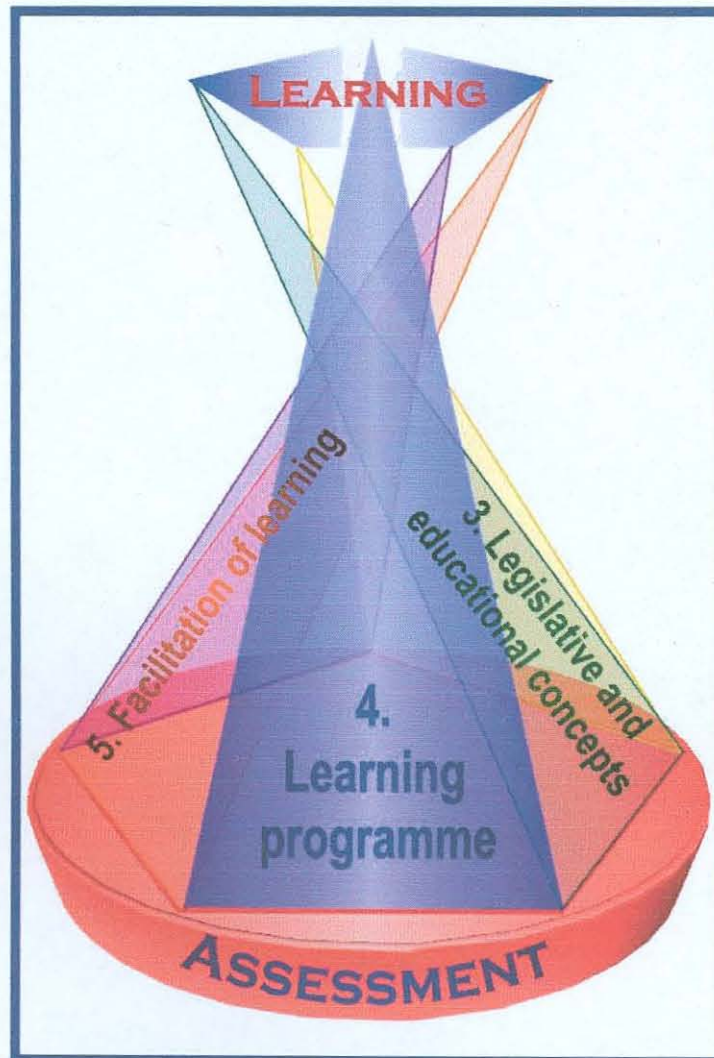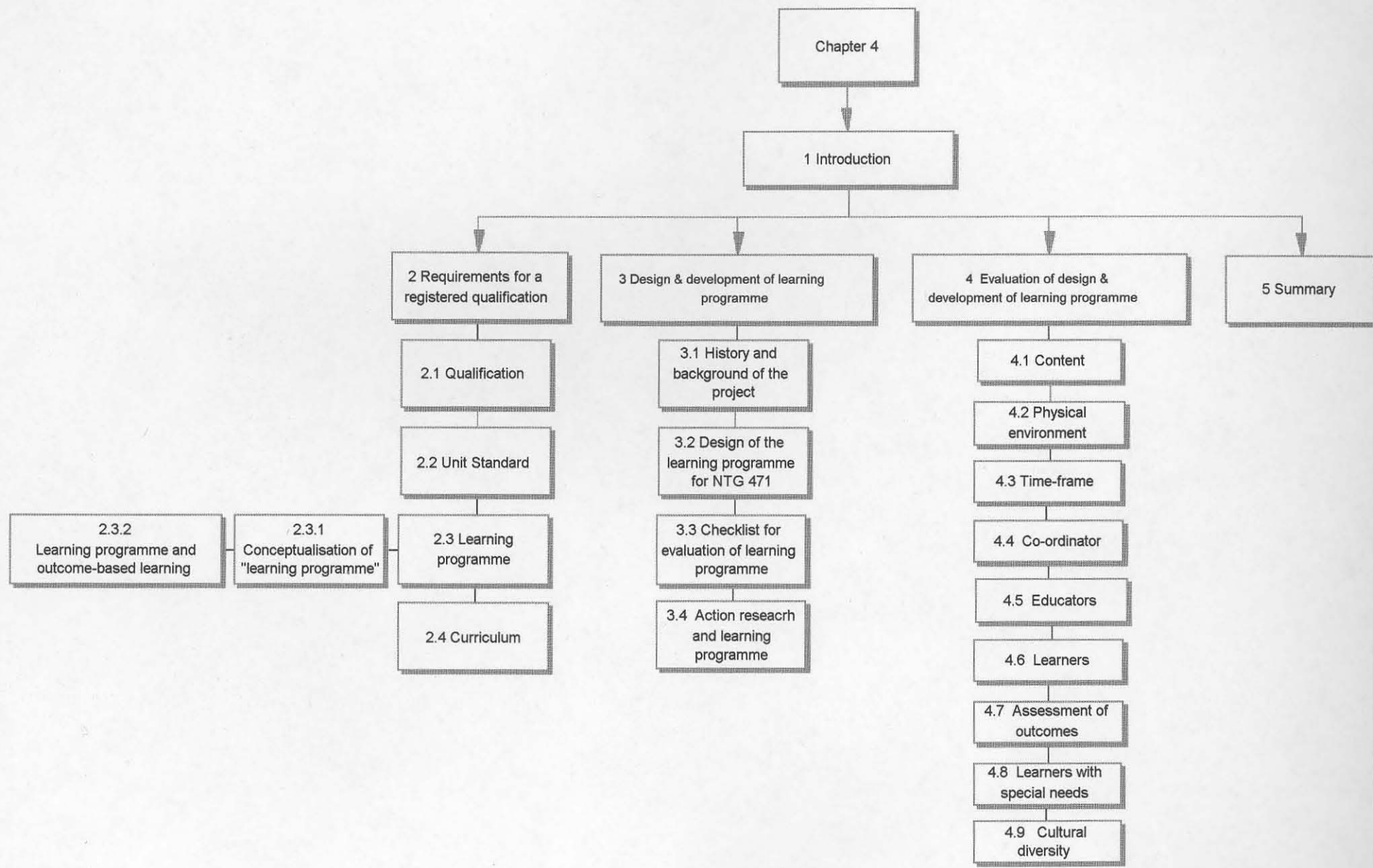*"Everything should be made as simple as possible, but not simpler. The important thing is not to stop questioning. Curiosity has its own reason for existing." (Albert Einstein, 1879 - 1955)*

Chapter 4

If Chapter 3 leaves a feeling of complexity, Chapter 4 explains the simplicity of the application of these principles. It reveals that we are not allowed to stop questioning what we are doing. It indicates that there are no limits to our curiosity or creativity ...

The legislative policy and the educational philosophy are the guidelines of the learning programme [Chapter 4]. Chapter 4 explains the design and development of the learning programme for the NTG 471 unit standard of the FDE(CAE) qualification with reference to the legislative and the educational concepts of South African education [Chapter 1, Chapter 3]. To determine the competence of a learner in outcome-based learning the learning programme is fundamental to the assessment of the specific and critical cross-field outcomes.

Chapter 4

1 Introduction

2 Requirements for a registered qualification

- 2.1 Qualification
- 2.2 Unit Standard
- 2.3 Learning programme
  - 2.3.1 Conceptualisation of "learning programme"
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3 Design & development of learning programme

- 3.1 History and background of the project
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4 Evaluation of design & development of learning programme

- 4.1 Content
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5 Summary

CHAPTER 4

Learning programme

"The purpose of education is to change the thoughts, feelings and actions of learners." (Bloom, 1956)

1 Introduction

The purpose of this study is to develop a better understanding, and providing an holistic overview of outcome-based learning in South African context with special reference to an integrated and generic process of assessment of competence against the unit standards or qualification.

To compile a research report that suits this purpose, the researcher has to keep in mind the statements in Chapter 1 that refer to the attempt to determine the following:

➤ "Who are we?"

➤ "What would we like to be?"

