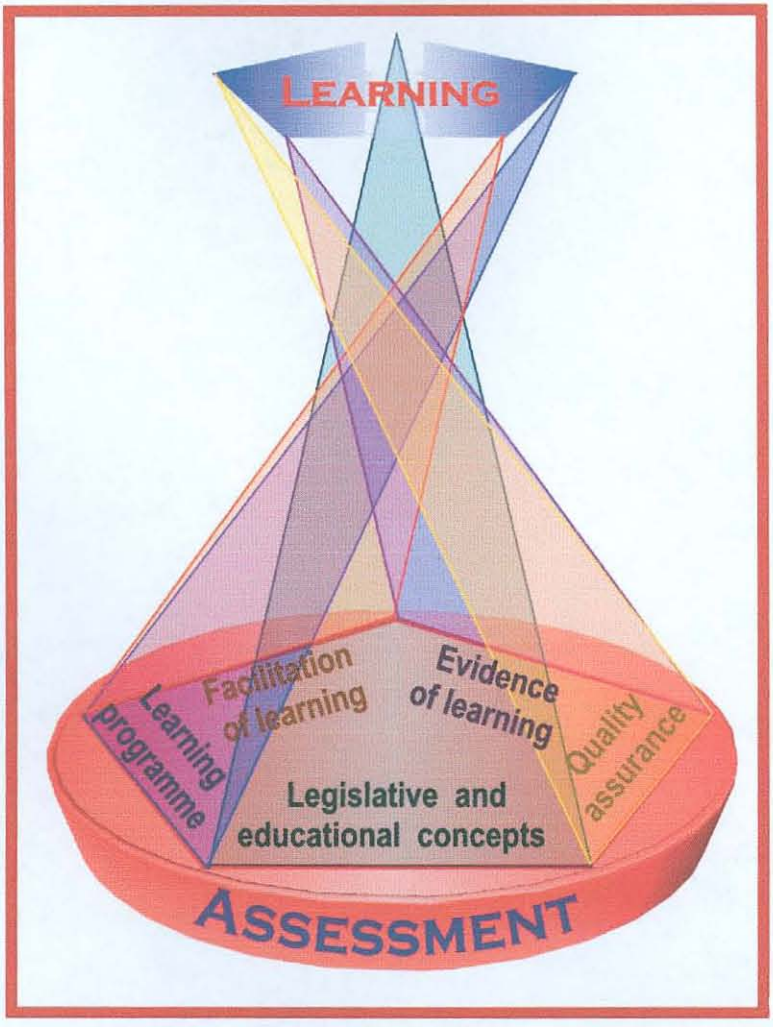
"If I have ever made any valuable discoveries, it has been owing more to patient attention, than any other talent."

