmers and staff where they will be working; be able to write a structured report; be able to lay out simple trials; be able to co-develop experimental designs with farmers (especially smallholder farmers); be exposed to understand the structures of organisations and the relationship that exist between mentor-mentee, supervisor-learner; be exposed to more practical where they are responsible for everything from cleaning to management. Graduates must be able to assist with basic tasks such as clipping hooves, giving injections, treating wounds; they should master conducting research using qualitative and quantitative methods; and be prepared to work for minimum wage.

9.3. Conclusions about the ITAPP framework

One of the secondary questions for this study was: What is the framework to assess an undergraduate qualification of any kind? As discussed in detail in Chapter 2, this study developed a framework to interrogate the BagricExt qualification at UKZN. It suggested that this framework would be suitable for any higher education (undergraduate) qualification. In addition to facilitating research design and analysis of data for this study, the framework itself was being tested. The original framework is as is shown in Figure 9.1.

Placement and T&L are directly connected. Employers have suggested that graduates need to be taught well to face challenges and bring solutions to issues faced on the job. It was established that the quality of T&L will determine good performance, which will have an impact in the workplace (placement). While it was found that in BagricExt the (T&L) is doing well in terms of delivering on its learning outcomes, the employers were not fully satisfied in some specific areas – suggesting a gap between Teaching and Learning and Placement. Employers identified the need for the graduates to be better accomplished in terms of behaviour (specifically work ethics) and life skills which are not specifically taught or assessed in the BagricExt graduates – they are, however incorporated into the NQF Level descriptors and thus should be 'learned' as part of a NQF level 7 degree. The examples given (e.g. the way to present oneself at a workshop, not wearing slippers at work, watching the clock instead of focussing on getting the job done and not recognising the state of urgency on the job) suggest that, aside from having the technical competence that is clearly articulated and which is the main focus of assessment, employers want something more – something not directly related to the content of the degree. There is an expectation of maturity and greater awareness of what is expected in a job – even on the first day.
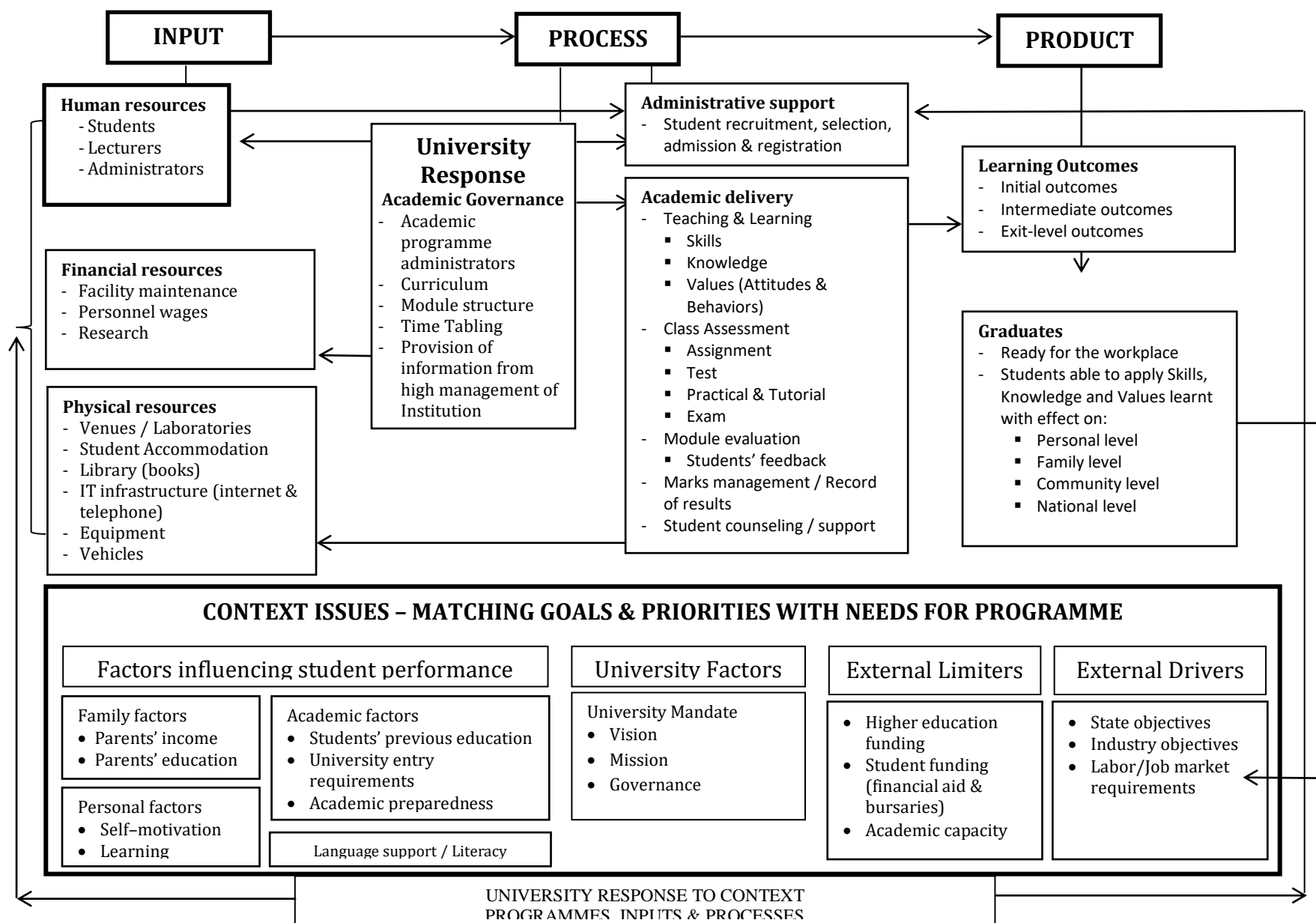
Figure 9.1: Factors influencing students' performance and elements for assessing an undergraduate qualification

In terms of the BAgricExt curriculum, this finding suggests a need to review the current curriculum to determine ways where behaviour and life skills can be built into the knowledge and skill of the curriculum. It also highlights again the need to debate the content vs learning focus of the T&L methods applied in the BAgricExt – and may even counter the expressed desire for additional production learning.

The study also found that Performance and Placement are directly linked in the way that the quality of performance affects finding and succeeding in a placement. Again, the generally good performance with regard to the learning outcomes for the five learning areas was acknowledged by employers, and that the first day competencies were met, noting (as discussed earlier) a few areas of improvement needed in life skills and behaviour.

However, the level of post-graduation employment is concerning; even though graduates are doing well in class and in the workplace, their low level of post-graduation employment (31%) suggests a gap or disconnection between Performance and Placement. The reasons for this incoherence could be jobs scarcity in the field of extension, graduates not groomed to search for jobs, employers not interested to hire inexperienced workers, and/or graduates not willing to start on entry-level wages.

Suggestions to improve on post-graduation employment rates were discussed in the previous section. The point here is how these finding affect the ITAPP framework. The findings of the study suggested a reorganisation of the ITAPP to give "Placement" more prominence. (See figure 9.2). Specifically, the results of the study suggest that Placement should be the pivot of the entire framework – ensuring that all other elements are geared toward eventual placement either in a job or self-employment.

Effectively ITAPP, which describes what was seen as essentially as sequential process needs to fundamentally change to an outcomes or goal driven process. The results of this study suggest that the ITAPP framework should be renamed to the "Placement-Centred Intake to Performance (PCIP) Framework". By renaming this framework, future assessments of the BAgricExt or any other qualification will still look at the key process elements of Input, Teaching and Learning, Access to Resources and Performance, but will do so with the overriding aim of Placement – where placement is defined as a livelihood achieved through paid employment or self-employment.
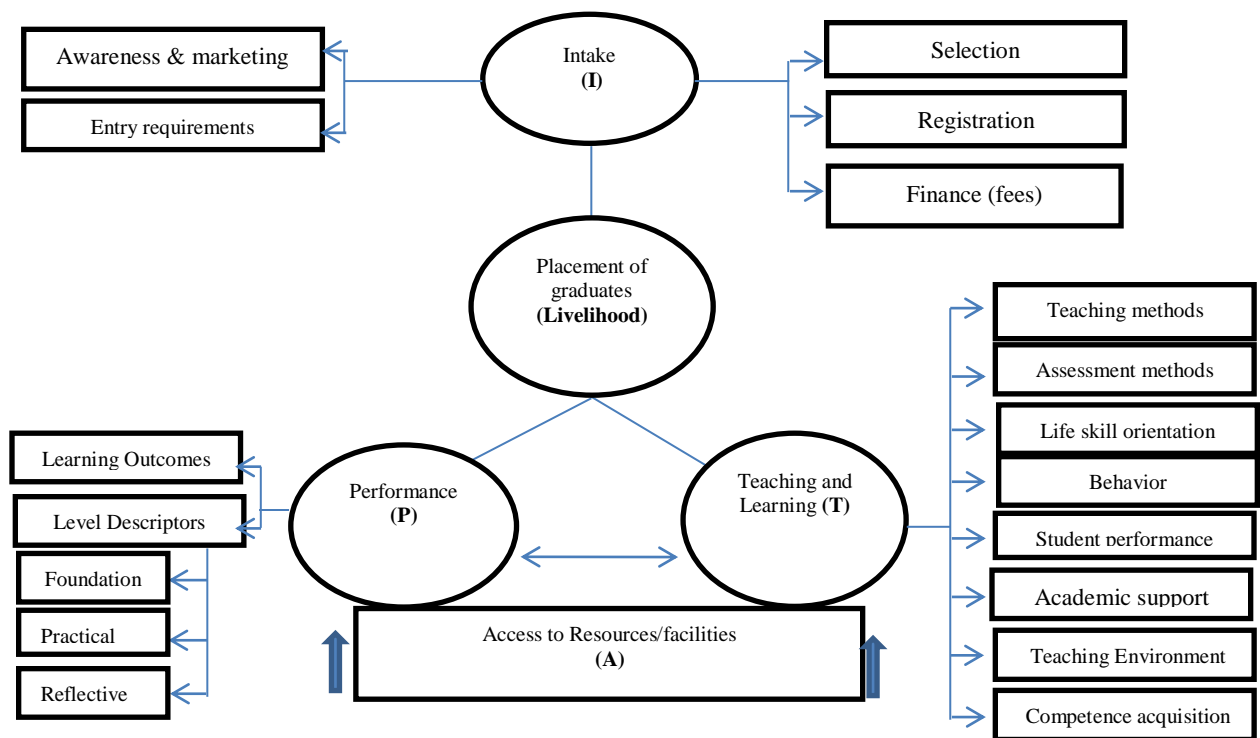
Figure 9.2: Revised Framework for evaluating the BAgricExt in prospect of a livelihood - "Placement-Centred Intake to Performance (PCIP) Framework"

As shown in figure 9.2, the connection between placement and intake reinforces what students gave as their reason to apply in BAgricExt programme (or for any programme), which is to make

246

sure they are in the field that is offering job opportunities. It also 'forces' the analysis of the qualification to look at how the intake process impacts on placement. This will help the relevant intake processes seek more than merely to be efficient in their own right, but be conscious of their role in the eventual potential livelihood of students applying to the programme.

Similarly, with Teaching and Learning and with Performance, PCIP drives the analysis of these two elements to be centred on their contribution to placement, rather than their being 'efficient' in their own terms (e.g. delivery of learning outcomes). Finally, the revised framework also shifts access to resources and facilities out of the sequence and into the position of foundation. The message here is that each of the three processes (Intake, Teaching and Learning, Performance) cannot be performed effectively without the required resources.