Chapter 3 defended the first sub-question of this study pertaining to the legislative and educational concepts of education, training and development in South Africa. The philosophical roots that evolved from these arguments are the sound educational foundation for the present situation in South African education, training and development, i.e.:

➤ The legislative structures of education, training and development in South Africa

➤ The dichotomy of content-based learning and outcome-based learning[23]

➤ The critical outcomes and specific outcomes embedded in learning theories of cognitivist, constructivist and co-operative learning

Chapter 4 addresses the second sub-question of this study, i.e.:

What does the composition of the learning programme for a registered qualification regarding assessment in South African education entail?

Of the three dimensions of a qualification i.e. the "Why?", What?" and "How?", this chapter addresses the "Why?" and the "What?" and that includes the following:

➤ The requirements for a registered qualification

➤ The design and development of the learning programme

➤ The evaluation of the learning programme design and development in the context of this study

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[23] "Outcome-based education" is used to refer to the broader context; "outcome-based learning" is used to refer to the narrower learning situation

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This chapter is in coherence with the previous as well as the next five chapters describing the support of learners in order to become autonomous learners who take responsibility for their own learning and continuous personal and professional development. Killen (2002:12) states that teaching is only teaching if learners learn. Cockburn (1997) emphasises that it remains the responsibility of educators to construct meaningful learning experiences that lead to the mastery of outcomes. If the learning programme is in place, it may contribute to a better understanding, and an holistic overview of outcome-based learning in South African context with special reference to an integrated and generic process of assessment of competence against the national unit standards or qualification.

2 The requirements for a registered qualification

A qualification is the set of competences that can serve as a reference for the performance of a learner in a work-place situation. To design a qualification for outcome-based learning needs a paradigm shift from primarily content-based learning towards outcome-based learning [Chapter 3]. In outcome-based learning the qualification is designed around learner-centred outcomes and not educator-centred content (Siebörger & Macintosh, 2001:57; Van der Horst & McDonald, 1997:16). Educators must plan learning programmes carefully and design appropriate tasks that give learners the opportunity to practice and develop the knowledge, skills and attitudes they need to acquire to be competent against the specific outcomes of the qualification (Goode & Thomen, 2001:195).

It is relevant to distinguish between the different concepts that are often used interchangeably, i.e. "qualification", "unit standard", "learning programme" and "curriculum".

2.1 Qualification [Chapter 3, section 3.4]

According to SAQA (1997:15) the requirements for a qualification are the following:

➢ Represent a *planned combination of learning outcomes* which have a defined purpose or purposes, and which is intended to provide qualifying factors with applied competence and a basis for *further learning*

➢ Add significant *value to the qualifying learning* in terms of enrichment of the person, provision of status, recognition, credentials and licensing; enhancement of marketability and employability; opening-up of access routes to additional education and training

➢ Provide *benefits to society and the economy* through enhancing citizenship, increasing social and economic productivity; providing specifically skilled / professional people; transforming and redressing legacies of inequity

➢ Comply with the *objectives of the NQF* including the enhancement of learner access, mobility of progression, and the provision of quality education and training

➢ Have both *specific and critical cross-field outcomes* which promote life-long learning

➢ Be *internationally comparable* where applicable

An outcome-based qualification develops three kinds of applied competence that must be taken into account when designing a learning programme (Norms and Standards for Teacher Education, Training and Development, 1997:59; Bloom, 1956):

➢ *Foundational competence* is the demonstrated understanding of what we or others are doing and why we are doing it: that refers to the lower cognitive level of Bloom's taxonomy

➢ *Reflexive competence* is the demonstrated ability to integrate or connect performances with our understanding so that we learn from our actions and are able to adapt to changes and unforeseen circumstances: that refers to the higher cognitive level of Bloom's taxonomy

➢ *Practical competence* is the demonstrated ability to perform a set of tasks that refers to the psychomotor domain of human learning

The rationale between these applied competences may vary for different qualifications, depending on the composition of the qualification.

According to Addendum 7, Addendum 8 and Chapter 3 a qualification contains the following:

➢ A body of knowledge in a unit standard or qualification according to credits and on levels of the NQF [Chapter 4]

➢ No location or time constraints and aimed at lifelong learning [Chapter 5]

➢ Proof of achieved outcomes [Chapter 6]

➢ Recognition of achievement / applied competence against learning outcomes [Chapter 7]

➢ Nationally agreed and internationally comparable [Chapter 8]

A national qualification will be registered on the NQF as a whole qualification or a qualification containing unit standards. A learner will be accredited by SAQA with the national qualification and the learner's name will be registered on the NLRD. A transitional period of five years (1 January 1998 until 31 December 2002) was set for interim registration of present qualifications.

2.2 Unit standard [Chapter 3, section 3.4.1]

Unit Standards are the building blocks of qualifications and will be guidelines used as follows guidelines (King, 1999:13):

➢ A learner's guide for learning [Chapter 4, Chapter 5, Chapter 6]

➢ An educator's guide for preparation of the learning programme [Chapter 4, Chapter 5, Chapter 6]

➢ An assessor's document [Chapter 7]

2.3 Learning programme

One of the major changes in outcome-based learning, training and development is the process of assessment [Chapter 8]. Changing assessment changes the learning programme (Siebörger & Macintosh, 2001:35).

2.3.1   Conceptualistion of "learning programme"

It is essential to determine what is understood by the concept 'learning programme'. Table 44 is a summary of the conceptualisation of a 'learning programme' related to the outcomes in a unit standard or qualification in South African education, training and development.

Table 44: Conceptualisation of "learning programme"

Author(s)	Conceptualisation of "learning programme"
King (1999:18)	A learning programme is the **course of study** through which learners achieve designated **outcomes** and include learning **activities** in which the learner will be involved while working towards the **achievement** of the outcomes
Du Pré (2000:iii,39); Ramotsehoa & Mabaso (2001:116); Olivier (2000:26,57); SAQA, (2000)	The learning programme is the **coherent body of knowledge** with integrated and / or sequential learning **activities** (combination of courses, modules or units of learning – learning materials and methodology) associated with the **specific outcomes** of the qualification, i.e. the **process** through which the learner **achieves** the **unit standard/s** or qualification
Van der Horst & McDonald (1997:49)	A learning programme is a set of teaching and learning **activities** and ways of **assessing** a learner's **achievements**
Beyleveld & Jama (2002:120); Technikon Pretoria (2002)	A learning programme is there for the learner to **achieve** the standards and starts with the intended learning achievement, i.e. the **outcomes**. A learning programme must be designed to incorporate what is officially wanted and what is technically possible and is easily converted from the **unit standard**

The synthesis from this table identifies the key aspects of a learning programme:

➢   A **coherent body of knowledge for the course of study**

➢   Derived from the **specific outcomes** in the **unit standard**

➢   Including all **activities**

➢   Explaining a **process** to determine **achievements** through **assessment**

Lancaster (2001:90 – 93) refers to the following phases to do learning programme planning:

➢   Identifying the factors to be addressed in the learning programme in context of the unit standard, i.e. the skills needs and priorities to make a learner competent (section 3.2.1)

➢   Developing a learning programme framework of all relevant information, i.e. the broad statement of principles including the philosophy, progression and portability between qualifications or unit standards as well as the activities (section 3.2.2)

➢   Developing an assessment framework for the learning programme, i.e. assessment procedures [Chapter 7] (section 3.3.3)

2.3.2   Learning programme and outcome-based learning

Learning programme design in South Africa must take into account the philosophy of the requirements of the NQF, which is an outcome-based learning system of learning [Chapter 3]. To achieve this objective ETDPs will have to undergo a paradigm shift in order to adapt to this new education system. Du Pré (2000:41), Lancaster (2001:87), Mabaso (2001:164), Olivier (2000:1, 31) and Siebörger & Macintosh (2001:33) identify the following concerning an outcome-based learning programme:

➢   Controlling the outputs and not the inputs of learning

➢   Determining the learning outcomes first

➢   The design should begin at the end (what learners intend to achieve) – a design down approach (work backwards to determine what is needed to achieve it)

➢   Defining and organising all the teaching / learning / assessment activities that deliver the learning outcomes

➢   Including various experiences of learners to achieve the learning outcomes

➢   Including all learning materials

➢   Following a learner-centred approach

The above-mentioned aspects are discussed with reference to the design and development of the learning programme for the research project.