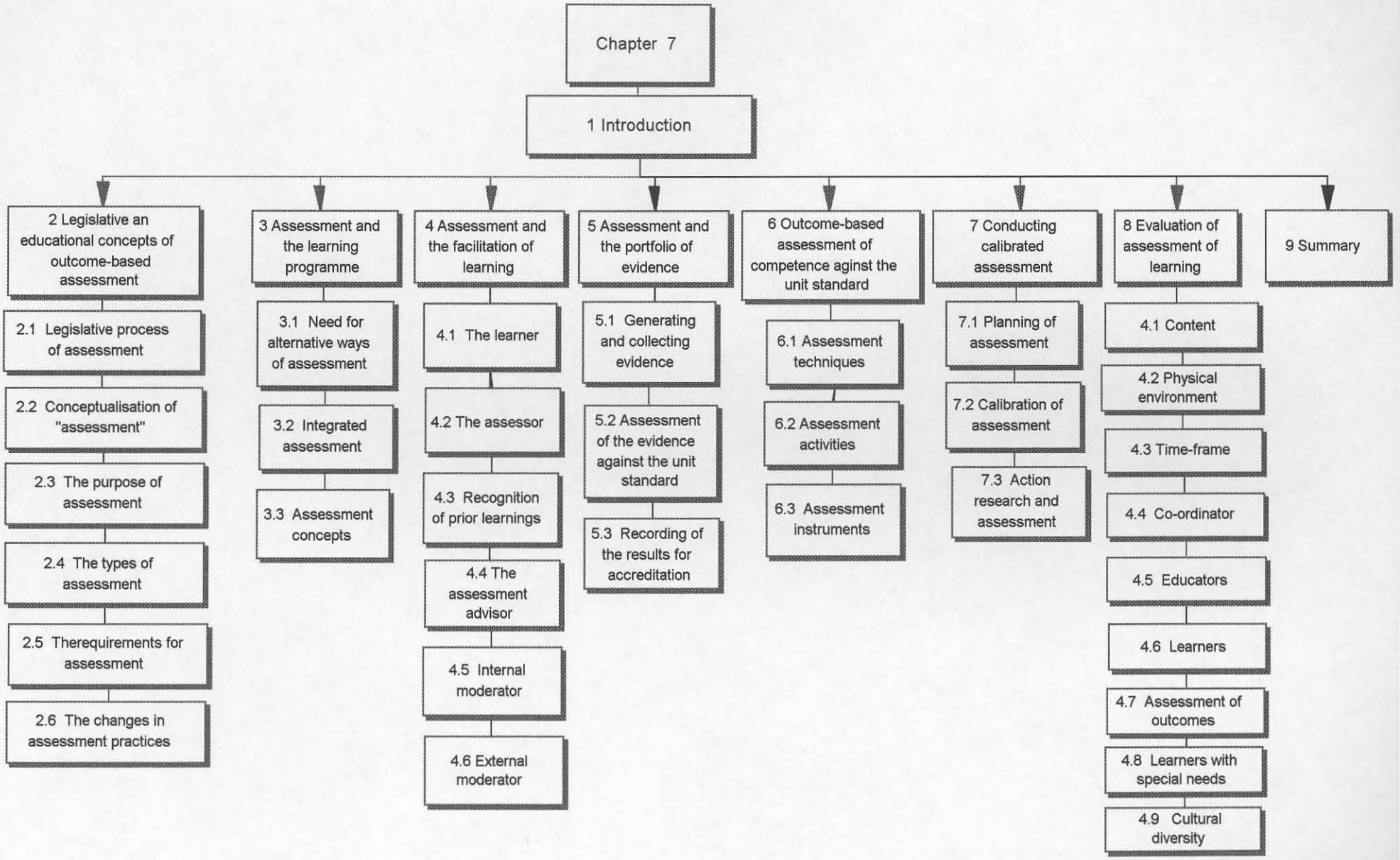
(Isaac Newton, 1642 -1727)

Chapter 7



I always knew that the dream to be able to measure the evidence of learning was to come true one day. How unexpectedly I got to it! This perfect pebble I picked was because of patient attention for five years and not because of any other talent. Suddenly the dawn changed to full daylight and the picked pebbles made a pattern ... but for one aspect: quality assurance of the assessment. I know I can improve on it in future. My knowledge is no longer of a meagre and unsatisfactory kind, although the great ocean of truth still lay before me ...

"If you cannot measure it, you cannot improve on it." (Lord Kelvin)



CHAPTER 7

Assessment of learning

"When you can measure what you are speaking about and express it in numbers, you know something about it: but when you cannot measure it, your knowledge is of a meagre and unsatisfactory kind."

(Lord Kelvin, 1824 - 1907)

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 calibrated assessment of competence against the national unit standards or qualification.

Chapter 3 addresses the first sub-question of this study pertaining to the contribution of the legislative and educational concepts to assessment in education, training and development in South Africa. Chapter 4 addresses the second sub-question of this study and describes the contribution of the composition of the learning programme for a registered qualification to assessment. Chapter 5 clarifies the third sub-question of this study on the contribution of the facilitation of learning to assessment and Chapter 6 introduces the fourth sub-question of the study on the contribution of the compilation of a portfolio of evidence of learning to assessment. Chapter 7 is an attempt to answer the fifth sub-question of the study, i.e.:

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

This chapter may be regarded as the final effort to determine the answer to the questions referred to in Chapter 1, i.e.

- "Who are we?"
- "What would we like to be?"

In order to answer these questions, this chapter gives an overview of the implementation of the understanding for the calibration of assessment and it reports on two major questions:

"What do we assess and how do we assess it?"