It anticipated that such a framework will more readily highlight the strengths and weaknesses of the BAgricExt when it is next reviewed and will do so in the essential context of increasing the possibility of graduates to establish a livelihood as a result of the successful completion of the degree.

9.4.   Future research

In this study students indicated that they do not value the fairness of examination as a way to assess the acquisition of knowledge, while institutions (in this case UKZN) present examination as one of the best ways to assess knowledge acquisition. Acknowledging that there are virtually no exam in the final (third) year of the BAgricExt, it is suggested that future research be conducted to find out how to accurately and fairly assess students competence particularly in a way that fosters long-term learning (as opposed to merely being satisfied with passing a module)?

The study highlights the importance of employment readiness, and proposes assisting graduates in the placement process. Before taking this up, it is recommended that research be done to investigate how such assistance might affect the students' sense of responsibility for looking for jobs or self-employment opportunities – as the proposal suggests that this be done by the University. The aim of such research would be how to design and implement the assistance so that it increases students' consciousness and self-motivation with regard to post-graduation livelihood choices.

References:

Council on Higher Education (CHE). (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Report of the Task Team on Undergraduate Curriculum Structure. Discussion Document. Brummeria Pretoria.

Gibbs, G. & Simpson, C. (2004). Conditions Under Which Assessment Supports Students' Learning. *Learning and Teaching in Higher Education, 1: 3-31.*

Fortune, A.E., Lee, M., & Alonzo Cavazos, A. (2007). Does Practice Make Perfect? Practicing professional skills and outcomes in social work field education. *The Clinical Supervisor.* 26(1, 2):239-263.

Appendix 1: Questionnaire for current students (first year)

Information provided will be used for the improvement of the quality of teaching and learning in the Bachelor of Agricultural Extension program at the University of KwaZulu-Natal. Please complete by writing your answer on the space provided or using a tick mark [√] where indicated. Information is confidential.

SECTION A: Demographics

Gender: Male ☐   Female ☐
 Age: ……………years.
 Race: African ☐   White ☐   Indian ☐   Coloured ☐
 Current qualification……………………………………………………………………………………
 Year of first registration: ………..
 Level: First year ☐ Second year ☐   Third year ☐
 Which of the following describes best the place where you grew up?
     -   Urban area   ☐
     -   Rural area
     -   Semi urban area   ☐
     -   Semi-rural area   ☐
 	
 What is your future career?………………………………………………………………………………

SECTION B: Intake

No	Questions
1.	How were you informed about available place in the B. Agric. Ext. program? …………………………………………………………………………..……………………………………… …………………………………………………………………………………………………
2.	Were you looking for places in other programs? Yes …… No …… If Yes, which one? ………………………………………………………………………….... What was the outcome of application there? .... …………………………………………………………………………………………………
3.	Why did you choose the B. Agric. Ext. program? .... ………………………………………………………………………………………………… What steps did you take to apply? ………………………………………………………………………………………………… ………………………………………………………………………………………………… Did you find the application process Easy? …… Complicated? .... Manageable? .... Explain your answer: ....

	What steps did you take to register? ……………………………………………………………………………………………………… ……………………………………………………………………………………………………… Did you find the registration process Easy? …… Complicated? ……… Manageable? ………… Explain your answer: ....
4.	Were you familiar with the entrance requirements? Yes……..No……. How did you meet them? ………………………………………………………………………............ ………………………………………………………………………………………… …………………………………………………………………………………………… Which requirement did you find more difficult to meet? Why? ……………………………..... ....
5.	How did you fund your study? ....
6.	What APS (Academic Point Score) did you have? Give a number.. If you don't know, tick this box☐ What mark did you get for the following matric subjects: English: …….... Mathematics: …….... Biological Science: .... Physical Science: .... Agricultural Science: ……......

SECTION C: Teaching and learning process

Please answer the items 7 to 15 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
7. The teaching activities promoted student interaction					
8. The content of modules was relevant to my degree					
9. The content in different modules was interrelated					
10. The workload in courses was manageable					
11. I had language challenges during my studies					
12. The assessment criteria for papers, assignments, tests and exams were clearly communicated in advance					
13. I received sufficient feedback on the assignments and on my test results					
14. There are meetings between class representatives and administrators					

about the learning process?					
15. There is a detention in the school for undisciplined students					

Add any suggestion for the improvement of training and learning process in your school.

....

....

16. How many hours do you spend for lectures in a week? ....

17. How many hours do you spend for practicals in a week? ....

18. How many hours do you spend for research in a week? ....

19. How many hours do you spend for assignments in a week? ....

20. How many hours do you spend for tutorials in a week? ....

21. Is English tutoring available?   Yes ☐   No ☐

22. If Yes Do you / Did you participate in the English tutoring? Yes ☐   No ☐

23. If Yes, how did it go? ....
....

24. If No, why not? ....
....

25. Is Mathematics tutoring available? Yes ☐ No ☐

26. If Yes Do you / Did you participate in the Mathematics tutoring? ☐   ☐

27. If Yes how did it go? ....
....

28. If No, why not? ....
....

29. Is Academic counselling available? Yes ☐ No ☐

30. If Yes Do you / Did you participate in Academic counselling? Yes ☐ No ☐

31. If Yes how did it go? ....

....

32. If No, why not? ....

....

33. Is Personal counselling available? Yes ☐ No ☐

34. If Yes Do you / Did you participate in the Personal counselling? Yes ☐ No ☐

35. If Yes how did it go? ....

....

36. If No, why not? ....

....

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught and how you have performed in it.
Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

	Competence	How well it was taught				How well I performed in it			
		1	2	3	4	1	2	3	4
37.	Capacity for analysis and synthesis								
38.	Capacity for applying knowledge in practice								
39.	Planning and time management								
40.	Producing and communicate information								
41.	Problem solving								
42.	Research skills								
43.	Capacity to learn								
44.	Accessing, processing and managing information								
45.	Critical and self-critical abilities								
46.	Capacity to understand the context and systems								

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught and how you have performed in it.
Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

	Competence	How well it was taught				How well I performed in it			
		1	2	3	4	1	2	3	4
47.	Capacity to adapt to new situations								
48.	Capacity for generating new ideas (creativity)								
49.	Decision-making								
50.	Teamwork								
51.	Interpersonal skills								
52.	Leadership								
53.	Capacity to identify resources and production systems								
54.	Capacity to apply basic production principles								
55.	Capacity for operational planning and evaluation								
56.	Capacity to evaluate agricultural systems								
57.	Capacity to plan and manage profitable farming system								

SECTION D: Performance

Please answer the items 58 to 67 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
58. The BAgricExt programme has enabled me to be able to transmit descriptive information, to listen, to read and understand concepts, and to articulate my own opinions.					
59. The BAgricExt programme has enabled me to be able to be able to Identify and reflect on learning processes using the Kolb learning cycle					
60. The BAgricExt programme has enabled me to be able Complete a task with the resources provided, and to develop a rudimentary project plan using simple tools in a virtual setting.					
61. The BAgricExt programme has enabled me to be able to express a sense of connectedness					

Please answer the items 58 to 67 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
62. The BAgricExt programme has enabled me to be able to participate in processes of learning and group activities.					
63. The BAgricExt program has enabled me to be able to conduct a task as a research process, and articulate rudimentary critical research in a practical.					
64. The BAgricExt program has enabled me to acquire knowledge, meaning of terms and principles on plant and animal health, physiology and reproduction of plants and animals.					
65. The BAgricExt program has enabled me to acquire knowledge in production economics, marketing and farm accounting.					
66. The BAgricExt program has enabled me to acquire basic information, meanings of terms, and principles around natural resources and environmental impact.					
67. The BAgricExt program has enabled me to acquire basic information, meanings of terms, and principles around conservation structures, farm infrastructure and machinery.					

For items 68 to 72, please indicate your performance in each area of learning by ticking the appropriate box to the right	*Excellent*	*Very good*	*Good*	*Bad*
68.	Extension				
69.	Agricultural Production				
70.	Farm Business Management				
71.	Resource Management				
72.	Farm Engineering				
For items 73-77 answer the following question: Which of the following assessments methods (Test, Assignment, Practical and Exam), do you feel represents the fairest way to demonstrate what you have learnt within the 5 areas of learning below? Why? *(for each learning area give one method and reason)*				

Learning area		Best Assessment Method *(tick one box)*	Reason
73.	Extension	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
74.	Agricultural Production	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
75.	Farm Business Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
76.	Resource Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
77.	Farm Engineering	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....

78.	Which modules did you find more difficult? Why? Provide reason per module	
	Module name	Why
79.	Which modules did you find very easy? Why? Give reason per module	
	Module name	Why
80.	What did you like most about the B. Agric. Ext. program? …… ……	
81.	What did you like least about the B. Agric. Ext. program? …… ……	
82.	What improvements would you suggest?	

SECTION E: Access, use and value of facilities

Answer the items 83 to 88 using the scale to the right by indicating how much do you agree or disagree. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
83. Access to the computer room facilitated my learning					
84. Access to the internet facilitated my learning					
Where? (*you can tick more than one if necessary*) ( )LAN ( )Library ( )Hostel ( )Internet Café ( )At friend's home ( )Other (specify)………………………….......................................					
85. We have sufficient agricultural science books in the library					

86.	The class sizes helped my learning					
87.	There were sufficient workstations/study areas and opportunities to work/study on campus/at Cedara College					
88.	There were sufficient facilities for students with a physical impairment					
89.	Add any suggestion for the improvement of facilities for good teaching and learning in your school?					

Thanks for your contribution!

Appendix 2: Questionnaire for current students (second year)

Information provided will be used for the improvement of the quality of teaching and learning in the Bachelor of Agricultural Extension program at the University of KwaZulu-Natal. Please complete by writing your answer on the space provided or using a tick mark [√] where indicated. Information is confidential.

SECTION A: Demographic

Gender: Male ☐   Female   ☐

Age: ……………years.

Race: African ☐   White ☐   Indian   ☐   Coloured ☐

Current qualification…………………………………………………………………………………

Year of first registration: ………..

Level: First year ☐ Second year ☐   Third year ☐

Which of the following describes best the place where you grew up?
- Urban area   ☐
- Rural area   ☐
- Semi urban area   ☐
- Semi-rural area   ☐

What is your future career?
………

SECTION B: Intake

No	Questions
37.	How were you informed about available place in the B. Agric. Ext. program? …………………………………………………………………... ………………………………………………………………………………………………
38.	Were you looking for places in other programs? Yes …… No …… If Yes, which one? …………………………………………………………………………………….... What was the outcome of application there? .... ………………………………………………………………………………………………
39.	Why did you choose the B. Agric. Ext. program? .... ……………………………………………………………………………………………… What steps did you take to apply? ……………………………………………………………………………………………… ……………………………………………………………………………………………… Did you find the application process Easy? …… Complicated? .... Manageable? .... Explain your answer: .... What steps did you take to register?

	…… ……… Did you find the registration process Easy? …… Complicated? ……… Manageable? ………… Explain your answer: ....
40.	Were you familiar with the entrance requirements? Yes……..No…… How did you meet them? ……………………………………………………………....................................... …………………………………………………………………………………………… …………………………………………………………………………………………… Which requirement did you find more difficult to meet? Why? ……………………………..... ……
41.	How did you fund your study? ....
42.	What APS (Academic Point Score) did you have? Give a number... If you don't know, tick this box☐ What mark did you get for the following matric subjects: English: …….... Mathematics: …….... Biological Science: .... Physical Science: .... Agricultural Science: ……......