2.4 Curriculum

Van der Horst & McDonald (1997:49) indicate that the learning programme replaces what we know as the syllabus or curriculum and that educators are free to develop their own learning programmes as long as they are within the framework of the specific outcomes of the unit standards or qualification.

Learning programmes are not registered on the NQF and are the private property of the providers, who are accredited by the ETQA (Olivier, 2000:21,26).

3   Design and development of the learning programme for one unit standard (NTG 471) of the FDE(CAE) qualification

To be able to understand the design and the development of the learning programme it is necessary to attend to the history and background of the project.

3.1 The history and background of the project

This qualification started in 1993 when the Further Diploma in Education (Computer Assisted Education) [FDE(CAE)] had been approved by the Department of Education as a part-time two year post graduate qualification to be presented by the University of Pretoria.

According to Nielsen (1997:284, 300) and Oberg & Freeman (1996:5) the need for a qualification in computer-assisted education is supported by:

➢ Changes in technologies and application in education which need to be addressed

➢ Challenging opportunities, e.g. multimedia, Internet in education

➢ Providing for life-long learning and professional development

➢ Educators are without jobs because they are under-qualified and this qualification may contribute to better qualifications in relation to the present needs

➢ Increasing demand for professional qualifications which this qualification adheres to

3.1.1 The composition of the qualification

For the purposes of interim registration of existing qualifications with SAQA, this qualification consists of unit standards with a designated credit weighting on level 6 of the NQF [Chapter 3] (Norms and Standards for Teacher Education, Training and Development, 1997:128). The qualification has five unit standards with twelve (12) credits (1 credit = 10 notional hours of learning [Chapter 3]) allocated to each unit standard representing a total of 60 credits. Twelve credits are equal to 120 notional hours of learning. Although this is not the number of credits as required by SAQA for a qualification (120 credits), this qualification was submitted to SAQA for recording in 1998 as a present qualification and is therefore registered and is accredited as a qualification by SAQA until termination of the application for present qualifications in December 2002 (Du Pré, 2000:48). The content requirements of this qualification are represented in Table 45 (University of Pretoria, 2000:59).

Table 45: The content requirements of the FDE(CAE) qualification

Unit standards	Code	Content
Computer Use in Teaching	RGB 471	➢ General computer skills for education ➢ Multi-purpose programmes for education ➢ Programmes for school administration and the application thereof
Computer Use in Teaching	RGB 472	➢ Word processing ➢ Spreadsheets ➢ Databases ➢ Graphics ➢ Programmes for subject teaching, single purpose and multi-purpose
Theoretical Principles	TBG 471	➢ Behaviourism versus cognitivism learning theories ➢ Teaching and learning theories in computer assisted education ➢ Co-operative and individual learning
Computer Assisted Testing	RTS 471	➢ Design and present computer-based tests ➢ Management of computer based tests ➢ Types of questions, feedback and remedial work
New Technologies (New Technologies was used as representative of all the unit standards referred to in the study)	NTG 471	➢ Knowledge systems, hypermedia in subject teaching ➢ Interactive video, CD ROM and intelligent computer assisted education

The indication from Table 45 is that the qualification includes a variety of integrated computer skills and is embedded in current learning theories. This makes the qualification very valuable for the South African educator, because of the current changes in both computer technology and educational environment. The aim of this qualification is to prepare the educators to develop a high level of expertise in technology and to fully integrate technology in the classroom. This qualification focuses on how to teach using technology and not only on how to use the technology.

3.1.2   Requirements

This qualification is a two-year part-time qualification for educators with a formal educator's qualification on level 5 of the NQF. A formal educator's qualification can be classified as three years of studies (M + 3) or four years of studies (M + 4) after completing the Further Education and Training Certificate (FETC or grade 12). Table 46 is a summary of the prerequisites for the qualification.

Table 46: Prerequisites for the qualification

Type of qualification	Examples	Years of study
First degree plus Educator's Qualification	➢ BA + Higher Diploma in Education, ➢ BSc + Higher Diploma in Education ➢ BComm + Higher Diploma in Education	3 + 1 = 4 years
Professional degree	➢ BA Ed ➢ BSc Ed ➢ BComm Ed ➢ BPrim Ed	3 + 1 = 4 years
Professional Educator's Diploma	➢ Higher Diploma in Education	3 or 4 years

Table 46 indicates that the qualification is a post-graduate or post-diploma qualification and that a certificate is not sufficient to register as a learner for this qualification. It can be expected that learners on this level are (level 6 of the NQF; Chapter 3 section 2.1.3.4):

➢   Experienced in the higher order cognitive skills of analysis, synthesis and evaluation of Bloom's taxonomy [Chapter 3, Chapter 5, Chapter 6, Chapter 7]

➢   Independent and autonomous learners who can take responsibility for their own learning and their own continuous personal and professional development [Chapter 5, Chapter 6, Chapter 7]

3.1.3   Registration of learners

Learners who are registered for this qualification are full -ime educators and this may be regarded as in-service educator learning. It is suggested that in-service educator learning must become the essence of educator development activities in South Africa. It is also stated that this is best achieved by increased collaboration between non-governmental organisations (NGOs) and Higher Education Institutions (HEIs) (Norms and Standards for Teacher Education, Training and Development, 1997:124).

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From 1994 until 1997 the registration for the qualification was limited to local learners who could attend lectures at the premises of the University of Pretoria. Together with the massification of education in South Africa in a technology-enhanced environment, it became necessary to make contact with learners at a distance and give them the opportunity to achieve this qualification. The negotiations with the objective to enable more educators to be exposed to this qualification started in 1997 and resulted in a contract for a partnership between the Higher Education Institution (HEI) (UP) and a non-governmental organisation (NGO) (FKSA). The HEI would provide the accreditation and quality control for the qualification and the NGO would provide the educators and the training facilities. It is not the purpose of this study to discuss the details of the contract between the participants.

The rationale for the negotiations for a partnership was the real need for opportunities to improve qualifications in South Africa and is in accordance with the following (Norms and Standards for Teacher Education, Training and Development, 1997:125; SAQA, 2000; Sebolai, 1995:26):

➢ More educators could be exposed nationally to the opportunity to graduate with this qualification which will enable them to keep apace with changes in education for continued teaching competence and employment

➢ The expansion of computer technology and the availability of computers in schools could no longer be neglected and educators would be able to perform in an authentic environment with integrated theory and practice opportunities

➢ There is a need for computer-skilled educators to empower them for the integration of computer skills into their learning programme, administration and extra-mural activities and to enhance their teaching

➢ This qualification is unique as far as the relevance of the content focuses on integrated applied technology competence

➢ There will be an opportunity to exercise life-long learning in an authentic context

➢ Educators want to improve their existing qualifications and cannot afford the time to go back to the residential university fulltime

➢ A more cost-effective method of providing opportunities to improve qualifications and the educator can still be economically active while studying

➢ The opportunity to reach educators in remote areas with new technologies, accelerating changes to access of information and alternative teaching strategies

➢ There is a significant similarity between the content of the two modules on computer skills (RGB 471 and RGB 472) of the qualification and the professional development course (Professional Development 6.0) of the NGO

The number of learners who have registered for this qualification since it was presented for the first time, is represented in Table 47 (University of Pretoria, 2001). No third year registrations are included in this table and all learners participated in the research.

Table 47: Statistics on the registrations for the qualification

Year	First year registrations	Second year registrations	Total number registrations	Graduates
1993	14	0	14	0
1994	11	8	19	8
1995	0	6	6	6
1996	0	0	0	0
1997	20	0	20	0
1998 University of Pretoria[26]	0	15	15	
1998 Educators for FKSA	0	25	25	
1998 Partnership	70	0	0	40
1999	123	62	185	62
2000	109	76	185	62
2001	42	77	119	76
2002	0	39	39	66

The qualification was introduced in 1993 and fourteen learners registered of whom eight graduated in 1994. In 1994 eleven learners registered and six graduated in 1995. There were no first year registrations for the period 1995 to 1996, and the qualification was re-established in 1997 with twenty locally registered learners.