The answers to these questions will be found in the integration of:

- The legislative and educational concepts of outcome-based assessment
- The outcome-based learning programme and assessment
- The outcome-based facilitation of learning and assessment
- The portfolio of evidence and assessment
- Outcome-based learning and calibrated assessment of competence against the unit standards or qualification

Assessment is a key component of education (Thurlow, 2002). It is the tool that enables educators to determine and improve the learners' competence against the specific and critical cross-field outcomes of a unit standard or qualification (Conley, 2000). In a content-based system of education learners would have mirrored the contents that they were exposed to by the teacher, which does not always prepare the learner for real-life and life-long learning (Olivier, 2000:31). In outcome-based learning the assessment becomes part of the learning process to enable the learner to realise that "(L)earning is a process of discovery and we must each be our own discoverer, others could not do it for you" (Dewey, 2002).

As most content-based systems previously relied heavily on external and summative lower cognitive level test / examinations and/or skills tests according to pre-determined memoranda with a pass or fail as result, the new paradigm has shifted to formative aspects of assessment which have been historically under-estimated and under-valued in South Africa (King, 1999; Nielsen, 1997:292; Olivier, 2000:67). Spady (1994:187) emphasises that the "what and whether" are more important than the "when and "how" in designing and operating learning systems and if this is true, then the assessment of learning (to determine the "what and whether") is more important than the delivering of the content (the "when and how").

This chapter will elaborate on the legislative and educational concepts of assessment, and give an overview of the role of assessment in the learning programme, the facilitation of learning and the portfolio of evidence. A description of the conducting and calibration of assessment is followed by the evaluation of assessment of learning in context of this study.

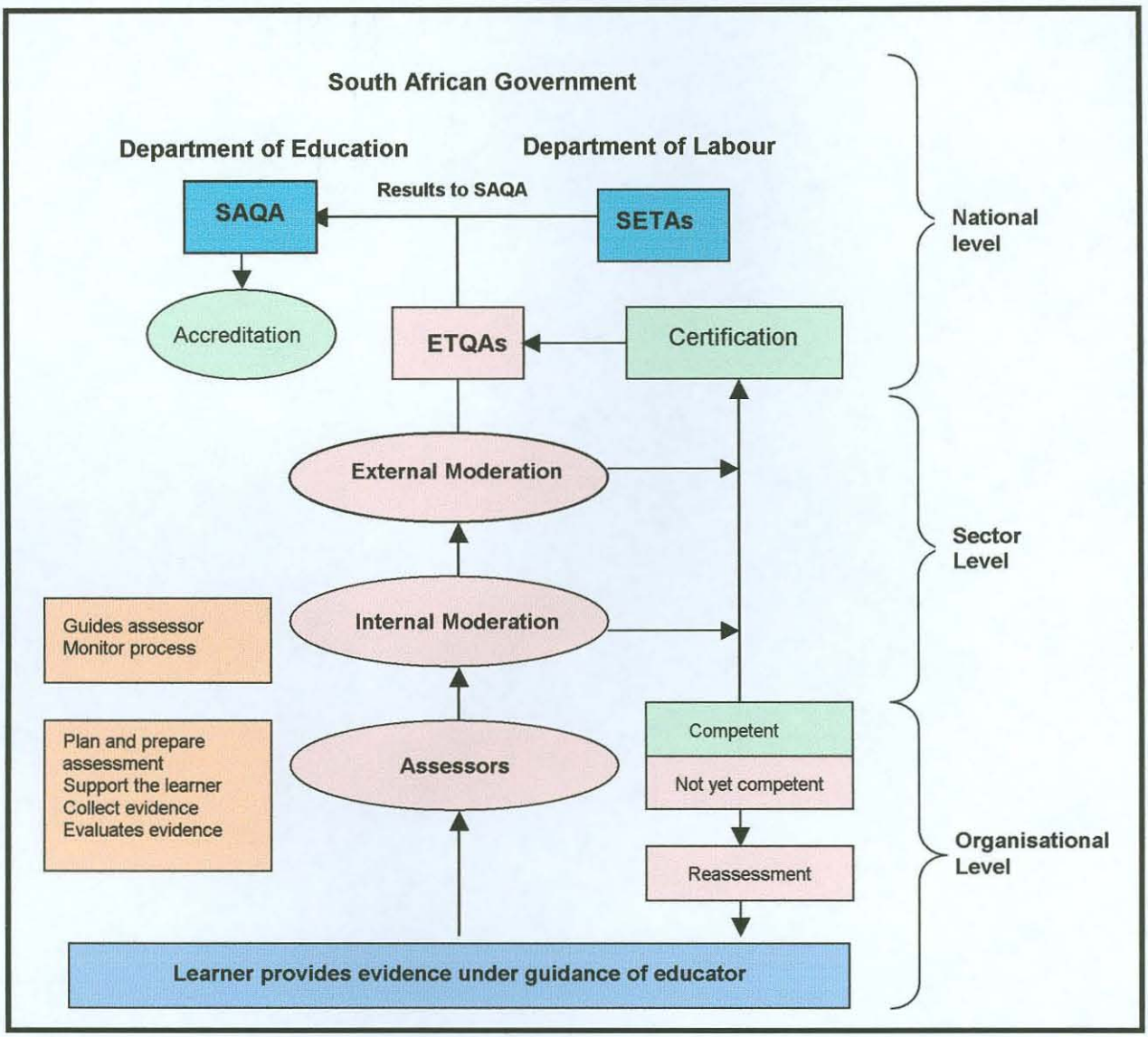
2 The legislative and educational concepts of outcome-based assessment