SECTION C: Teaching and learning process

Please answer the items 7 to 15 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	**A**	**B**	**C**	**D**	**E**
43. The teaching activities promoted student interaction					
44. The content of modules was relevant to my degree					
45. The content in different modules was interrelated					

46. I had language challenges during my studies					
47. The assessment criteria for papers, assignments, tests and exams were clearly communicated in advance					
48. I received sufficient feedback on the assignments and on my test results					
49. There are meetings between class representatives and administrators about the learning process?					
50. There is a detention in the school for undisciplined students					

Add any suggestion for the improvement of training and learning process in your school.

....

....

51. How many hours do you spend for lectures in a week? ....

52. How many hours do you spend for practicals in a week? ....

53. How many hours do you spend for research in a week? ....

54. How many hours do you spend for assignments in a week? ....

55. How many hours do you spend for tutorials in a week? ....

56. Is English tutoring available?   Yes ☐   No ☐

57. If Yes Do you / Did you participate in the English tutoring? Yes ☐   No ☐

58. If Yes, how did it go? ....

....

59. If No, why not? ....

....

60. Is Mathematics tutoring available? Yes ☐ No ☐

61. If Yes Do you / Did you participate in the Mathematics tutoring? Y☐   N☐

62. If Yes how did it go? ....

....

63. If No, why not? ....

....

64. Is Academic counselling available? Yes ☐ No ☐

65. If Yes Do you / Did you participate in Academic counselling? Yes ☐ No ☐

66. If Yes how did it go? ....

....

67. If No, why not? ....

....

68. Is Personal counselling available? Yes ☐ No ☐

69. If Yes Do you / Did you participate in the Personal counselling? Yes ☐ No ☐

70. If Yes how did it go? ....

....

71. If No, why not? ....

....

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught and how you have performed in it.
Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

	Competence	How well it was taught				How well I performed in it			
		1	2	3	4	1	2	3	4
37.	Capacity for analysis and synthesis								
38.	Capacity for applying knowledge in practice								
39.	Planning and time management								
40.	Producing and communicate information								
41.	Problem solving								
42.	Research skills								
43.	Capacity to learn								
44.	Accessing, processing and managing information								
45.	Critical and self-critical abilities								
46.	Capacity to understand the context and systems								
47.	Capacity to adapt to new situations								
48.	Capacity for generating new ideas (creativity)								

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught and how you have performed in it.
Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

	Competence	How well it was taught				How well I performed in it			
		1	2	3	4	1	2	3	4
49.	Decision-making								
50.	Teamwork								
51.	Interpersonal skills								
52.	Leadership								
53.	Capacity to identify resources and production systems								
54.	Capacity to apply basic production principles								
55.	Capacity for operational planning and evaluation								
56.	Capacity to evaluate agricultural systems								
57.	Capacity to plan and manage profitable farming system								

SECTION D: Performance

Please answer the items 58 to 69 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
58. The BAgricExt program has allowed me to be able to clarify meaning in communication.					
59. The BAgricExt program has allowed me to be able to critically reflect on and make meaning from outcomes of the Kolb learning cycle.					
60. The BAgricExt program has allowed me to be able to find resources appropriate to a given task and complete the task; develop and implement a realistic project in a simple setting.					
61. The BAgricExt program has allowed me to be able to use "hard" systems tool to analyse a given "objective" system; and reflect on the use of tools in a real world setting.					
62. The BAgricExt program has allowed me to be able to participate through reflecting on own participation in group process.					

Please answer the items 58 to 69 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
63. The BAgricExt program has allowed me to be able to collect relevant "hard" data using appropriate tools and methods, and to analyse its relevance in context and in relation to theory.					

Please answer the items 58 to 69 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
64. The BAgricExt program has allowed me to be able to understand the value of partnerships; and make equitable contribution to a team or group.					
65. The BAgricExt program has allowed me to be able to understand and apply different extension approaches and tools in simple setting.					
66. The BAgricExt program has allowed me to acquire Basic management principles of basic crop and animal production system, Feeding systems available and nutritional requirements for livestock production.					
67. The BAgricExt program has allowed me to acquire knowledge for farm business management, keeping records, budgeting, and management of machinery and human resource.					
68. The BAgricExt program has allowed me to acquire knowledge on site selection and planning, land preparation, climate, soil fertility, water and vegetation.					
69. The BAgricExt programprogramme has allowed me to acquire knowledge to maintain farm infrastructure and machinery at a standard required for sustainable production.					

For items 70 to 74, please indicate your performance in each area of learning by ticking the appropriate box to the right	*Excellent*	*Very good*	*Good*	*Bad*
70.	Extension				
71.	Agricultural Production				

72.	Farm Business Management				
73.	Resource Management				
74.	Farm Engineering				

For items 75-79 answer the following question: Which of the following assessments methods (Test, Assignment, Practical and Exam), do you feel represents the fairest way to demonstrate what you have learnt within the 5 areas of learning below? Why? *(for each learning area give one method and reason)*

Learning area	Best Assessment Method*(tick one box)*	Reason
75. Extension	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
76. Agricultural Production	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
77. Farm Business Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
78. Resource Management	☐ Test	

		☐ Assignment	....
		☐ Practical	....
		☐ Exam	
		☐ All the above	
79.	Farm Engineering	☐ Test	
		☐ Assignment	....
		☐ Practical	....
		☐ Exam	
		☐ All the above	

80.	Which modules did you find more difficult? Why? Provide reason per module	
	Module name	Why

81.	Which modules did you find very easy? Why? Give reason per module	
	Module name	Why

82.	What did you like most about the B. Agric. Ext. program?
	……………………………………………………………………………………………………
	……………………………………………………………………………………………………

83.	What did you like least about the B. Agric. Ext. program?
	……………………………………………………………………………………………………
	……………………………………………………………………………………………………

84.	What improvements would you suggest?
	....
	....

SECTION E: Access, use and value of facilities

Answer the items 85 to 90 using the scale to the right by indicating how much do you agree or disagree. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
85.	Access to the computer room facilitated my learning					
86.	Access to the internet facilitated my learning					
	Where? (*you can tick more than one if necessary*) ( )LAN ( )Library ( )Hostel ( )Internet Café ( )At friend's home ( )Other (specify)……………………...					
87.	We have sufficient agricultural science books in the library					
88.	The class sizes helped my learning					
89.	There were sufficient workstations/study areas and opportunities to work/study on campus/at Cedara College					
90.	There were sufficient facilities for students with a physical impairment					
91.	Add any suggestion for the improvement of facilities for good teaching and learning in your school?					

Thanks for your contribution!

Appendix 3: Questionnaire for current students (third year and graduates)

Information provided will be used for the improvement of the quality of teaching and learning in the Bachelor of Agricultural Extension program at the University of KwaZulu-Natal. Please complete by writing your answer on the space provided or using a tick mark [√] where indicated. Information is confidential.

SECTION A: Demographic

Gender: Male ☐　　　　　　　Female ☐

Age: ……………years.

Race: African ☐　White ☐　　Indian ☐　Coloured ☐

Current qualification……………………………………………………………………………

Year of first registration: ………..

Level: First year ☐ Second year ☐　Third year ☐
　　　Graduate unemployed ☐　　Graduate employed ☐

If you have graduated but not working, specify what you are doing:
　　☐ Still looking for a job ☐ Waiting to register for further studies
　　☐ Have registered for further studies (specify)..
　　☐ My previous job came to end (specify reason)..
　　☐ Busy with family affairs
　　☐ Other (specify)…………………………………………………………………….

Which of the following describes best the place where you grew up?
　-　Urban area　　　　☐
　-　Rural area　　　　 ☐
　-　Semi urban area　　☐
　-　Semi-rural area　　 ☐

What is your future career?
…………………………………………………………………………………………………

SECTION B: Intake

No	Questions
72.	How were you informed about available place in the B. Agric. Ext. program? …………………………………………………………………... ………………………………………………………………………………………………
73.	Were you looking for places in other programs? Yes …… No …… If Yes, which one? …………………………………………………………………………....... What was the outcome of application there? .... ………………………………………………………………………………………………
74.	Why did you choose the B. Agric. Ext. program? .... ………………………………………………………………………………………………

	What steps did you take to apply? ……………………………………………………………………………………………………… ……………………………………………………………………………………………………… Did you find the application process Easy? …… Complicated? ……… Manageable? .... Explain your answer: .... What steps did you take to register? ………………………………………………………………………………………………… ………………………………………………………………………………………………… Did you find the registration process Easy? …… Complicated? ……… Manageable? .... Explain your answer: ....
75.	Were you familiar with the entrance requirements? Yes……..No……. How did you meet them? ………………………………………………………………………............. ………………………………………………………………………………………… ………………………………………………………………………………………… Which requirement did you find more difficult to meet? Why? ……………………………... …………………………………………………………………………………………………
76.	How did you fund your study? ....
77.	What APS (Academic Point Score) did you have? Give a number... If you don't know, tick this box ☐ What mark did you get for the following matric subjects: English: …….... Mathematics: …….... Biological Science: .... Physical Science: .... Agricultural Science: …….....

SECTION C: Teaching and learning process

Please answer the items 7 to 15 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
78. The teaching activities promoted student interaction					
79. The content of modules was relevant to my degree					
80. The content in different modules was interrelated					
81. The workload in courses was manageable					
82. I had language challenges during my studies					
83. The assessment criteria for papers, assignments, tests and exams were clearly communicated in advance					
84. I received sufficient feedback on the assignments and on my test results					
85. There are meetings between class representatives and administrators					

about the learning process?				
86. There is a detention in the school for undisciplined students				

Add any suggestion for the improvement of agricultural training and learning process in your BAgricExt?

....

....

87. How many hours do you spend for lectures in a week? ....

88. How many hours do you spend for practicals in a week? ....

89. How many hours do you spend for research in a week? ....

90. How many hours do you spend for assignments in a week? ....

91. How many hours do you spend for tutorials in a week? ....

92. Is English tutoring available?   Yes ☐   No ☐

93. If Yes Do you / Did you participate in the English tutoring? Yes ☐   No ☐

94. If Yes, how did it go? ....
....

95. If No, why not? ....
....

96. Is Mathematics tutoring available? Yes ☐ No ☐

97. If Yes Do you / Did you participate in the Mathematics tutoring? Yes ☐   No ☐

98. If Yes how did it go? ....
....

99. If No, why not? ....
....

100. Is Academic counselling available? Yes ☐   No ☐

101. If Yes Do you / Did you participate in Academic counselling? ☐es   No ☐

102. If Yes how did it go? ....

....

103. If No, why not? ....

   ....

104. Is Personal counselling available? Yes ☐ No ☐

105. If Yes Do you / Did you participate in the Personal counselling? ☐es   No ☐

106. If Yes how did it go? ....

   ....

107. If No, why not? ....

   ....