When the course was re-introduced in 1997 the need for expanded opportunities resulted in the mentioned partnership between the HEI and the NGO. The contract determined that the educators representing the NGO had to be trained by the HEI in the qualification to act as accredited educators on behalf of the HEI. A once-off permission was given to train educators who had completed an in-house course in computer skills (PD 6.0) in one year instead of the two year part-time requirement. Training occurred in Durban, Cape Town and Johannesburg on a block basis of two days (8 x 2 = 16 hours) for three sessions during the year. Twenty-five educators were trained during 1998 for the purpose of accredited educators to present the qualification on behalf of UP.

In 1998 a total of 40 learners graduated of which 25 were targeted to become accredited educators for the qualification. These accredited FKSA educators started during 1998 with the first year learners at the different training centres. The first group of partnership first year learners enrolled in 1998 for a two-year period to graduate in 1999.

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[26] The transition period of training into the partnership

During 1999 and 2000 was a substantial growth in learners with a decline in 2001 due to no marketing and awaiting the new SAQA registered Advanced Certificate in Education (Computer Integrated Education) [ACE(CIE)].

3.1.4 The implementation of the qualification

The model of implementation of the qualification was the following:

➢ Local training sessions at different accredited training centres by qualified and accredited educators

➢ Educators received a prescribed unit standard

➢ Educators had freedom to decide on the learning programme, i.e. learning strategies and learning tasks

➢ Educators had a prescribed time allocation for each module

➢ Certain prescribed contents, references and resources were made available as had been developed on behalf of, and accepted by the HEI

➢ Communication was via e-mail, fax and telephone (synchronous and a-synchronous)

➢ Examination procedures and examination papers were initially published on the Internet but at a later stage it changed to e-mail attachments with password protection [Chapter 7]

➢ Learners wrote formal examination papers at the local training centre under supervision of the educator

➢ The HEI representatives acted as internal examiners and external moderators were appointed by the HEI

3.1.5 The administration of the qualification

Hayden & Thompson (1998:56) distinguish the following to be considered during administration of a qualification:

➢ Content taught [Unit standard - Chapter 4]

➢ The method of presentation and the facilitating arrangements [Learning programme – Chapter 4]

➢ Support to learners [Facilitation - Chapter 5]

➢ Authenticity of learners' contributions [Portfolio of evidence - Chapter 6]

➢ Competence of learners [Assessment - Chapter 8]

The method of presentation is a combination of a face-to-face activity as well as an individual responsibility. UP accredits educators and registers the learners for the course. The prerequisite for accredited educators for this course is that they must have graduated in the FDE(CAE) and that they have to be a permanent employee of FKSA.

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The educators were encoded and identified and the learners were arranged according to the accredited training centre as presented in Table 48.

Table 48: Encoding for educators and number of learners per training centre

Year	Code	1997	1998	1999	2000	2001	2002
Bedfordview	Bed			✓	✓	✓	
Bellville	Be					✓	✓
Bloemfontein[27]	Bl		✓	✓			
CapeTown	CT		✓	✓	✓		
Vereeniging	DR		✓	✓	✓	✓	✓
Durban	Du		✓	✓	✓	✓	✓
King Williamstown	KW			✓	✓		
Klerksdorp	Kl		✓	✓	✓	✓	
London (UK)	Lo					✓	✓
Menlyn	Me		✓	✓	✓		
Newcastle	Nw		✓	✓	✓	✓	✓
Pietersburg	Pi		✓	✓	✓	✓	✓
Port Elizabeth[28]	PE		✓	✓	✓	✓	
Randburg	Ra		✓	✓	✓	✓	
Rustenburg	Ru		✓	✓	✓	✓	✓
Tzaneen	Tz			✓	✓		
University of Pretoria	UP	✓	✓				
Waterkloof	Wa		✓	✓	✓	✓	✓
Wonderboom	Wo			✓	✓		

A total number of seventeen accredited training centres participated in the training of the learners in a period of five years (1998 – 2002). Each centre represents one accredited educator.

The administration and the presentation of the qualification was organised by a national co-ordinator on behalf of UP and FKSA. The functions of the national co-ordinator were the following:

➢ Designing and developing the unit standards and learning programme for the qualification in accordance to the SAQA regulations [Chapter 3, Chapter 4]

➢ Overseeing the presentation and assessment of the qualification [Chapter 5, Chapter 6, Chapter 7]

➢ Submitting evidence of learners' competence for quality assurance to UP [Chapter 6, Chapter 8]

➢ Proposing the accreditation of educators for the training

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[27] Educators from Upington attended training
[28] Educators from Cradock and Burgersdorp attended training

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➤ Acting as the contact between the HEI and the NGO

➤ Executing administrative activities of the qualification

3.2 The design of the learning programme

The design of a learning programme involves certain activities. These activities will be discussed in the following sections.

3.2.1 The NTG 471 unit standard

The unit standard contains the outcomes and the outcomes become the content of the learning programme that must be achieved during learning (King, 1999:19; Olivier, 2000:48) [Chapter3].

With reference to Table 45 this qualification, the FDE(CAE), has five unit standards and the New Technologies [NTG471] unit standard was used as an example to demonstrate the principles of the investigation on outcome-based learning. Table 49 is a copy of the unit standard that was used as the example [Addendum 10].

Table 49: The unit standard for NTG 471

Unit Standard number	NTG 471
Unit Standard title	New Technologies
NQF level	6
Credits	12 SAQA Credits
Field	Education, Training and Development
Sub-field	Higher Education and Training
Issue date	1 January 2001
Review date	Expires 31 December 2002
Purpose	This unit standard will enable the candidate to integrate computer skills and techniques with the development of a web-designed application and the knowledge structures of networking in an educational environment.
Learning assumed	A relevant teacher's qualification and experience in teaching. This course should have been preceded by the 4 year Baccalaurus degree in Education, the 3 year Baccalaurus degree and Higher Education Diploma or the Professional Teaching Qualification of at least 3 years. Candidates had to successfully complete a course in advanced computer skills (Advanced computer skills have been obtained in RGB 471 and RGB 472 of the qualification)
Specific outcomes and Assessment criteria	
Specific outcome 1	**Identify, describe and apply knowledge on a Web-based design**
Assessment Criteria	Demonstrate knowledge of sound design principles Design a Web site for educational purposes Publish the Web site
Range Statements	Apply design principles Storyboard the Web site Use an appropriate software program Submit an accessible URL

Table 49 to be continued on next page.

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Table 49: The unit standard for NTG 471 [continued]

Specific outcome 2	Understand and apply the principles and application of networks
Assessment Criteria	2.1 Apply knowledge of the components of a network 2.2 Apply knowledge of the typology of a network 2.3 Apply knowledge of the cabling of a network 2.4 Apply knowledge of the types of a network 2.5 Apply knowledge of the administration of a network
Range Statements	2.1 LAN, MAN, WAN 2.2 Bus, Star, Ring 2.3 Co-axial, UTP / STP 2.4 Server-based, peer-to-peer 2.5 Compile a strategy for the implementation of a network in the institution according to the needs
Embedded knowledge	Knowledge of the application of Web sites and networking in an educational institution
Critical Outcomes	1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made 2. Work effectively with others as a member of a team, group, organisation, community 3. Organise and manage oneself and one's activities responsibly and effectively 4. Collect, analyse, organise and critically evaluate information 5. Communicate effectively using visual, mathematical and / or language skills in the modes of oral and / or written presentation 6. Use science and technology effectively and critically, showing responsibility towards the environment and health of others 7. Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation
Accreditation	Assessor Internal moderator External moderator ETQA SAQA
Notes	All applications must be done in an authentic context Evidence will be a portfolio of data including: ➢ A variety of authentic computer generated documents ➢ A variety of web related documents ➢ A showcase of the student's work ➢ Written tests and examinations ➢ Observation checklists

This unit standard will be the reference in the remaining discussion of the study report, but it must always be regarded in context with the other five unit standards of the FDE(CAE) qualification.