The legislative and educational concepts of outcome-based learning in South African education, training and development have been discussed in Chapter 3. It is indicated in Chapter 3 section 4.4 that a complete discussion of assessment will be done in Chapter 7. The following sections comply with this with a discussion of the legislative aspects of assessment, the conceptualisation of assessment, the purpose of assessment, the requirements for assessment and the types of assessment.

2.1 The legislative process of assessment

The legislative process of assessment is summarised in Figure 14 (SAQA, 2002).

Figure 14: The legislative process of assessment



The ETQA registered and SAQA accredited training provider employs ETQA registered educators (ETDPs) . These educators can be either from a formal education institution or an informal sector in industry and they provide the learner with the legal documentation of the qualification as registered on the NQF [Chapter 3]. The educator designs and develops a learning programme to guide the learner through authentic learning opportunities and activities to become competent in the specific and critical cross-field outcomes as described in the qualification or unit standard [Chapter 4]. The educator facilitates the process of learning [Chapter 5] and the learner uses the qualification as guideline and the learning opportunities to develop competence in the specific and critical cross-field outcomes as described in the qualification or unit standard [Chapter 4]. The learner compiles a portfolio of evidence [Chapter 6] to be submitted to the assessor who plans and conducts the assessment with continuous supports to the learner [Chapter 7].

The assessor evaluates the competence of the learner and submits the evidence to the internal moderator for quality assurance by the ETQA. The internal moderator submits the evidence to the external moderator who advises the ETQA to accept the evidence as valid and reliable evidence of the learner's competence against the specific and critical cross-field outcomes as described in the qualification or unit standards [Chapter 4]. The ETQA does the certification of the learner and the name of the learner is added to the NLRD.

In the private sector the SETAs will provide for the learnerships for in-service training in the Department of Labour (Services SETA, 2002).

Assessment is the key to make decisions about individual performance for accreditation and certification and the aim is that all learners should be a hundred percent competent (Wolfson, 2001:238; Siebörger & Macintosh, 2001:17).

The legislative process of assessment in context of this study

The HETQA accredits the HEI (UP) as a training provider and the co-ordinator as well as all educators accredited by UP at the different training venues in South Africa, as ETDPs [Chapter 5] to present the FDE(CAE) qualification. The co-ordinator is a trained assessor and acts as assessor (organisational level) for the qualification that is registered on the NQF. The representative of UP acts as internal moderator and UP appoints an external moderator for the qualification (sector level). The HETQA acts as quality assurers and accredits the learner and allows certification after which the learner's name will be submitted to the NLRD for registration on the NQF.

2.2 Conceptualisation of assessment

Assessment comes from the Greek word "sitting next to..." and it is essential to determine what is understood by the concept 'assessment'. Table 95 is a summary of the conceptualisation of 'assessment' relating to the specific and critical cross-field outcomes in a unit standard or qualification in South African education, training and development.