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught and how you have performed in it.
Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

	Competence	How well it was taught				How well I performed in it			
		1	2	3	4	1	2	3	4
37.	Capacity for analysis and synthesis								
38.	Capacity for applying knowledge in practice								
39.	Planning and time management								
40.	Producing and communicate information								
41.	Problem solving								
42.	Research skills								
43.	Capacity to learn								
44.	Accessing, processing and managing information								
45.	Critical and self-critical abilities								
46.	Capacity to understand the context and systems								
47.	Capacity to adapt to new situations								
48.	Capacity for generating new ideas (creativity)								
49.	Decision-making								
50.	Teamwork								

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught and how you have performed in it.
Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

Competence		How well it was taught				How well I performed in it			
		1	2	3	4	1	2	3	4
51.	Interpersonal skills								
52.	Leadership								
53.	Capacity to identify resources and production systems								
54.	Capacity to apply basic production principles								
55.	Capacity for operational planning and evaluation								
56.	Capacity to evaluate agricultural systems								
57.	Capacity to plan and manage profitable farming system								

SECTION D: Performance

Please answer the items 58 to 72 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
58. The BAgricExt program has allowed me to be able to communicate and illustrate concepts in use, in both written and oral form.					
59. The BAgricExt program has allowed me to be able to critically reflect on own strengths and weaknesses, and take steps to improve these and apply Kolb theory in a complex real world setting.					
60. The BAgricExt program has allowed me to be able to Identify and conduct a project, Collaborate with an organised group of rural people to initiate and conduct a development project.					
61. The BAgricExt program has allowed me to be able to apply theory and tools of Sustainable Livelihoods analysis to virtual and real world setting.					
62. The BAgricExt program has allowed me to be able to participate effectively in community groups and learn from them; and to critically assess group dynamics.					

63. The BAgricExt program has allowed me to be able to plan a research process, gather the information and analyze the results; and to critically					

review the relevant previous material.				
64. The BAgricExt program has allowed me to be able to apply stakeholder analysis tools in virtual and real world setting.				
65. The BAgricExt program has allowed me to be able to participate effectively in community groups and learn from them; and to critically assess group dynamics.				
66. The BAgricExt program has allowed me to be able to plan a research process, gather the information and analyze the results; and to critically review the relevant previous material.				
67. The BAgricExt program has allowed me to be able to apply stakeholder analysis tools in virtual and real world setting.				
68. The BAgricExt program has allowed me to be able to understand and apply extension approaches and tools in a complex setting.				
69. The BAgricExt program has allowed me to be able to plan and manage a selected production system in a sustainable manner to optimise economic return.				
70. The BAgricExt program has allowed me to be able to add value and to market the farm business effectively, to manage agriculture finances, human resource, and external farm environment.				
71. The BAgricExt program has allowed me to be able to make informed decisions for sustainable land use.				
72. The BAgricExt programme has allowed me to be able to manage the farm infrastructure and machinery.				

For items 73 to 77, please indicate your performance in each area of learning by ticking the appropriate box to the right	*Excellent*	*Very good*	*Good*	*Bad*
73. Extension				
74. Agricultural Production				
75. Farm Business Management				
76. Resource Management				
77. Farm Engineering				
For items 78-82 answer the following question: Which of the following assessments methods (Test, Assignment, Practical and Exam), do you feel represents the fairest way to demonstrate what you have learnt within the 5 areas of learning below? Why? *(for each learning area give one method and*				

reason)			
Learning area		Best Assessment Method*(tick one box)*	Reason
78.	Extension	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
79.	Agricultural Production	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
80.	Farm Business Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
81.	Resource Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
82.	Farm Engineering	☐ Test ☐ Assignment ☐ Practical	....

		☐ Exam ☐ All the above	
83.	Which modules did you find more difficult? Why? Provide reason per module		
	Module name	Why	
84.	Which modules did you very easy? Why? Give reason per module		
	Module name	Why	
85.	What did you like most about the B. Agric. Ext. program? …… ……		
86.	What did you like least about the B. Agric. Ext. program? …… ……		
87.	What improvements would you suggest?		

SECTION E: Access, use and value of facilities

Answer the items 88 to 93 using the scale to the right by indicating how much do you agree or disagree. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
88. Access to the computer room facilitated my learning					
89. Access to the internet facilitated my learning					
Where? (*you can tick more than one if necessary*) ( )LAN ( )Library ( )Hostel ( )Internet Café ( ) At friend's home					

	( )Other (specify)……………………..					
90.	We have sufficient agricultural science books in the library					
91.	The class sizes helped my learning					
92.	There were sufficient workstations/study areas and opportunities to work/study on campus/at Cedara College					
93.	There were sufficient facilities for students with a physical impairment					
94.	Add any suggestion for the improvement of facilities for good teaching and learning in your school?					

Thanks for your contribution!

Appendix 4: Questionnaire for employed graduates

Information provided will be used for the improvement of the quality of teaching and learning in the Bachelor of Agricultural Extension program at the University of KwaZulu-Natal. Please complete by writing your answer on the space provided or using a tick mark [√] where indicated. Information is confidential.

SECTION A: Demographic

Gender: Male ☐   Female   ☐
Age: ……………years.
Race: African ☐   White ☐   Indian   ☐   Coloured ☐
Current qualification……………………………………………………………………………
Year of first registration: ………..
Level: Graduate employed   ☐ Graduate unemployed   ☐

Which of the following describes best the place where you grew up?
 	
    -    Urban area   ☐
 	
    -    Rural area   ☐
 	
    -    Semi urban area   ☐
 	
    -    Semi-rural area   ☐

What is your future career?………………………………………………………………………

SECTION B: Intake

No	Questions
1.	How were you informed about available place in the B. Agric. Ext. program? …………………………………………………………... …………………………………………………………………………………………
2.	Were you looking for places in other programs? Yes …… No …… If Yes, which one? …………………………………………………………………………..... What was the outcome of application there? .... …………………………………………………………………………………………
3.	Why did you choose the B. Agric. Ext. ? ....

	………
	What steps did you take to apply?
	………
	………
	Did you find the application process Easy? …… Complicated? .... Manageable? ....
	Explain your answer: ....
	....
	What steps did you take to register?
	………
	………
	Did you find the registration process Easy? …… Complicated? .... Manageable? ....
	Explain your answer: ....
	....
4.	Were you familiar with the entrance requirements? Yes……..No…….
	How did you meet them?
	………………………………………………………………………………...........
	……………………………………………………………………………………………………
	……………………………………………………………………………………………………
	Which requirement did you find more difficult to meet? Why? …………………………..........
	……………………………………………………………………………………………………
5.	How did you fund your study? ....
	....
6.	What APS (Academic Point Score) did you have? Give a number...
	If you don't know, tick this box☐
	What mark did you get for the following matric subjects:
	English: ……..... Mathematics: ……...... Biological Science: ....
	Physical Science: .... Agricultural Science: …….......

SECTION C: Teaching and learning process

Please answer the items 7 to 15 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	**A**	**B**	**C**	**D**	**E**
7. The teaching activities promoted student interaction					

	A	**B**	**C**	**D**	**E**
8. The content of modules was relevant to my degree					
9. The content in the different modules was interrelated					
10. The workload in courses was manageable					
11. I had language challenges during my studies					
12. The assessment criteria for papers, assignments, tests and exams were clearly communicated in advance					
13. I received sufficient feedback on the assignments and on my test results					
14. There are meetings between class representatives and administrators about the learning process					
15. There is a detention in the school for undisciplined students					

Add any suggestion for the improvement of training and learning process in your BAgricExt

....

....

16. How many hours did you spend for lectures in a week? ....

17. How many hours did you spend for practicals in a week? ....

18. How many hours did you spend for research in a week? ....

19. How many hours did you spend for assignments in a week? ....

20. How many hours did you spend for tutorials in a week? ....

21. Was English tutoring available?   Yes ☐   No ☐

22. If Yes, did you participate in the English tutoring? Yes ☐   No ☐

23. If Yes, how did it go? ....
....

24. If No, why not? ....
....

25. Mathematics tutoring was available? Yes ☐ No ☐

Please answer the items 7 to 15 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E

26. If Yes, did you participate in the Mathematics tutoring? Yes ☐   No ☐

27. If Yes, how did it go? ....
....

28. If No, why not? ....
....

29. Was academic counselling available? Yes ☐No ☐
30. If Yes, did you participate in the Academic counselling? Yes ☐   No ☐
31. If Yes, how did it go? ....
....
32. If No, why not? ....
....

33. Was personal counselling available? Yes   ☐No   ☐
34. If Yes, did you participate in personal counselling? Yes ☐ No ☐
35. If Yes how did it go? ....
....
36. If No, why not? ....
....

Any additional comment about tutoring...
....
....

		How well it was taught				How well I performed in it				How relevant it is to my job			
	Competence	1	2	3	4	1	2	3	4	1	2	3	4
37.	Capacity for analysis and synthesis												
38.	Capacity for applying knowledge in practice												
39.	Planning and time management												
40.	Producing and communicate information												
41.	Problem solving												
42.	Research skills												
43.	Capacity to learn												
44.	Accessing, processing and managing information												
45.	Critical and self-critical abilities												
46.	Capacity to understand the context and systems												
47.	Capacity to adapt to new situations												
48.	Capacity for generating new ideas (creativity)												
49.	Decision-making												
50.	Teamwork												
51.	Interpersonal skills												
52.	Leadership												
53.	Capacity to identify resources and production systems												
54.	Capacity to apply basic production principles												
55.	Capacity for operational planning and evaluation												
56.	Capacity to evaluate agricultural systems												
57.	Capacity to plan and manage profitable farming system												

For each of the competences listed below, please give your opinion by indicating for each competence the extent to which it was taught, how you have performed in it, and how relevant it is on your work place. **Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent**

SECTION D: Performance

Please answer the items 58 to 72 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	**A**	**B**	**C**	**D**	**E**
58. The BAgricExt program has enabled me to communicate and illustrate concepts in use, in both written and oral form.					
59. The BAgricExt program has allowed me to be able to critically reflect on own strengths and weaknesses, and take steps to improve these and apply Kolb theory in a complex real world setting.					
60. The BAgricExt program has enabled me to Identify and conduct a project, collaborate with an organizeised group of rural people to initiate and conduct a development project.					
61. The BAgricExt program has enabled me to apply theory and tools of Sustainable Livelihoods analysis to virtual and real world setting.					
62. The BAgricExt program has allowed me to be able to participate effectively in community groups and learn from them; and to critically assess group dynamics.					
63. The BAgricExt program has enabled me to plan a research process, gather the information and analyze the results; and to critically review the relevant previous material.					
64. The BAgricExt program has enabled me to apply stakeholder analysis tools in virtual and real world setting.					
65. The BAgricExt program has enabled me to participate effectively in community groups and learn from them; and to critically assess group dynamics.					
66. The BAgricExt program has enabled me to plan a research process, gather the information and analyze the results; and to critically review the relevant previous material.					
67. The BAgricExt program has enabled me to apply stakeholder analysis tools in virtual and real world setting.					
68. The BAgricExt program has enabled me to understand and apply extension approaches and tools in a complex setting.					
69. The BAgricExt program has enabled me to plan and manage a selected production system in a sustainable manner to optimise economic return.					

70. The BAgricExt program has enabled me to add value and to market the farm business effectively, to manage agriculture finances, human resource, and external farm environment.					
71. The BAgricExt program has enabled me to make informed decisions for sustainable land use.					

Please answer the items 58 to 72 using the scale to the right by indicating to what extent you agree or disagree about the statement on Teaching & Learning as you experienced it. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
72. The BAgricExt program has enabled me to manage farm infrastructure and machinery.					