3.2.2 The time frame of the FDE(CAE) qualification

This qualification has five unit standards with a credit value of 12 credits each, equalling a total of 60 credits. Each unit standard has therefore an allocation of 120 notional hours of learning. The time allocation for the qualification is explained in Table 50.

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Table 50: Time allocation for the qualification

Unit Standard	Code	Notional hours	Lecturing time	Self study time
Computer Use in Teaching	RGB 471	120	22.5	97.5
Computer Use in Teaching	RGB 472	120	22.5	97.5
Theoretical Principles	TBG 471	120	21	99
Computer Assisted Testing	RTS 471	120	21	99
New Technologies	NTG 471	120	21	99

The importance of the time allocation was in the indication of the time needed for the average learner to be competent in the specific outcomes of the unit standard. Some learners could need more time and others less.

3.2.3 Preparation for the design of a learning programme for the NTG 471 unit standard

In preparing to design the NTG 471 learning programme, the educator had to address the questions as summarised in Table 51 (King, 1999:18).

Table 51: Questions to ask when designing a learning programme

Question	Answers for the learning programme of the unit standard NTG 471
Who are the learners?	Learners enrolled for the FDE(CAE) qualification attending the presentation of unit standard NTG 471
What is the scope and aim of this unit standard?	To enable the candidate to integrate computer skills and techniques with the development of a web designed application and the knowledge structures of networking in an educational environment
What is the prior knowledge of the learners?	Candidates must have successfully completed a course in advanced computer skills
What are the outcomes of this unit standard?	To identify, describe and apply knowledge on web-based design To understand and apply the principles and application of networks In addition also the critical cross-field outcomes
What are the underlying abilities to be promoted?	Web design skills and applications in an authentic environment and integrated application abilities of networks in an authentic environment
What is the order in which the learning is taking place?	Web design principles, web design in a software program, networks as related to the Internet
What methods will be used?	Problem statements, information gathering, co-operative learning, discussions
What materials will be used?	Sources and resources of information: books, magazines, articles, Internet
What evidence will be gathered for assessment?	Class work, assignments, observation checklists, questionnaires, tests
When and how will assessment be done?	Formative and summative continuous assessment
What is the time frame?	120 notional hours of learning: 21 hours of lecturing and 99 hours of self-study

This information must be transferred to the learning programme including the critical outcomes \ specific outcomes, assessment criteria, range statements, performance indicators and notional time (King, 1999).

3.2.4   The development of the learning programme for the NTG 471 unit standard

Learners go through five integrated phases to achieve the outcomes (Olivier, 2000:49):

➢   Determining the outcomes

➢   Preparing for specific activities in a manageable time-frame

➢   Interacting and performing and monitoring the tasks

➢   Assessing all of the above

➢   Concluding and completing the tasks by evaluating, checking, verifying, rectifying and auditing

3.2.4.1   Phase 1: Determine the outcomes

The unit standard contains the specific outcomes (SO) and critical cross-field outcomes (CO) for the learning programme. In this unit standard the specific outcomes were the following:

➢   Specific outcome 1 (SO1): The learner will be able[27] to identify, describe and apply knowledge on Web-based design

➢   Specific outcome 2 (SO2): The learner will be able to understand and apply the principles and application of networks

The critical cross-field outcomes[28] for the NTG 471 unit standard include the following:

➢   Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made

➢   Work effectively with others as a member of a team, group, organisation, community

➢   Organise and manage oneself and one's activities responsibly and effectively

➢   Collect, analyse, organise and critically evaluate information

➢   Communicate effectively using visual, mathematical and / or language skills in the modes of oral and / or written presentation

➢   Use science and technology effectively and critically, showing responsibility towards the environment and health of others

➢   Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation

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[27] "The learner will be able to ..." is a generic phrase to all specific outcomes (SAQA, 1998)

[28] Critical cross-field outcomes are generic statements (SAQA, 1998)

3.2.4.2   Phase 2: Preparation

To construct the learning programme, the development of personal, transferable skills must focus on the decision on what skills and capabilities have to be included in the learning programme so that the outcomes can be clearly and unambiguously stated.

In outcome-based learning the learner becomes an active participant. During the preparation phase the educator must keep in mind that the learner must be involved in the planning and executing of activities in an authentic context as indicated in Table 52 (Olivier, 2000:51; Ramotsehoa & Mabaso, 2001:116,130).

Table 52: Preparation phase of the development of a learning programme

Activity	Explanation
Develop a clear view of the intended outcome	The unit standard was public domain and every learner was provided with documentation to verify the outcomes. The outcomes were as stated in the unit standard: ➢ Specific outcome 1 (SO1): Identify, describe and apply knowledge on Web-based design ➢ Specific outcome 2 (SO2): Understand and apply the principles and application of networks ➢ All the critical cross-field outcomes are included
Formulate possibilities to achieve the outcome	The learning programme included relevant problem statements to guide the learner to achieve the outcome [Table 53]
List tasks within a time frame	Tasks were listed within the time frame for this unit standard of 120 notional hours of learning [Table 53]
Select learning materials. Learning materials refer to all sources and resources a learner needs to achieve the outcomes, e.g. study guides, books, Internet, cassettes (audio and video), videoconferencing, computer technology	The sources and resources referred to in this unit standard primarily included books and the Internet
Identify communication opportunities	Co-operative learning environment as well as individual learning opportunities
Learners plan to ➢ Solve problems ➢ Seek possible answers or solutions ➢ Formulate own ideas / theoretical constructs ➢ Establish assessment criteria for progress	➢ To be competent in an outcome, the learning programme included a problem statement. ➢ The learner had to become actively involved and propose possible solutions for the problem statement, be given the opportunity to formulate own ideas and relating them to the requirements of the unit standard
Preparation supports critical cross-field outcomes:	
➢ Identify and solving problems ➢ Organise and manage oneself and the activities effectively ➢ Collect, analyse, organise and evaluate information ➢ Communicate effectively with visual, oral and written data	

Table 53 presents the learning tasks for the learning programme. These learning tasks are explained in context in Table 59. As integrated learning tasks, they include both specific outcomes and all critical cross-field outcomes.

Table 53: The learning tasks for the NTG 471 unit standard learning program

NTG 471 Learning Tasks		
Topic	**Description**	**Reference Number**
Introduction	Table of Contents	Table of Content
Personal	A short description of yourself (a short CV).	Personal
Project 1 (SO1/SO2) Including the critical cross-field outcomes as described in the unit standard Design and development of a Web site	Find two URLs as examples of well designed Web sites in your learning area. Summarise 5 aspects that you like and five aspects that you dislike about these Web sites.	NTG 471: 1/2002
	Find at least one URL that explains Web site design principles. Summarise 10 Web site design principles to take into account when designing your Web site.	NTG 471: 2/2002
	Submit the storyboard for the Web site as a Word document (Web site.doc)	NTG 471: 3/2002
	Design a Web site on ONE of the following: You are going to publish your learning tasks for NTG 471, RTS 471 and TBG 471 on a Web site for FDE(CAE) learners. Design a Web site for yourself to enable you to add all your learning tasks during the year. This Web site will include a short description of yourself, a table of content, and the three modules. You are going to design a Web site for your school. The Web site must include at least five web pages. Your school has a Web site. Add a separate part to this Web site on your learning area. The Web site must include at least five web pages. Follow the following guidelines: The Web site must be designed in an html editor (e.g. Front Page). It must include as many different aspects of the html editor in which you design the Web site as possible. The Web site must be published. You are not allowed to design any Web site of your choice that has no educational value.	NTG 471: 4/2002
Project 2 (SO1/SO2) Computer networking in a computer centre	Use one of the following scenarios to do this project. You may use any software program. The proposal must be appropriate to be presented to an audience.	NTG 471: 5/2002

Scenario 1

The existence of computers cannot be denied. It has become very important to implement and integrate computer technology in the school environment. There are very often major objections to buying computers for a school. Some of the objections are that computers are very expensive and a computer centre may become a white elephant. The governing body of the school needs background information on the **planning, implementation, management and integration into the curriculum** of a computer centre at your school. The principal of the school needs more information and asks you to make a presentation to the governing body during the next meeting. You will have 30 minutes at your disposal.