Table 95: Conceptualisation of "assessment"

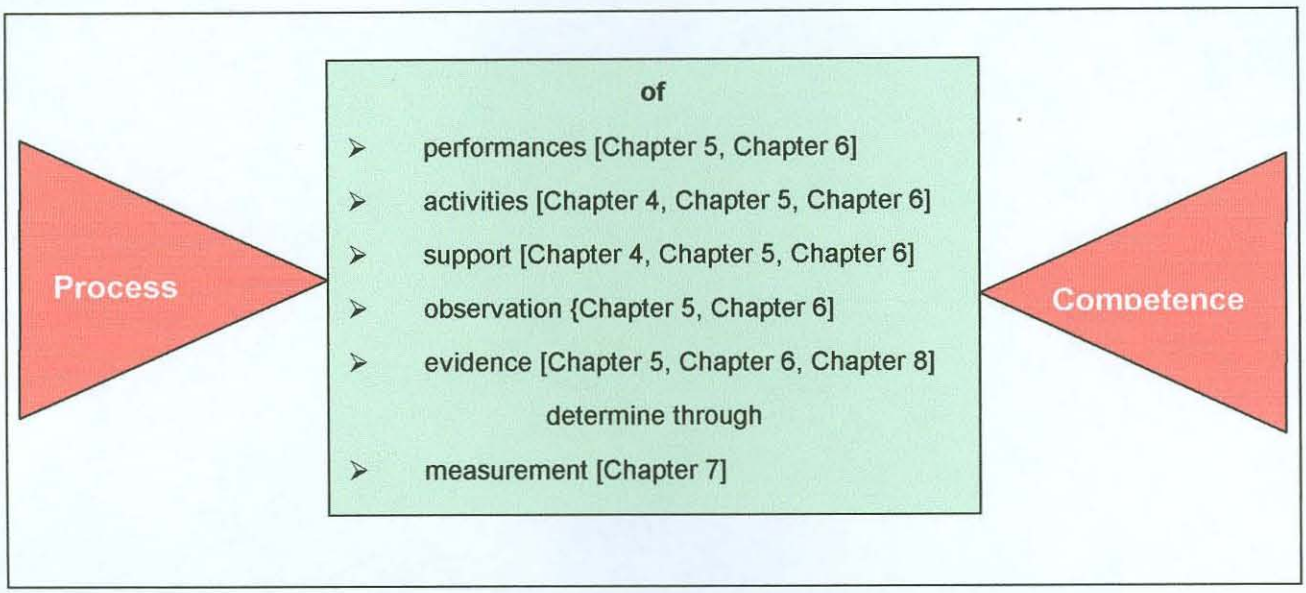
Author(s)	Conceptualisation of "assessment"
HSRC (1995:1)	"The **process** of determining capability which is carried out by **observing** and evaluating **performances**. There are **different ways** in which assessment may be carried out."
King (1999)	"Assessment involves the **process** of collecting and interpreting evidence of learner **achievement**"
Lancaster (2001:95) SAQA (1998:2)	"Assessment refers to the procedures used for judging the **achievements** of the learner." "The structured evaluation of a person's ability to **demonstrate** the acquisition and application of outcomes of a programme of learning, leading to the award of a qualification."
Mabaso (2001:164)	"The collection of information about an individual learner / employee and thus making a judgement that is based on the evidence about **performance** and / or an inference about competence."
Mokhobo-Nomvete (2000:4)	"...assessment in education and training is about making judgements about the results of learning so that decisions can be made...e.g. can the learner **do a certain job**?"
Norms and Standards for Teacher Education, Training and Development (1997:xi)	"The **process** of determining capability which is carried out by **observing** and evaluating **performances**. There are **different ways** in which assessment may be carried out."
Olivier (2000:109)	"Assessment becomes a series of **activities** that take place to obtain evidence about a learner's progression and competence. **Different ways** and techniques should be used to gather evidence to do assessment throughout the learning **process**."
SAQA: Discussion Document for Public Comment (2000)	"The **process** of collecting evidence of learners' work to measure and make judgements about the **achievement** or non-achievement of specified national qualifications Framework standards and / or qualifications."
Spady (1994:189)	"Generic term for the **process** of gathering information on the quality of a product, **performance**, or **demonstration**. Assessment typically implies the use of **methods other than traditional** paper and pencil testing."
Siebörger & Macintosh (2001:7,6)	"Educational assessment is part of the **process** of learning not something separate." "The purpose of educational assessment is ... to help learners to learn and to **achieve** more."
Van der Horst & McDonald (1997:72,170)	"Assessment involves the **process** of collecting and interpreting information or evidence of learner achievement so that comparisons or evaluations can be made." "It is a **data gathering strategy**. The **measurement or data** you gain from assessment helps you to evaluate"