For items 73 to 77, please indicate your performance in each area of learning by ticking the appropriate box to the right	*Excellent*	*Very good*	*Good*	*Bad*
73.	Extension				
74.	Agricultural Production				
75.	Farm Business Management				
76.	Resource Management				
77.	Farm Engineering				

For items 78-82 answer the following question: Which of the following assessments methods (Test, Assignment, Practical and Exam), do you feel represents the fairest way to demonstrate what you have learnt within the 5 areas of learning below? Why? *(for each learning area give one method and reason)*		
Learning area	Best Assessment Method *(tick one box)*	Reason
78. Extension	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
79. Agricultural Production	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
80. Farm Business Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
81. Resource Management	☐ Test ☐ Assignment ☐ Practical ☐ Exam ☐ All the above	....
82. Farm Engineering	☐ Test ☐ Assignment ☐ Practical	....

		☐ Exam ☐ All the above	
83.	Which modules did you find more difficult? Why? Provide reason per module		
	Module	Why	
84.	Which modules did you find very easy? Why? Give reason per module		
	Module	Why	
85.	What did you like most about the B. Agric. Ext. program? …… ….. …… ….		
86.	What did you like least about the B. Agric. Ext. program? …… ….. …… ….		
87.	What improvements would you suggest?		

SECTION E: Access, use and value of facilities

Answer the items 88 to 93 using the scale to the right by indicating how much do you agree or disagree. **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
88. Access to the computer room facilitated my learning					
89. Access to the internet facilitated my learning					
Where? (*you can tick more than one if necessary*) ( )LAN ( )Library ( )Hostel ( )Internet Café ( )At friend's home ( )Other (*specify*)………………...					
90. We have sufficient agricultural science books in the library					
91. The class sizes helped my learning					
92. There were sufficient workstations/study areas and opportunities to work/study on campus/at Cedara College					
93. There were sufficient facilities for students with a physical					

	impairment
94.	Add any suggestion for the improvement of facilities for good teaching and learning in your school? ....

SECTION F: Placement

95.	How long did it take you to get the first job? ....Week(s).............Month(s)...........Year(s)
96.	When did you start working? ....
97.	Name of institution where you are working: ....
98.	Address/location of the institution: ....

99.	Position you occupy now: ....
100.	Is this position related to your degree? Yes ☐ No ☐ If no, how did you qualify for it? ……………………………………………………………………
101.	Type of employment *(tick one box)* ( )Permanent ( )Under contract *(specify time)* …………. ( )Temporary ( )Internship (for how long) …………..…
102.	Are you/do you intend to continue with your studies? Yes ☐ No ☐ If yes, in which program? ……………………………………When? ………………. Where? ……………………………………………………………………………………………...

103.	Please rank below **the five most important skills** , that you learned on the program, placing them according to their level of importance in your work place *(1=most important; 5 less important)*: (1) .... (2) .... (3) .... (4) .... (5) ....
104.	Did you receive any form of skill development/training while working? Yes …….No…… If yes, please specify…………………………………………………………………………………
105.	Which modules from the B Agric. programme have you found helpful in your work environment? Why do you think so?

	Module	Reason (use additional pages if needed)
106.	Students who finish in B. Agric. Ext. program are easily employed (what is your opinion?)..	
107.	What improvements would you suggest? .... …………………………………………………………………………………………………… …………………………………………………………………………………………………… ……………………………………………………………………………………………………	

Thanks for your contribution!

Appendix 5: Questionnaire for lecturers

This questionnaire will be answered by a sample of lecturers to collect information for the improvement of the quality of teaching and learning in the Bachelor of Agricultural Extension program at the University of KwaZulu-Natal. Please complete by writing your answer on the space provided or using a tick mark [√] where indicated. Information is confidential.

Part 1: Module taught by lecturer

Module Name	
Module code	
Number of credits	

Does it fall in which stream? *(Please tick a box on the right)*	Agricultural Production	
	Farm Business Management	
	Farm Engineering	
	Extension	
	Resource Management	

1.	Give a brief explanation of the module content/knowledge and skills offered

2.	Describe the extent (if any) to which the following tutoring / counselling processes help students perform better in this module	
	Process	Extent it helped students perform better in this module
	English Tutoring	
	Math tutoring	
	Academic counselling	
	Personal counselling	

	Other	
3.	What modules are needed as pre-requisites before taking this module?	
4.	What modules must be completed with this module, as co-requisites?	
5.	What are the D.P. requirements for this module?	
6.	What are the practicals or field trip requirements for this module?	
7.	How do you assess students? *(indicate the % weighting for each method)* Test: ....%; Assignments: ....%; Practical: ....%; Exam: ....%	
8.	What arrangements are made for the internal and external moderation of assessment?	
	Internal:	
	External:	
9.	What procedures are used to assure the quality of this module?	

10.	Please list the key learning outcomes of this module, the criteria used to assess attaining the outcome(s), and the method of assessment used (e.g. exam, research paper, project report)		
	Learning outcome	Assessment criteria	Assessment method(s)

11.	Which of these assessment methods would you change? What method would you use? Give your reasons		
	Method to change	Preferred method	Reason

12.	How do review/evaluation results feed back into curriculum planning, development and delivery?		
13.	Identify any critical content/knowledge, skill or learning outcome that you feel should be included in this module, but is not currently included; give your reasons		
	Detail	Identify which of the following: Content/knowledge, skill, learning outcome	Reason to add
14.	Identify any of the content, knowledge, skill or learning outcome(s) that are currently included in this module, but should not be included in this module; give your reasons		
	Detail	Identify which of the following: Content/knowledge, skill, learning outcome	Reason to remove

Part 2: Your perspective for the Program (BAgricExt / UKZN - Cedara)
Please indicate the extent to which you agree or disagree with the following statements concerning Bachelor of Agriculture program.

Tick the appropriate box using the following scale **A**=Strongly Agree **B**= Agree **C**=Neutral **D**= Disagree **E**=Strongly Disagree	A	B	C	D	E
15.	The program deals more with practice/application than it does with theory					
16.	The program deals more with theory than it does with practice/application					

17.	The program deals fairly evenly with theory and practice/application					
18.	Lecturers are expected to continually learn and seek out new ideas in this program					
19.	When I begin working with a new group of students, I have detailed knowledge of what those students learned previously					
20.	It is easy for other lecturers in this program to know what students learned in my class					
21.	Lecturers in this program expect students to complete every assignment					
22.	Lecturers in this program encourage students to keep trying even when the work is challenging					
23.	Lecturers in this program set high expectations for academic work					
24.	Students in this program respect their lecturers and other staff members					
25.	Students in this program are focused and dedicated to their academic work					
26.	There are available facilities for smooth teaching and learning in this program					
27.	There is a clear administration allowing good service delivery in this program					
28.	Students get marks for tests and assignments timeously					
	Indicate the average turnaround time for getting marks to students: _____ days					
29.	Students get a chance to review the results of tests and assignments					

Part 3: Other general questions

30.	How do you help students integrate theory with practice?
31.	What support was provided to students with academic problems? Describe any mechanism in place.

32.	What could be done, within the limits of existing resources, to improve the program''s effectiveness?
33.	How conducive did you find the teaching environment in term of students, class space, facilities, workload and ethos?

Students (behavior & discipline)	
Class space	
Facilities (computers, library, farming equipment, teaching tools,..)	....
Module workload	....
Class room ethos	....

34.	If you have any other additional comment for the improvement of the curriculum or about your work in this program, please enter your comment here

Thank you for taking the time to complete this questionnaire.
Your contribution to the study is greatly appreciated.

Appendix 6: Questions guide for employers

Name of the Company/Institution: _____

Position of participant in the Company: _____

Nature of work of the company/institution: _____

SECTION A: Questions

- How long have you been working with the graduate?

- What position does he/she occupy?

- What were the first-day competency expectations?
  - Knowledge
  - Skills
  - Attitude
  - Behaviour

- How well the graduate is responding to these expectations of employer?
  - Knowledge
  - Skills
  - Attitude
  - Behaviour

- If you feel that they lack some of the skills to perform their duties, please indicate them.
  - Knowledge
  - Skills
  - Attitude
  - Behaviour

- How do you assess the performance of these new graduates?
  - Knowledge
  - Skills
  - Attitude
  - Behaviour

- Who mentors the graduates in your organisation? How is he/she mentored?
- What forms of skill development and support are offered to employees in your organisation?
  - Knowledge
  - Skills
  - Attitude
  - Behaviour
- Provide a specific example of a significant contribution made by the graduate to your organisation
- What are the graduate's strengths and areas for improvement?

	Strength	Weakness
Knowledge		
Skills		
Attitude		
Behaviour		
Other		

- Have you experienced some problems with recent graduates who work for your Organisation? Please specify what kind of problem.
- What would be your suggestion to academic institutions about critical areas of skills improvement for effective performance in the work for this or similar positions?

Appendix 7: Questions guide for Administrative staff

Position of participant _____

This interview will cover the intake process for the B Agric AERRM. It covers: The entry requirements; the recruitment and selection process; the registration process; and fees and financial aid.

Entry requirements
1. Please confirm the entry requirements for the B Agric. APS score? Matric subjects? How many (%?) applicants meet these requirements?

The recruitment and selection process
1. How are students attracted to the program?
2. How are you informed of applications? What is the time-frame?
3. When/How do you decide to offer a place to an applicant?
4. When/How do you decide to offer housing?
5. How is the applicant informed that s/he has been offered a place?
6. What happens after an offer has been made?
7. How can/should the system be improved?

The registration process
1. Describe the registration process.
   a. Who is involved in the process? Who should be involved in the process?
   b. From your point of view, what are its strengths and weaknesses?
   c. From the student's point of view, what are its strengths and weaknesses?
2. Explain the on-line registration process
   a. From your point of view, what are its strengths and weaknesses?
   b. From the student's point of view, what are its strengths and weaknesses?
3. How can/should the system be improved?

Financial Aid
1. When/How do you decide to offer financial aid?
2. How many first year students are given financial aid in the BAgricExt program?
3. What are the requirements to be granted financial aid? How does the system work?
4. How do you deal with the case where a student has a high APS but doesn't meet financial aid requirements?
5. How can/should the system be improved?