Scenario 2

Your school is already integrating computers in the curriculum with great success. The neighbouring school still hesitates to implement computers. The main reasons being that they think it is very expensive and may result in a failure due to inappropriate management.
The governing body of the neighbouring school invites you to make a presentation on the **design, implementation, management and integration into the curriculum** of a computer centre during their next meeting. You will have 30 minutes at your disposal.

3.2.4.3   Phase 3: Interact and perform

Olivier (2000:35, 53) and Ramotsehoa & Mabaso (2001:132) discuss how learners interact and perform in the outcome-based learning process. To perform means to put into effect what was planned for, i.e. to execute the tasks, sub-tasks and specific outcomes as illustrated in Table 54.

Table 54: Interaction and performance in the development of a learning programme

Activity	Explanation
Communicate with other people and reconcile ideas of other people with their own and *vice versa*	Co-operative learning activities are created for learners to discuss possible solutions and share knowledge
Acquire skills	Learners acquire computer skills
Collect organise, analyse and evaluate information and data Questionnaires Charts and grids Flowcharts Field trips Compiling newspaper clippings	The learners collect and analyse data from a variety of sources and resources, e.g. the Internet, books, magazines, experts in the field
Introducing equipment	Learners are exposed to technology
Develop best practices	The portfolio of evidence becomes the best practices
Work in groups or teams	Learners work in groups and teams to accomplish a task
Make decisions	Learners make decisions about the scope and quality of their performance
Take a place in the job market or create their own job opportunities	This qualification is an excellent opportunity for learners to become entrepreneurs
Live a healthy lifestyle	Learners must be aware of the ergonomics of computers
Build their self-esteem	Learners feel empowered
Use technology	The learners use computer technology such as Internet and computer application skills

Interaction supports the critical cross-field outcomes

➢   Identifying and solving problems

➢   Collecting, analysing, organising and evaluating information

➢   Organising and managing oneself and the activities effectively

➢   Working effectively with others as a member of a team, group, organisation or community

➢   Communicating effectively with visual, oral and written data

➢   Using science and technology effectively and critically, showing responsibility towards the environment and the health of others

➢   Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation

➢   Contributing to the full personal development of each learner and the social and economic development of society at large

Table 55 presents the authentic and performance activities in the learning programme.

Table 55: The interaction activities for the NTG 471 unit standard learning program

New Technologies (NTG 471)	
To be competent in Specific Outcome 1 the student has to do the following during 21 hours of lecturing time.	
Unit standard requirements	Activities
Specific Outcome 1: Identify, describe and apply knowledge on Web-based design **Assessment Criteria:** Demonstrate knowledge of sound design principles **Range Statements:** Use an appropriate software program Critical cross-field outcomes as described in the unit standard	**Tasks for lecturing purposes:** **Lecture 1: 3 hours** Find **any two URLs** in your **learning area** (use an appropriate web browser like Internet Explorer or Netscape) Make a **printout** of one of the pages Look at these Web sites and decide on at least **five aspects** that you **like** and that you **dislike** about these Web sites Use a Word document and list these aspects in a **Word document** Share and discuss your likes and dislikes of these Web sites and create a **combined** table for all learners. Search for one Web site on Web site **Design Principles** Share and discuss your Web site Design Principles and create a **combined** table for all learners. Hand these documents in for assessment. **Homework: Start with the learning tasks** **Prepare a document on design principles** **Lecture 2: 3 hours** Storyboard two pages of a Web site. You are going to develop this storyboard in the html editor Hand these documents in for assessment **Homework: Work on the learning tasks** **Storyboard the** Web site **Lecture 3, 4 and 5: 9 hours** Development in Front Page (Do not use a theme!) Develop at least two of the five pages during each session and hand in for assessment
Specific Outcome 2: Understand and apply the principles and application of networks **Assessment Criteria:** Knowledge of the components of a network Knowledge of the typology of a network Knowledge of the cabling of a network Knowledge of the types of a network Knowledge of the administration of a network **Range Statements:** LAN, MAN, WAN Bus, Star, Ring Co-axial, UTP / STP Server-based, peer-to-peer Compile a strategy for the implementation of a network in the institution according to the needs	**Tasks for lecturing purposes:** **Lecture 6: 3 hours** Find any URL that will explain the different aspects with reference to a network (refer to Unit Standard). Hand these documents in for assessment **Lecture 7: 3 hours** Discuss these principles and create a document to be presented to the lecturer Make sure that you include all the requirements of the Assessment Criteria and Range Statements

3.2.4.4 Phase 4: Assess

Although this aspect will be dealt with in depth in Chapter 7, reference to this part of the learning programme is essential. Olivier (2000:55) refers to the assessment as a continuous activity that takes place between learners, peers and educators when assessing the quality of the preparation, performance and achievement of outcomes through the evidence provided by the learners. Table 56 is an indication of the critical outcomes that support assessment.

Table 56: Assessment in the development of a learning programme

Assessment supports critical cross-field outcomes
➢ Identifying and solving problems
➢ Working effectively with others as a member of a team, group, organisation or community
➢ Organising and managing oneself and the activities effectively
➢ Collecting, analysing, organising and evaluating information
➢ Contributing to the full personal development of each learner and the social and economic development of society at large
➢ Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation

Table 57 is an example of an assessment matrix for a three hours' lecturing session that was used for formative assessment purposes in the NTG 471 unit standard and includes all the critical cross-field outcomes for the unit standard.

Table 57: An example of a formative assessment matrix

New Technologies (NTG 471) (SO1)		C[29]	NYC[30]
Student number:			
Date: (Lecture 1)			
Student submits a document (for validity)	1		
Submit the two relevant URLs in learning area	2		
Evaluate applicable likes and dislikes	2		
Printout of the URLs	2		
Submit the relevant URL on design principles	1		
Submit document on individual design principles	1		
Printout of design principles	1		
Signed documents (for validity)	1		
Total	**11**		

These matrices were used to assess class work during lecturing time, for evidence that the learner was actively involved. A complete discussion of the impact of this matrix is covered in Chapter 7.

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[29] Competent
[30] Not yet competent

3.2.4.5   Phase 5: Conclude

The conclusion is an indication of how well the preparation was done, how well the interaction took place and how well all the processes were assessed (Olivier, 2000:56). Table 58 summarises the critical cross-field outcomes that are supported within the conclusion phase.

Table 58: Conclusion in the development of a learning programme

Conclusion supports critical cross-field outcomes
➢   Organising and managing oneself and the activities effectively
➢   Collecting, analysing, organising and evaluating information
➢   Using science and technology effectively and critically, showing responsibility towards the environment and the health of others
➢   Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation

These phases in the learning programme are not to be separated, but act as a hub driving the achievement of the specific outcomes of outcome-based learning. The phases in an outcome-based learning programme resemble the activities in the work-place (Olivier, 2000:60).

3.2.5   Synthesis of the learning programme

The previous sections describe the separate aspects of developing a learning programme for outcome-based learning with reference to the outcomes, the preparation for specific activities in a manageable time-frame, the interaction and performance activities and the assessment activities for this unit standard. The synthesis of these contributions is represented in Table 59.

Table 59: The synthesis of the learning programme

Unit standard title	New Technologies
NQF level	5
Credits	10
Learning assumed to be in place	Computer skills of RGB 471 and RGB 472
Purpose statement	This unit standard will enable the candidate to integrate computer skills and techniques with the development of a web-designed application and the knowledge structures of networking in an educational environment.