The synthesis from Table 95 summarises the following construction of "assessment":

Assessment is about the **process** of the **performance** through **activities** and **support** of the learner while **observations** are made and **evidence** is gathered to **measure** the **competence** of a learner against the outcomes.

This conceptualisation can be demonstrated as in Figure 15 where the process results in proving the competence of a divergent thinker and life-long learner.

Figure 15: Conceptualisation of "assessment"



The conceptualisation of assessment in context of this study

Table 96 indicates that this study adheres to the conceptualisation of assessment.

Table 96: The conceptualisation of assessment in context of this study

Conceptualisation	Context in the study
Process	All activities that the learner performs over a period of time, e.g. from the handout of the administrative material, e.g. unit standard, until the final assessment are included in the process of learning that is assessed against the specific outcomes
Activities	A variety of opportunities of activities that are submitted for assessment include classwork, learning tasks, information searches, summaries, hands-on practical applications [refer Chapter 4 and Chapter 5]
Performances	The learner has the opportunity to submit alternative evidence of authentic performance tasks to provide evidence of competence [refer Chapter 4 for the learning tasks and Chapter 5 for lecture activities]
Support	The educator supports and guides the learner through the process during lectures as well as via alternative synchronous and asynchronous media, and does not aim to deliver a product [Chapter 5 and Chapter 6]
Observation	There are various opportunities for observation: the educator and peers observe during lectures and the learner has to provide a witness for the tasks and activities that were not performed in the presence of the educator or assessor [Chapter 5 and Chapter 6]
Evidence	The learner submits evidence of all efforts to prove competence against the specific outcomes. Evidence includes written assignments, video clips, photos, printout of documents [Chapter 6]
Measurement	Measurement against the specific outcome is done by the use of an assessment matrix, checklists, tests, memoranda [Chapter 7]
Competence	The competence of the learner is measured as "1" if the evidence provided for the competence is quality assured, valid and reliable, and "0" if the learner is not yet competent against the specific outcome [Chapter 7 and Chapter 8]

2.3 The purpose of assessment

Mothamaha (in Meyer et al, 2001:vii) states:

"It is not what you know that makes you,

It is the practise of what you know that makes you."

The purpose of outcome-based assessment in South African education, training and development is to determine the competence of a learner against the specific and critical cross-field outcomes of a national unit standard or a qualification. This indicates that the purpose of outcome-based assessment is not only to determine what levels of academic performance the learners have achieved (*"What you know"*), but to determine what the learners can do with the skills that they have acquired (*"...the practise..."*).

Assessment is therefore an integral part of learning and serves to be both developmental as well as judgemental and to prepare the learner for life-long learning in an authentic environment (Mabaso, 2001:165; Van der Horst & McDonald, 1997:173).

One of the most relevant concerns of outcome-based learning is that all learners are expected to be successful as proved by assessment practices (Siebörger & Macintosh, 2001:17; Spady, 2002; Van der Horst & McDonald, 1997:145).

The purpose of assessment, i.e. to determine the competence of learners, is therefore as indicated and applied in Table 97 (Conley, 2002; RMC Research Corporation, 2002; Siebörger & Macintosh, 2001:38; South Africa, 1998a; South Africa, 1998b; Spady, 1994:40, Van der Horst & McDonald, 1997:133; Winsor, 1998).