Appendix 8: Findings on Intake process

APS score from students:

Level of students	APS (minimum and maximum)
First Year	29-38
Second Year	29-36
Third Year & Graduates	28-40
Employed	28-30

Did not know their APS score:

Level of students	Number of students
First Year	6
Second Year	5
Third Year & Graduates	12
Employed	4
Total	27

Marks scored for main subjects:

	English %	Math %	Biological Science %	Physical science %	Agricultural science
First Year	63-84	51-79	60-86	50-67	59-73
Second Year	50-87	51-70	50-84	49-65	65-85
Third Year & Graduates	50-83	41-71	50-75	52-69	61-75
Employed	58-82	42-59	64-72	48-60	65-76

Familiarity with entrance requirements (from students):

	Yes	No	Missing	Total
First Year	12	0	5	17
Second Year	11	2	1	14
Third Year & Graduates	20	3	0	23
Employed	9	1	1	11
Total	52	6	7	65

%	80%	9%	11%	100%

Perceptions of application process:

	Easy	Complicated	Manageable	Missing	Total
First Year	14	0	2	1	17
Second Year	7	2	5	0	14
Third Year & Graduates	5	6	12	0	23
Employed	6	0	3	2	11
Total	32	8	22	3	65
%	49%	12%	34%	5%	100%

Perceptions about registration process

	Easy	Complicated	Manageable	Missing	Total
First Year	8	7	2	0	17
Second Year	5	4	4	1	14
Third Year & Graduates	6	8	9	0	23
Employed	5	0	6	0	11
Total	24	19	21	1	65
%	37%	29%	32%	2%	100%

Source of funding for BAgricExt students

	NSFAS	Bursary	Parent & NSFAS	Parent & Bursary	NSFAS & Sponsor	Parent	Bank Loan	Missing	Total
First Year	10	1	0	0	1	1	0	4	17
Second Year	7	3	0	0	0	3	0	1	14
Third Year & Graduates	6	0	0	1	0	4	0	12	23
Employed	2	1	1	1	0	2	1	3	11
Total	25	5	1	2	1	10	1	20	65
%	38.5%	7.7%	1.5%	3.1%	1.5%	15.4%	1.5%	30.8%	100%

Intake numbers in BAgricExt from 2010 to 2015

Year	Number of registered students
2010	8
2011	16
2012	23
2013	20
2014	15
2015	17

Total	99

Appendix 9: Findings on Teaching and Learning

Time spent per week for academic activity

	Time spent per week for academic activity (hours)				
Level	Lectures	Practicals	Research	Assignments	Tutorials
First Year	12 to 22	2 to 19	3 to 18	5 to 20	2 to 16
Second Year	2 to 22	3 to 13	2 to 10	2 to 8	2 to 4
Third Year & graduates	3 to 35	2 to 15	3 to 20	5 to 40	2 to 15

Challenges in English language

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Missing	Total
First Y	1	4	0	8	3	1	17
Second Y	3	5	0	3	3	0	14
Third Y	4	1	5	8	5	0	23
Employed	0	0	0	5	6	0	11
Total	8	10	5	24	17	1	65
%	12.3%	15.4%	7.7%	36.9%	26.2%	1.5%	100%

Assessment criteria in BAgricExt

The assessment criteria for papers, assignments, tests and exams were clearly communicated in advance

A=Strongly Agree B= Agree C=Neutral D= Disagree E=Strongly Disagree

	A	B	C	D	E	Missing	Total
First Y	9	8	0	0	0	0	17
Second Y	4	6	4	0	0	0	14
Third Y	4	11	7	1	0	0	23
Employed	5	6	0	0	0	0	11
	22	31	11	1	0	0	65

I received sufficient feedback on the assignments and on my test results

	A	B	C	D	E	Missing	Total
First Y	10	4	2	0	1	0	17
Second Y	6	5	1	1	0	1	14
Third Y	6	11	6	0	0	0	23
Employed	3	8	0	0	0	0	11
	25	28	9	1	1	1	65

Assessment in the 5 areas of learning:
Extension
Preferred assessment method in Extension area of learning

	Test	Assignment	Practical	Exam	All the above	Missing	Total
First Year	3	12	2	0	0	0	17
Second Year	2	9	1	1	0	1	14
Third Year	0	14	8	0	0	1	23
Employed	0	3	5	0	0	3	11
Total	5	38	16	1	0	5	65
%	7.7%	58.5%	24.6%	1.5%	0%	7.7%	100%

Agricultural Production
Preferred assessment method in Agricultural Production area of learning

	Test	Assignment	Practical	Exam	All the above	Missing	Total
First Year	1	3	3	2	0	8	17
Second Year	5	2	6	0	0	1	14
Third Year	13	1	7	0	2	0	23
Employed	1	2	3	2	0	3	11
Total	20	8	19	4	2	12	65
%	30.8%	12.3%	29.2%	6.2%	3%	18.5%	100%

Farm Business Management
Preferred assessment method in Farm Business Management area of learning

	Test	Assignment	Practical	Exam	All the above	Missing	Total
First Year	3	2	0	2	0	10	17
Second Year	5	4	2	1	0	2	14
Third Year	6	6	6	0	0	5	23
Employed	3	3	0	2	0	3	11
Total	17	15	8	5	0	20	65
%	26.1%	23.1%	12.3%	7.7%	0%	30.8%	100%

Resource Management
Preferred assessment method in Resource Management area of learning

	Test	Assignment	Practical	Exam	All the above	Missing	Total
First Year	4	1	2	2	0	8	17
Second Year	3	2	6	0	0	3	14
Third Year	3	6	12	2	0	0	23
Employed	1	3	3	1	0	3	11
Total	11	12	23	5	0	14	65

	Test	Assignment	Practical	Exam	All the above	Missing	Total
%	16.9%	18.5%	35.4%	7.7%	0%	21.5%	100%

Farm Engineering
Preferred assessment method in Farm Engineering area of learning

	Test	Assignment	Practical	Exam	All the above	Missing	Total
First Year	2	0	8	0	0	7	17
Second Year	1	5	5	1	0	2	14
Third Year	3	5	14	1	0	0	23
Employed	0	0	7	2	0	2	11
Total	6	10	34	4	0	11	65
%	9.2%	15.4%	52.3%	6.2%	0%	16.9%	100%

Is English tutoring available?   Yes No

	YES	NO	Missing	Total
First Y	17	0	0	17
Second Y	6	6	2	14
Third Y	17	6	0	23
Employed	7	4	0	11
	47	16	2	65

If Yes Do you / Did you participate in the English tutoring?

	YES	NO	Missing	Total
First Y	10	7	0	17
Second Y	2	7	5	14
Third Y	10	6	7	23
Employed	3	5	3	11
	25	25	15	65

Is Mathematics tutoring available?

	YES	NO	Missing	Total
First Y	0	17	0	17
Second Y	0	13	1	14
Third Y	4	19	0	23
Employed	6	3	2	11
	10	52	3	65

If Yes Do you / Did you participate in the Mathematics tutoring?

	YES	NO	Missing	Total
First Y	0	0	17	17
Second Y	0	4	10	14
Third Y	3	0	20	23
Employed	3	3	5	11
	6	7	52	65

Is Academic counselling available?

	YES	NO	Missing	Total
First Y	17	0	0	17

Second Y	13	0	1	14
Third Y	20	1	2	23
Employed	10	0	1	11
	60	1	4	65

If Yes Do you / Did you participate in Academic counselling?

	YES	NO	Missing	Total
First Y	12	5	0	17
Second Y	7	6	1	14
Third Y	11	8	4	23
Employed	4	7	0	11
	34	26	5	65

Is Personal counselling available?

	YES	NO	Missing	Total
First Y	11	6	0	17
Second Y	12	2	0	14
Third Y	21	2	0	23
Employed	9	0	2	11
	53	10	2	65

If Yes Do you / Did you participate in the Personal counselling?

	YES	NO	Missing	Total
First Y	1	8	8	17
Second Y	6	6	2	14
Third Y	3	16	4	23
Employed	2	7	2	11
	12	37	16	65

Acquisition of competences in BAgricExt

Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent
How well it was taught

	Bad	Good	Very good	Excellent	Missing	Total
First Y	0	3	3	11	0	17
Second Y	0	6	4	0	4	14
Third Y	0	8	14	1	0	23
Employed	0	5	4	2	0	11
	0	22	25	14	4	65

Capacity for applying knowledge in practice

First Y	3	0	7	7	0	17
Second Y	0	6	3	2	3	14
Third Y	0	4	12	4	3	23
Employed	0	1	4	6	0	11
			26			

Planning and time management

First Y	0	3	5	9	0	17

Second Y	0	3	6	2	3	14
Third Y	1	6	9	5	2	23
Employed	0	2	6	3	0	11
			26			

Producing and communicate information

First Y	0	4	3	9	1	17
Second Y	1	2	4	4	3	14
Third Y	0	7	11	4	1	23
Employed	0	1	3	7	0	11
				24		

Problem solving

First Y	0	3	10	4	0	17
Second Y	0	3	4	4	3	14
Third Y	0	5	13	4	1	23
Employed	0	1	4	6	0	11
			31			

Research skills

First Y	0	1	1	15	0	17
Second Y	0	2	3	6	3	14
Third Y	1	7	7	7	1	23
Employed	0	1	4	6	0	11
				34		

Capacity to learn

First Y	1	3	5	8	0	17
Second Y	0	3	3	5	3	14
Third Y	0	4	9	9	1	23
Employed	0	1	4	6	0	11
				28		

Accessing, processing and managing information

First Y	0	1	8	8	0	17
Second Y	1	3	4	3	3	14
Third Y	0	4	13	5	1	23
Employed	0	2	7	2	0	11
			32			

Critical and self-critical abilities

First Y	2	1	7	7	0	17
Second Y	0	6	4	1	3	14

Third Y	0	8	9	5	1	23
Employed	0	7	4	0	0	11
			24			

Capacity to understand the context and systems

First Y	2	1	11	3	0	17
Second Y	1	3	2	5	3	14
Third Y	0	4	14	4	1	23
Employed	0	1	4	6	0	11
			31			

Capacity to adapt to new situations

First Y	1	2	10	4	0	17
Second Y	1	1	5	4	3	14
Third Y	1	5	12	4	1	23
Employed	0	2	3	6	0	11
			30			

Capacity for generating new ideas(creativity)

First Y	0	2	6	8	1	17
Second Y	1	1	3	6	3	14
Third Y	0	2	11	7	3	23
Employed	0	2	4	5	0	11
			24	26		

Decision-making

First Y	0	2	7	7	1	17
Second Y	0	3	4	4	3	14
Third Y	0	6	13	4	0	23
Employed	0	2	3	6	0	11
			27			

Teamwork

First Y	0	2	4	11	0	17
Second Y	0	0	4	6	4	14
Third Y	0	4	4	14	1	23
Employed	0	1	0	10	0	11
				41		

Interpersonal skills

First Y	0	4	6	7	0	17

Second Y	0	4	3	4	3	14
Third Y	0	5	11	6	1	23
Employed	0	2	4	4	1	11
			24			

Leadership

First Y	0	3	5	9	0	17
Second Y	1	2	3	5	3	14
Third Y	0	8	9	5	1	23
Employed	0	2	3	4	2	11
				23		

Capacity to identify resources and production systems

First Y	0	3	7	7	0	17
Second Y	0	0	5	6	3	14
Third Y	0	5	7	10	1	23
Employed	0	1	4	4	2	11
			23	27		

Capacity to apply basic production principles

First Y	2	1	6	6	2	17
Second Y	0	2	5	4	3	14
Third Y	0	4	6	12	1	23
Employed	0	1	4	4	2	11
				26		

Capacity for operational planning and evaluation

First Y	1	3	8	5	0	17
Second Y	0	4	2	5	3	14
Third Y	0	5	8	10	0	23
Employed	0	2	2	5	2	11
				25		

Capacity to evaluate agricultural systems

First Y	3	1	5	8	0	17
Second Y	0	2	4	5	3	14
Third Y	0	5	8	10	0	23
Employed	0	0	5	4	2	11
				27		

Capacity to plan and manage profitable farming system

First Y	1	5	6	5	0	17

Second Y	0	2	6	3	3	14
Third Y	0	5	7	11	0	23
Employed	0	2	4	3	2	11
			23			

The competencies that students found were taught at the excellence level are classified according to their scored %

Rank	Competencies	%
	First year	
1	Research skills	88%
2	Capacity for analysis and synthesis	65%
	Teamwork	
3	Planning and time management	53%
	Producing and communicate information	
	Leadership	
4	Capacity to learn	47%
	Accessing, processing and managing information	
	Capacity for generating new ideas(creativity)	
	Capacity to evaluate agricultural systems	
	Second year	
1	Research skills	43%
	Capacity for generating new ideas(creativity)	
	Teamwork	
	Capacity to identify resources and production systems	
2	Capacity to learn	36%
	Leadership	36%
	Capacity for operational planning and evaluation	36%
	Capacity to evaluate agricultural systems	36%
	Third year	
1	Teamwork	61%
2	Capacity to apply basic production principles	52%
3	Capacity to plan and manage profitable farming system	48%
4	Capacity to identify resources and production systems	43%
	Capacity for operational planning and evaluation	
	Capacity to evaluate agricultural systems	
5	Capacity to learn	39%