Determine the Specific Outcome	Interact and Perform	Assessment
SO1: Identify, describe and apply knowledge on Web-based design		Portfolio of evidence Class activities
Assessment criteria 1.1 Demonstrate knowledge of sound design principles 1.2 Design a Web site for educational purposes 1.3 Publish the Web site **Range Statements** 1.1 Apply design principles 1.2 Storyboard the Web site 1.3 Use an appropriate software program 1.4 Submit an accessible URL	Lecture 1, Lecture 2 Lecture 3, Lecture 4, Lecture 5	Learning task 1/2002 Learning task 2/2002 Learning task 3/2002 Learning task 4/2002 Observation checklists, Assessment tasks Tests
SO2: Understand and apply the principles and application of networks		
Assessment criteria 2.1 Apply knowledge of the components of a network 2.2 Apply knowledge of the typology of a network 2.3 Apply knowledge of the cabling of a network 2.4 Apply knowledge of the types of a network **2.5** Apply knowledge of the administration of a network **Range Statements** 2.1 LAN, MAN, WAN 2.2 Bus, Star, Ring 2.3 Co-axial, UTP / STP 2.4 Server-based, peer-to-peer 2.5 Compile a strategy for the implementation of a network in the institution according to the needs	Lecture 6 Lecture 7	Class activities Learning task 5/2002 Observation checklists, Assessment tasks Tests

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3.3 Checklist for evaluation of a learning programme

Ramotsehoa & Mabaso (2001:136) describe a list of criteria for the evaluation of an acceptable learning programme. This checklist is represented in Table 60 including the application of the NTG 471 learning programme.

Table 60: Checklist for evaluation of a learning programme in context of the study

Checklist for evaluation of a learning programme	
Learning programme is relevant, flexible, including national needs, learner needs, employers needs	✓
The form and structure of the learning programme encourages access and is responsive to changing environments	✓
Learning and assessment methods are appropriate to the aims and purposes of the programme	✓
The elements of the learning programme are related to the registered standards or qualification in respect of learning outcomes, purpose assessment and accreditation requirements for the educators and assessors	✓
The learning programme integrates theoretical and practical learning components and where experiential learning forms part of the programme, it is appropriately managed	✓
Entry requirements for the programme are as open as possible, support the principle of access, make provision for the recognition of prior learning exemptions	✓
The language policy of the programme is based on the language profile of the learners in career and further or higher learning contexts and the policy reflects in the learning materials, assessments and learner support services	✓

3.4 The action research and the learning programme

A cyclic procedure is characteristic to action research [**Chapter2**]. Table 61 presents the cyclic events of action research in the context of design and development of the learning programme for the NTG 471 unit standard of the FDE(CAE) qualification for 1997.

Table 61: Action research application in this study for 1997

The cyclic, spiral and iterative nature of the action research in this study						
Cycle	Legislative framework and educational concepts in South African education	Learning programme	Facilitation of learning Chapter 5	Evidence of learning: portfolio Chapter 6	Assessment of learning Chapter 7	Quality assurance Chapter 8
1997	Chapter 3	Chapter 4				
Idea	Non-existent in any of the participants	Design and develop a curriculum from scratch				
Plan	Not applicable	No learning programme exists, a conventional content-based and teacher-centred curriculum with conventional tasks and study guides was developed				
Action / Observe	Not applicable	Unsatisfactory results because of inappropriate reading abilities of learners and individual inputs				
Reflect / Evaluate	Not applicable	Alternative strategies had to be considered				

This was the first year of the introduction of the qualification in a content-based learning environment with a curriculum and conventional teaching and learning activities prepared for rote learning.

Table 62 represents the contribution of the design and development of the learning programme to the action research in 1998.

Table 62: Action research application in this study for 1998

The cyclic, spiral and iterative nature of the action research in this study							
Cycle	Legislative framework and educational concepts in South African education	Learning programme	Facilitation of learning Chapter 5	Evidence of learning: portfolio Chapter 6	Assessment of learning Chapter 7	Quality assurance Chapter 8	
1998	Chapter 3	Chapter 4					
Idea	To bring about a change that will have an impact on outcome-based learning	Enhancement of the curriculum with appropriate references and resources					
Plan	Inform participants about the legislative structures	Improvement of references and resources for learners					
Action / Observe	Introduce participants to educational concepts in outcome-based learning	Resistance against provided content references and resources					
Reflect / Evaluate	The information is not enough; background of participants insufficient	Learners did not understand the variety of references and resources, still in a behaviourist paradigm of 'content received is content to be learnt by heart and to be reproduced'					

The second year of the presentation as in Table 62 of the FDE(CAE) did not differ much from the first year.

Table 63 represents the contribution of the design and development of the learning programme to the action research in 1999.

Table 63: Action research application in this study for 1999

The cyclic, spiral and iterative nature of the action research in this study							
Cycle	Legislative framework and educational concepts in South African education	Learning programme	Facilitation of learning Chapter 5	Evidence of learning: portfolio Chapter 6	Assessment of learning Chapter 7	Quality assurance Chapter 8	
1999	Chapter 3	Chapter 4					
Idea	Thinking of alternative strategies to implement outcome-based assessment. Read about assessment and the process and procedures, the legislative requirements	Start with the design and development of a new learning programme					
Plan	Talking to educators and inform them about the change	Design and develop a completely new learning programme					
Action / Observe	Encouraging educators to read and contribute. The legislative structures are still in developmental phase and more information is needed	Time constraints to fully develop and implement a new learning programme. Unit standards are developed					
Reflect / Evaluate	More reading and planning to be done	The idea did not become a full reality although there was an idea					

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Table 63 reflects the need for the design and development of a new learning programme to fit the changes in the legislative policy and the educational theories in South African education.

Table 64 represents the contribution of the design and development of the learning programme to the action research in 2000.

Table 64: Action research application in this study for 2000

The cyclic, spiral and iterative nature of the action research in this study						
Cycle	Legislative framework and educational concepts in South African education	Learning programme	Facilitation of learning Chapter 5	Evidence of learning: portfolio Chapter 6	Assessment of learning Chapter 7	Quality assurance Chapter 8
2000	Chapter 3	Chapter 4				
Idea	Thinking of alternative strategies to implement outcome-based assessment. Read more about assessment and the process and procedures, the legislative requirements	Start again with the design and development of a new learning programme				
Plan	Talking to educators and inform them about the change. Visit the venues and communicate with the learners the strategies, listen to what they have to say and get their input	Although traditional methodologies were still used, the unit standards were applied and the plan was to introduce a completely new learning programme				
Action / Observe	Visiting to the venues did not take place due to a number of factors	The partial introduction of a new learning programme was still confusing because of a lack of understanding of the learning programme and introduction of alternative strategies to content-based learning				
Reflect / Evaluate	More reading and planning to be done	More training, participation and activities				

The first phase of progress towards the requirements of the legislative policy and the educational concepts and the unit standards was designed and developed and introduced for the first time. The co-ordinator expected the educators to design and develop their own learning programme as it was taken for granted that they would know how to do it.

Table 65 represents the contribution of the design and development of the learning programme to the action research in 2001.

Table 65: Action research application in this study for 2001

The cyclic, spiral and iterative nature of the action research in this study							
Cycle	Legislative framework and educational concepts in South African education	Learning programme	Facilitation of learning Chapter 5	Evidence of learning: portfolio Chapter 6	Assessment of learning Chapter 7	Quality assurance Chapter 8	
2001	Chapter 3	Chapter 4					
Idea	Think of alternative strategies to implement outcome-based assessment. Read about assessment and the process and procedures, the legislative requirements	A fully developed learning programme for the qualification in outcome-based learning					
Plan	Talk to educators and inform them about the change. Visit the venues and communicate with the learners the strategies, listen to what they have to say and get their input	Introduce educators to the fully developed learning programme for the qualification in outcome-based learning					
Action / Observe	A very positive response from the educators and learners during visits and conversations, indicating that these talks are essential	A new learning programme with a full implementation in an outcome-based scenario is still something the educators are unfamiliar with					
Reflect / Evaluate	This effort was really worth while and all participants reacted positively to information about the legislative and educational concepts of outcome-based learning in South Africa	The learning programme was developed and implemented and successes and failures can be reported					

The introduction of a learning programme controlled by the co-ordinator, and the educators had to report to the co-ordinator their own design and development of the learning programme on a regular basis.