The competencies that students found were taught very well (very good) are classified according to their scored %

	Competences	% of Very well taught
1.	Accessing, processing and managing information	49%
2.	Problem solving	48%
	Capacity to understand the context and systems	48%

3.	Capacity to adapt to new situations	46%
4.	Decision-making	42%
5.	Capacity for applying knowledge in practice	40%
	Planning and time management	40%
6.	Capacity for analysis and synthesis	38%
7.	Critical and self-critical abilities	37%
8.	Capacity to plan and manage profitable farming system	35%

Lecturers' perception about BAgricExt
A=Strongly Agree B= Agree C=Neutral D= Disagree E=Strongly Disagree

	A	B	C	D	E
15. The program deals more with practice/application than it does with theory	9%	18%	55%	18%	0%
16. The program deals more with theory than it does with practice/application	0%	46%	27%	18%	9%
17. The program deals fairly evenly with theory and practice/application	9%	46%	27%	18%	0%
18. Lecturers are expected to continually learn and seek out new ideas in this program	27%	36%	9%	27%	0%
19. When I begin working with a new group of students, I have detailed knowledge of what those students learned previously	0%	27%	46%	18%	9%
20. It is easy for other lecturers in this program to know what students learned in my class	9%	36%	27%	27%	0%
21. Lecturers in this program expect students to complete every assignment	46%	46%	0%	0%	0%
22. Lecturers in this program encourage students to keep trying even when the work is challenging	27%	64%	9%	0%	0%
23. Lecturers in this program set high expectations for academic work	9%	64%	27%	0%	0%
24. Students in this program respect their lecturers and other staff members	18%	46%	27%	9%	0%
25. Students in this program are focused and dedicated to their academic work	0%	27%	73%	0%	0%

26. There are available facilities for smooth teaching and learning in this program	9%	82%	0%	0%	0%
27. There is a clear administration allowing good service delivery in this program	0%	36%	55%	9%	0%
28. Students get marks for tests and assignments timeously	9%	18%	46%	27%	0%
Indicate the average turnaround time for getting marks to students: _____ days	5- 21 days				
29. Students get a chance to review the results of tests and assignments	27%	64%	0%	0%	0%

Appendix 10: Findings on Access, value and use of facilities

A=Strongly Agree B= Agree C=Neutral D= Disagree E=Strongly Disagree

Access to the computer room facilitated my learning

	A	B	C	D	E	Missing	Total
First Y	9	5	2	1	0	0	17
Second Y	5	4	5	0	0	0	14
Third Y	2	7	6	2	5	1	23
Employed	5	1	2	0	0	3	11
Total	21	17	15	3	5	4	65
%	32	26	23	5	8	6	100

Access to the internet facilitated my learning

	A	B	C	D	E	Missing	Total
First Y	7	5	5	0	0	0	17
Second Y	2	7	2	0	0	3	14
Third Y	3	9	4	2	4	1	23
Employed	4	3	1	0	0	3	11
Total	16	24	12	2	4	7	65
%	25	37	18	3	6	11	100

Where do you access internet?

	LAN	Library	Hostel	Internet Café	At a friends' home	Other
First Y	17	14	1	0	0	1
Second Y	11	10	6	0	0	2
Third Y	13	14	7	0	0	6
Employed	7	7	0	0	0	0
Total	48	45	14	0	0	9
%	74	69	22	0	0	14

We have sufficient agricultural science books in the library

	A	B	C	D	E	Missing	Total
First Y	5	3	6	1	2	0	17
Second Y	3	3	3	1	2	2	14
Third Y	2	10	3	6	2	0	23
Employed	0	3	0	3	1	4	11
Total	10	19	12	11	7	6	65
%	15	29	18	17	11	9	100

The class sizes helped my learning

	A	B	C	D	E	Missing	Total
First Y	5	8	2	2	0	0	17
Second Y	4	4	2	1	1	2	14
Third Y	9	9	5	0	0	0	23
Employed	3	3	2	0	0	3	11
Total	21	24	11	3	1	5	65
%	32	37	17	5	2	8	100

There were sufficient workstations/study areas and opportunities to work/study on campus/at Cedara College

	A	B	C	D	E	Missing	Total
First Y	9	6	1	1	0	0	17
Second Y	2	4	3	1	2	2	14
Third Y	6	8	3	2	3	1	23
Employed	2	3	0	3	1	2	11
Total	19	21	7	7	6	5	65
%	29	32	11	11	9	8	100

There were sufficient facilities for students with a physical impairment

	A	B	C	D	E	Missing	Total
First Y	5	4	7	1	0	0	17
Second Y	1	2	7	0	2	2	14
Third Y	4	4	10	2	2	1	23
Employed	1	1	2	3	0	4	11
Total	11	11	26	6	4	7	65
%	17	17	40	9	6	11	100

Appendix 11: Findings on Performance

a) Performance in the 5 learning areas of BAgricExt

Agricultural Extension

	Excellent	Very Good	Good	Bad	Missing	Total
First Y	0	1	16	0	0	17
Second Y	4	3	5	1	1	14
Third Y	6	8	9	0	0	23
Employed	4	2	2	0	3	11
Total	14	14	32	1	4	65
%	22	22	49	2	6	100

Agricultural Production

	Excellent	Very Good	Good	Bad	Missing	Total
First Y	0	0	8	2	7	17
Second Y	3	5	5	0	1	14
Third Y	1	10	10	2	0	23
Employed	0	3	4	0	4	11
Total	4	18	27	4	12	65
%	6	28	42	6	18	100

Farm Business Management

	Excellent	Very Good	Good	Bad	Missing	Total
First Y	0	0	5	1	11	17
Second Y	5	6	2	0	1	14
Third Y	4	5	14	0	0	23
Employed	0	3	4	0	4	11
Total	9	14	25	1	16	65
%	14	22	38	2	25	100

Resource Management

	Excellent	Very Good	Good	Bad	Missing	Total
First Y	0	0	9	1	7	17
Second Y	1	6	6	0	1	14
Third Y	1	10	12	0	0	23
Employed	1	2	4	2	2	11
Total	3	18	31	3	10	65
%	5	28	48	5	15	100

Farm Engineering

	Excellent	Very Good	Good	Bad	Missing	Total
First Y	0	1	8	1	7	17
Second Y	2	5	5	1	1	14
Third Y	0	4	14	5	0	23
Employed	0	2	3	0	6	11
Total	2	12	30	7	14	65
%	3	18	46	11	22	100

b) Performance on level descriptors
A=Strongly Agree B= Agree C=Neutral D= Disagree E=Strongly Disagree
First year

	FIRST YEAR	A	B	C	D	E	Missing	Total
58	The BAgricExt program has enabled me to be able to transmit descriptive information, to listen, to read and understand concepts, and to articulate my own opinions.	13	2	2	0	0	0	17
59	The BAgricExt program has enabled me to be able to Identify and reflect on learning processes using the Kolb learning cycle	2	7	4	1	3	0	17
60	The BAgricExt program has enabled me to be able Complete a task with the resources provided, and to develop a rudimentary project plan using simple tools in a virtual setting.	12	1	4	0	0	0	17
61	The BAgricExt program has enabled me to be able to express a sense of connectedness	10	2	4	1	0	0	17
62	The BAgricExt has enabled me to be able to participate in processes of learning and group activities.	13	4	0	0	0	0	17
63	The BAgricExt has enabled me to be able to conduct a task as a research process, and articulate rudimentary critical research in a practical.	3	13	1	0	0	0	17
64	The BAgricExt has enabled me to acquire knowledge, meaning of terms and principles on plant and animal health, physiology and reproduction of plants and animals.	7	6	0	2	1	1	17
65	The BAgricExt has enabled me to acquire knowledge in production economics, marketing and farm accounting.	4	7	0	5	1	0	17
66	The BAgricExt program has enabled me to acquire basic information, meanings of terms, and principles around natural resources and	11	5	0	1	0	0	17

| 67 | The BAgricExt program has enabled me to acquire basic information, meanings of terms, and principles around conservation structures, farm infrastructure and machinery. | 9 | 5 | 1 | 1 | 1 | 0 | 17 |

Second Year

		A	B	C	D	E	Missing	Total
58	The BAgricExt program has allowed me to be able to clarify meaning in communication.	6	6	0	0	1	1	14
59	The BAgricExt program has allowed me to be able to critically reflect on and make meaning from outcomes of the Kolb learning cycle.	4	3	4	1	0	2	14
60	The BAgricExt program has allowed me to be able to find resources appropriate to a given task and complete the task; develop and implement a realistic project in a simple setting.	6	6	1	0	0	1	14
61	The BAgricExt program has allowed me to be able to use "hard" systems tool to analyse a given "objective" system; and reflect on the use of tools in a real world setting.	5	5	3	0	0	1	14
62	The BAgricExt program has allowed me to be able to participate through reflecting on own participation in group process.	7	2	4	0	0	1	14
63	The BAgricExt program has allowed me to be able to collect relevant "hard" data using appropriate tools and methods, and to analyse its relevance in context and in relation to theory.	6	4	3	0	0	1	14
64	The BAgricExt program has allowed me to be able to understand the value of partnerships; and make equitable contribution to a team or group.	8	4	1	0	0	1	14
65	The BAgricExt program has allowed me to be able to understand and apply different extension approaches and tools in simple setting.	8	3	2	0	0	1	14
66	The BAgricExt program has allowed me to acquire Basic management principles of basic crop and animal production system, Feeding systems available and nutritional requirements for livestock production	6	5	1	1	0	1	14
67	The BAgricExt program has allowed me to acquire knowledge for farm business management, keeping records,	9	3	1	0	0	1	14

		A	B	C	D	E	Missing	Total
	budgeting, and management of machinery and human resource.							
68	The BAgricExt program has allowed me to acquire knowledge on site selection and planning, land preparation, climate, soil fertility, water and vegetation.	7	5	0	1	0	1	14
69	The BAgricExt program has allowed me to acquire knowledge to maintain farm infrastructure and machinery at a standard required for sustainable production.	7	3	3	0	0	1	14

Third Year

		A	B	C	D	E	Missing	Total
58	The BAgricExt program has allowed me to be able to communicate and illustrate concepts in use, in both written and oral form.	13	6	3	1	0	0	23
59	The BAgricExt program has allowed me to be able to critically reflect on own strengths and weaknesses, and take steps to improve these and apply Kolb theory in a complex real world setting.	11	11	0	1	0	0	23
60	The BAgricExt program has allowed me to be able to Identify and conduct a project, Collaborate with an organized group of rural people to initiate and conduct a development project.	11	10	0	2	0	0	23
61	The BAgricExt program has allowed me to be able to apply theory and tools of Sustainable Livelihoods analysis to virtual and real world setting.	8	11	2	2	0	0	23
62	The BAgricExt program has allowed me to be able to participate effectively in community groups and learn from them; and to critically assess group dynamics.	10	10	2	1	0	0	23
63	The BAgricExt program has allowed me to be able to plan a research process, gather the information and analyze the results; and to critically review the relevant previous material.	8	11	2	2	0	0	23
64	The BAgricExt program has allowed me to be able to apply stakeholder analysis tools in virtual and real world setting.	6	11	4	2	0	0	23
65	The BAgricExt program has allowed me to be able to participate effectively in community groups and learn from them; and to critically assess group dynamics.	7	12	2	1	0	1	23
66	The BAgricExt program has allowed me to be able to plan a research process, gather the information and analyze the results; and to critically review the relevant previous material.	6	15	0	2	0	0	23
67	The BAgricExt program has allowed me to be able to apply stakeholder analysis	7	10	3	2	0	1	23