Table 66 represents the contribution of the design and development of the learning programme to the action research in 2002.

Table 66: Action research application in this study for 2002

The cyclic, spiral and iterative nature of the action research in this study							
Cycle	Legislative framework and educational concepts in South African education	Learning programme	Facilitation of learning Chapter 5	Evidence of learning: portfolio Chapter 6	Assessment of learning Chapter 7	Quality assurance Chapter 8	
2002	Chapter 3	Chapter 4					
Idea	No first year learners for the existing qualification	A full development of the learning programme for outcome-based learning adapted and changed from that experienced in 2001					
Plan	Qualification terminates	No new plans for this qualification because of the termination. However, the experience can be used and built on in future					
Action / Observe	No further training in this qualification	The learning programme for this qualification has been developed and can be implemented					
Reflect / Evaluate	Not applicable	Partial success in implementing a learning programme; some educators still have to be subjected to more exposure and experience					

The educators involved understood the design and development of a learning programme better than in 2001.

Synthesis: The changes in the education, training and development in South Africa are inevitable. The action research outcomes progress concerning the contribution of the design and development of the learning programme emphasises the need for the following:

➢ Educators have many unanswered questions that must be addressed

➢ Educators are ignorant as far as the requirements for the design and development of a learning programme is concerned

➢ Educators need to be informed about the legislative and educational concepts pertaining to the design and development of a learning programme

➢ Educators accept information in a very positive way because it leads to understanding of the situation

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4 Evaluation of the design and the development of the learning programme

The following summarises the findings on the evaluation of the learning programme of the qualitative data collected with reference to the contributions of the content, the physical environment, the time frame, the co-ordinator, the educators, the learners, and the impact on the assessment of the outcomes against the specific outcomes of the unit standard for the qualification. This is an elaboration on the reflection on the action research as documented in Table 61 and in context of the requirements that all participants must contribute to the design and development of the learning programme [Chapter 2].

4.1 Content

The content of the learning programme is in context of the unit standard, including the specific and critical cross-field outcomes. No formative comments were received on the content of the NTG 471 or any other unit standard.

Summatively, some learners regarded parts of the content of the TBG 471 unit standard to be repetition, but it emphasises the inability of learners to operate on the higher levels of Bloom's taxonomy of cognitive skills of analysis and synthesis and evaluation to distinguish between the learning tasks. This reflects in the assessment of learning as described in Chapter 7.

4.2 Physical environment

The physical environment included unlimited access to technology and specifically computer technology and the Internet to execute the learning programme. Problems experienced were that learners did not have access to the infrastructure and did not understand the importance of a technology integrated learning programme.

4.3 Time frame

Learners did not understand the time frame of 120 notional hours and as it will be indicated in Chapter 7, the learners did not spend adequate time on learning inputs to become competent in the outcomes.

4.4 Co-ordinator

The co-ordinator made certain incorrect assumptions with reference to the learning programme, for example the following:

➢ All educators are well-informed about the changes in South African education, training and development especially because they are attending a variety of departmental in-service workshops on outcome-based learning

➢ Educators will respond spontaneously to requests for input into the design and development of the learning programme if asked for it

➢ Educators will share their experiences in an outcome-based learning fashion, while they are still engaged in a content-based learning paradigm

Apparently these assumptions were incorrect and guidance and training are necessary to support

educators and learners in an outcome-based learning programme. An inappropriate background reflects on the assessment of learning as explained in Chapter 7.

4.5 Educators

Educators were invited to take part in the design and development of the learning programme [Chapter 2: Requirement of action research]. However the following happened in this study with respect to the contributions and interpretation by the educators.

The traditional educator had never been exposed to the design and development of a learning programme. They received a curriculum from the Department of Education that was translated into a syllabus. The task of the educator was to break down this syllabus into subdivisions of year, term, week and daily activities and prepare lessons with reference to the content in the prescribed textbook. These activities were typical of a content-based, teacher-centred and passive learner approach.

Dealing with an internationally prescribed and mainly template based curriculum from which educators are not allowed to deviate, the educators from FKSA were trained in a behaviourist environment where little or no creativity was expected from them. This does not differ from the present formal education situation where institutions develop worksheets and sell them at a cost to colleagues so that they just have something to work from.

Educators are therefore used to being prescribed to with reference to what they have to do and do not understand the freedom of decision making in a learning programme design and development.

The finding in this study is that educators did not understand the concept of a 'learning programme' because they had never been exposed to it and since it was not properly explained to them, they could not really contribute meaningfully because of distances and time constraints.

It is recommended that in a situation like this, participants will have to be well-informed and prepared to contribute in regular meetings and workshops to the design and the development of a learning programme in outcome-based learning.

The one contribution of the educator from centre DR for the TBG 471 unit standard learning tasks was initially accepted very well by all participants, but turned out to be one of the worst implemented learning tasks, i.e. the design and development of a database to summarise reading material into a reference for learning tasks. This also contributed to the mainly lower cognitive levels of instruction and learning in content-based learning.

4.6 Learners

The learners are in-service educators at different venues in South Africa and represent the General Education and Training Band and the Further Education and Training Band.
It was found that the learners have hardly any knowledge of SAQA and the NQF or assessment in outcome-based learning. They have little or no prior knowledge of the changes that are taking place in the approach to interpretation of a learning programme, and are not able to interpret the unit standards in an outcome-based learning fashion.

Another finding emphasised the fact that learners did not read properly and that misinterpretations occurred regularly. Only in 2001 when the co-ordinator visited the centres and explained to the learners the importance of the unit standard as a legal document, a positive input was experienced from those who attended the meetings.

The learners did not contribute as participants in action research, because of these above-mentioned factors.

4.7 Assessment of outcomes

During the period 1997 to 1999 learners were exposed to content-based ways of evaluation of primarily task, test and examinations according to predetermined memoranda. Assessment of learning is completely different to these summative marking of learning tasks and examinations [Chapter 8].

The learning scenario changed completely and introduced a portfolio of evidence for assessment of learning [Chapter 6]. Successful assessment of learning is embedded in a well-designed and developed learning programme. The latter is prescribed by the legislative policies and present learning theories in the country [Chapter 3].

The educators and learners did not understand the legislative concepts (the requirements of SAQA and NQF) and therefore they did not understand the exposure to and introduction of a learning programme. As the learning programme determines the success of the facilitation of learning, this will be discussed in detail in Chapter 5.

4.8 Learners wit special educational needs

There were no learners with special educational needs to consider, but if there were any, the developer of the learning programme will keep it in mind.

4.9 Cultural diversity

The learning programme is designed to include cultural diversity. All tasks are authentic and the learner applies his / her real-life experiences.

5 Summary

The impact of the learning programme is crucial to the assessment of learning. If the learning programme is not well understood, interpreted and implemented tit will have an effect on the assessment of learning and the quality assurance of the assessment [Chapter 7, Chapter 8].

This study includes data of a qualification consisting of five unit standards, presented over a period of six years at 17 venues to learners who are registered for the FDE(CAE). Although only one unit standard is selected as an example for discussion in the research, Hayden & Thompson (1998:63) refer to the influence of the nature of the unit standard and confirm that there is a range of perceptions regarding the different unit standards in the qualification, but that all rate consistent levels of application in spite of variations in conditions.

Chapter 3 is a discussion on the legislative and educational concepts of education, training and development in South African education. Chapter 4 introduces the design and development of the learning programme of one unit standard in the qualification according to the legislative and educational concepts of outcome-based learning and the contribution to develop a better understanding, and providing an holistic overview of outcome-based learning in the South African context with special reference to an integrated and generic process of assessment of competence against the national unit standards or qualification. Chapter 5 describes the facilitation of the learning programme that was introduced in Chapter 4.