68	The BAgricExt program has allowed me to be able to understand and apply extension approaches and tools in a complex setting.	8	8	6	1	0	0	23
69	The BAgricExt program has allowed me to be able to plan and manage a selected production system in a sustainable manner to optimise economic return.	7	8	6	2	0	0	23
70	The BAgricExt program has allowed me to be able to add value and to market the farm business effectively, to manage agriculture finances, human resource, and external farm environment.	4	12	5	2	0	0	23
71	The BAgricExt program has allowed me to be able to make informed decisions for sustainable land use.	11	9	2	1	0	0	23
72	The BAgricExt program has allowed me to be able to manage the farm infrastructure and machinery.	8	9	3	3	0	0	23

c) Performance and Placement

Scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

Capacity for analysis and synthesis

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	1	6	10	0	0	17							
Second Y	1	5	5	0	3	14							
Third Y	0	13	8	0	2	23							
Employed	1	1	7	0	2	11		0	3	1	4	3	11
Total	3	25	30	0	7	65							
%	5	38	46	0	11	100		0	27	9	36	27	100

Capacity for applying knowledge in practice

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	1	7	7	2	0	17							
Second Y	0	4	4	2	4	14							
Third Y	0	7	11	1	4	23							
Employed	0	2	4	5	0	11		0	1	1	8	1	11
Total	1	20	26	10	8	65							
%	2	31	40	15	12	100		0	9	9	73	9	100

Planning and time management

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	2	7	7	1	0	17							
Second Y	2	6	2	2	2	14							
Third Y	3	9	4	3	4	23							
Employed	1	6	3	1	0	11		0	0	3	7	1	11
Total	8	28	16	7	6	65							
%	12	43	25	11	9	100		0	0	27	64	9	100

Producing and communicate information

	How well I performed in it						How relevant it is to my job					
	1	2	3	4	Missing	Total	1	2	3	4	Missing	Total
First Y	0	8	6	3	0	17						
Second Y	0	3	6	3	2	14						
Third Y	0	13	7	1	2	23						
Employed	0	1	8	2	0	11	0	0	4	6	1	11
Total	0	25	27	9	4	65						
%	0	38	42	14	6	100	0	0	36	55	9	100

Problem solving

	How well I performed in it						How relevant it is to my job					
	1	2	3	4	Missing	Total	1	2	3	4	Missing	Total
First Y	0	5	11	1	0	17						
Second Y	0	4	4	4	2	14						
Third Y	2	8	10	1	2	23						
Employed	0	3	8	0	0	11	0	2	2	6	1	11
Total	2	20	33	6	4	65						
%	3	31	51	9	6	100	0	18	18	55	9	100

Research skills

	How well I performed in it						How relevant it is to my job					
	1	2	3	4	Missing	Total	1	2	3	4	Missing	Total
First Y	0	8	8	1	0	17						
Second Y	0	3	3	6	2	14						
Third Y	1	14	4	2	2	23						
Employed	0	4	7	0	0	11	0	2	5	3	1	11
Total	1	29	22	9	4	65						
%	2	45	34	14	6	100	0	18	45	27	9	100

Capacity to learn

	How well I performed in it						How relevant it is to my job					
	1	2	3	4	Missing	Total	1	2	3	4	Missing	Total
First Y	0	8	8	1	0	17						
Second Y	0	3	3	6	2	14						
Third Y	1	14	4	2	2	23						
Employed	0	4	7	0	0	11	0	2	5	3	1	11
Total	1	29	22	9	4	65						
%	2	45	34	14	6	100	0	18	45	27	9	100

Accessing, processing and managing information

	How well I performed in it						How relevant it is to my job					
	1	2	3	4	Missing	Total	1	2	3	4	Missing	Total
First Y	0	2	12	2	1	17						
Second Y	1	4	1	5	3	14						
Third Y	1	12	7	1	2	23						
Employed	0	3	8	0	0	11	0	0	6	4	1	11
Total	2	21	28	8	6	65						
%	3	32	43	12	9	100	0	0	55	36	9	100

Critical and self-critical abilities

	How well I performed in it						How relevant it is to my job					
	1	2	3	4	Missing	Total	1	2	3	4	Missing	Total

	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	0	4	6	6	1	17							
Second Y	0	6	3	2	3	14							
Third Y	0	11	8	2	2	23							
Employed	0	6	4	1	0	11		0	4	3	3	1	11
Total	0	27	21	11	6	65							
%	0	42	32	17	9	100		0	36	27	27	9	100

Capacity to understand the context and systems

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	2	4	6	5	0	17							
Second Y	0	5	4	2	3	14							
Third Y	0	12	6	3	2	23							
Employed	1	1	4	5	0	11		0	1	3	6	1	11
Total	3	22	20	15	5	65							
%	5	34	31	23	8	100		0	9	27	55	9	100

Capacity to adapt to new situations

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	1	5	5	6	0	17							
Second Y	0	3	5	3	3	14							
Third Y	1	9	7	3	3	23							
Employed	0	3	3	4	1	11		0	2	3	5	1	11
Total	2	20	20	16	7	65							
%	3	31	31	25	11	100		0	18	27	45	9	100

Capacity for generating new ideas (creativity)

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	3	6	7	1	0	17							
Second Y	1	2	3	5	3	14							
Third Y	4	6	7	4	2	23							
Employed	0	3	4	4	0	11		1	1	4	4	1	11
Total	8	17	21	14	5	65							
%	12	26	32	22	8	100		9	9	36	36	9	100

Decision-making

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	1	2	6	8	0	17							
Second Y	0	3	4	4	3	14							
Third Y	0	11	8	2	2	23							
Employed	0	3	3	5	0	11		0	0	2	8	1	11
Total	1	19	21	19	5	65							
%	2	29	32	29	8	100		0	0	18	73	9	100

Teamwork

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total

	1	2	3	4		Total		1	2	3	4		Total
First Y	1	2	6	8	0	17							
Second Y	0	3	4	4	3	14							
Third Y	0	11	8	2	2	23							
Employed	0	3	3	5	0	11		0	0	2	8	1	11
Total	1	19	21	19	5	65							
%	2	29	32	29	8	100		0	0	18	73	9	100

Interpersonal skills

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	0	7	7	3	0	17							
Second Y	0	5	2	4	3	14							
Third Y	1	7	6	7	2	23							
Employed	0	0	6	5	0	11		0	2	2	6	1	11
Total	1	19	21	19	5	65							
%	2	29	32	29	8	100		0	18	18	55	9	100

Leadership

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	3	7	5	2	0	17							
Second Y	1	3	3	4	3	14							
Third Y	4	4	8	5	2	23							
Employed	0	1	5	4	1	11		1	0	1	6	3	11
Total	8	15	21	15	6	65							
%	12	23	32	23	9	100		9	0	9	55	27	100

Capacity to identify resources and production systems

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	1	8	6	2	0	17							
Second Y	0	2	5	4	3	14							
Third Y	2	3	10	6	2	23							
Employed	0	2	3	4	2	11		0	2	3	3	3	11
Total	3	15	24	16	7	65							
%	5	23	37	25	11	100		0	18	27	27	27	100

Capacity to apply basic production principles

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	0	6	5	2	4	17							
Second Y	0	2	4	5	3	14							
Third Y	0	9	9	2	3	23							
Employed	0	2	5	2	2	11		1	1	2	4	3	11
Total	0	19	23	11	12	65							
%	0	29	35	17	18	100		9	9	18	36	27	100

Capacity for operational planning and evaluation

	How well I performed in it							How relevant it is to my job					
	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total

	1	2	3	4	Missing	Total		1	2	3	4	Missing	Total
First Y	2	4	8	3	0	17							
Second Y	0	5	3	3	3	14							
Third Y	0	11	10	0	2	23							
Employed	0	3	3	3	2	11		0	1	2	5	3	11
Total	2	23	24	9	7	65							
%	3	35	37	14	11	100		0	9	18	45	27	100

Capacity to evaluate agricultural systems

	How well I performed in it							How relevant it is to my job					
	1	**2**	**3**	**4**	**Missing**	**Total**		**1**	**2**	**3**	**4**	**Missing**	**Total**
First Y	2	7	4	4	0	17							
Second Y	0	3	4	4	3	14							
Third Y	2	8	7	4	2	23							
Employed	0	2	4	3	2	11		0	1	3	4	3	11
Total	4	20	19	15	7	65							
%	6	31	29	23	11	100		0	9	27	36	27	100

Capacity to plan and manage profitable farming system

	How well I performed in it							How relevant it is to my job					
	1	**2**	**3**	**4**	**Missing**	**Total**		**1**	**2**	**3**	**4**	**Missing**	**Total**
First Y	3	6	5	3	0	17							
Second Y	2	2	4	3	3	14							
Third Y	0	9	9	3	2	23							
Employed	0	3	4	2	2	11		1	1	2	4	3	11
Total	5	20	22	11	7	65							
%	8	31	34	17	11	100		9	9	18	36	27	100

Appendix 12: Placement / How relevant competence was on workplace

Use the scale: 1= Bad; 2= Good; 3=Very Good; 4= Excellent

Capacity for analysis and synthesis

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	3	1	4	3	11
%	0	27	9	36	27	100

Capacity for applying knowledge in practice

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	1	1	8	1	11
%	0	9	9	73	9	100

Planning and time management

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	0	3	7	1	11
%	0	0	27	64	9	100

Producing and communicate information

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	0	4	6	1	11
%	0	0	36	55	9	100

Problem solving

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	2	2	6	1	11
%	0	18	18	55	9	100

Research skills

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	2	5	3	1	11
%	0	18	45	27	9	100

Capacity to learn

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	1	3	6	1	11
%	0	9	27	55	9	100

Accessing, processing and managing information

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	0	6	4	1	11
%	0	0	55	36	9	100

Critical and self-critical abilities

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	4	3	3	1	11
%	0	36	27	27	9	100

Capacity to understand the context and systems

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	1	3	6	1	11
%	0	9	27	55	9	100

Capacity to adapt to new situations

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	2	3	5	1	11
%	0	18	27	45	9	100

Capacity for generating new ideas (creativity)

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	1	1	4	4	1	11
%	9	9	36	36	9	100

Decision-making

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	0	2	8	1	11
%	0	0	18	73	9	100

Teamwork

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	2	1	7	1	11
%	0	18	9	64	9	100

Interpersonal skills

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	2	2	6	1	11
%	0	18	18	55	9	100

Leadership

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	1	0	1	6	3	11
%	9	0	9	55	27	100

Capacity to identify resources and production systems

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	2	3	3	3	11
%	0	18	27	27	27	100

Capacity to apply basic production principles

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	1	1	2	4	3	11
%	9	9	18	36	27	100

Capacity for operational planning and evaluation

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	1	2	5	3	11
%	0	9	18	45	27	100

Capacity to evaluate agricultural systems

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	0	1	3	4	3	11
%	0	9	27	36	27	100

Capacity to plan and manage profitable farming system

	Bad	Good	Very Good	Excellent	Missing	Total
Employed	1	1	2	4	3	11
%	9	9	18	36	27	100