Table 97: The purpose of assessment in context of this study

Purpose	Context in this study
To gather the most accurate and pertinent information to determine whether the learner is competent or making progres sagainst the assessment criteria that describe the specific outcome	The learner has to submit a portfolio of evidence of all activities to prove competence of learning against all five the unit standards. This portfolio contains the evidence of the learning process as well as the progression of the learner [Chapter 6]
To improve education, training and development, the standards, the learning programme and the learning process	The assessment is an integrated process and contributes to the improvement of education, training and development, the standards and the learning process because learners are more excited about the alternative way of assessment than content-based evaluation and according to feedback they give preference to it
Clarification of any unclear point with reference to strengths and weaknesses regarding developmental needs	Discussions on the unit standards and an action research approach contributed to changes and clarification [Chapter 2 and Chapter 4]
Offer positive feedback in respect of growth and achievement	The process of assessment provides for regular positive feedback. Once the assessment has been completed, the learners have to come for an interview regarding the areas that need attention and they are guided to improve until competent [Chapter 7 and Chapter 8]
Progressively lead learners to attainable outcomes for continued growth	The portfolio of evidence provides for the input of the learner to expose the process of growth, because it does not only contain the "best" examples, but all evidence that the learner gathers to be competent and that also reflects all the examples [Chapter 4, Chapter 5 and Chapter 6]
To determine recognition of prior learning	A separate section in the portfolio of evidence can be introduced where prior learning is identified. In this study prior learning was neglected as far as the unit standards are concerned, but prior learning was determined at every lecture.
It has a purpose of diagnosis, evaluation, guidance, grading, selection, prediction and control	The way in which the assessment has been done in this study provides for all these aspects as will become clear in the following sections

2.4 Types of assessment

In the content-based learning environment evaluation primarily included tests and examinations to determine a pass or a fail percentage for a learner. In outcome-based learning a number of significant alternatives need clarification.

2.4.1 Norm-referenced assessment

Mabaso (2001:168) Mokhobo-Nomvete (2000:5) and Van der Horst & McDonald (1997:168) describe norm-referenced assessment as an exercise to compare learners with one another and therefore differentiate between learners in order to rank or compare learners' performances in relation to the performance of other learners.

Norm-referenced assessment includes iterative teaching, testing, grading, reporting, the advancement through the pre-determined curriculum, averages and usually only one opportunity for learners to prove that they have "learnt" something. Standards, comparison, competition, statistics, symbols and pass / fail are typical of this type of assessment (Siebörger & Macintosh, 2001:14; Spady, 1994;31-35). Norm-referenced assessment is incompatible with outcome-based learning (Mokhobo- Nomvete, 2000:6).

2.4.2 Criterion-referenced assessment

The conceptualisation of criterion-referenced assessment is explained in Table 98.

Table 98: Conceptualisation of "criterion-referenced assessment"

Author(s)	Conceptualisation of "criterion-referenced assessment"
Mabaso (2001:168	"...criterion-referenced assessment has to determine whether a learner is competent against the clearly specified outcomes in the unit standard that are described by assessment criteria. The emphasis is on the performance of the learner and not the reproduction of information."
Mokhobo-Nomvete, 2000:5	In criterion-referenced assessment judgements are made against set criteria that state what a learner knows and can do and not judging in terms of what other learners know and can do
Spady (1994:189)	A criterion is "an essential performance component used to judge its completeness and quality." In this case the learner to be assessed will have no impact on the other learners, with no symbols or scores comparison, but the emphasis on the "individuals to use the potential that is within themselves" (Spady, 1994:39-41)
Siebörger & Macintosh (2001:15	Criterion referencing is the use of criteria as reference points, i.e. achievements are compared with descriptions which have been specified in a list
Van der Horst & McDonald (1997:12, 168)	"Criterion-referenced assessment refers to ... scores not compared to those of other learners ... but to a given or set criterion or standard performance ... so that the information can be used to adapt the instructional process ..." "When learners are assessed against a set of external criteria, such an assessment is known as criterion-referenced assessment."

According to Table 98 criterion-referenced assessment is the way to determine the competence of a learner against a set of criteria (assessment criteria in the unit standard) with no scores or comparison with other learners but with the aim to adapt the learning process to the benefit of the learner.

This study emphasises the importance of criterion-referenced assessment. The educators and learners do not understand the concepts especially when they are in a content-based system and they demand content-based materials to learn by heart.

2.4.3 Authentic assessment

The conceptualisation of authentic assessment is explained in Table 99.

Table 99: Conceptualisation of "authentic assessment"

Author(s)	Conceptualisation of "authentic assessment"
Siebörger & Macintosh (2001:36)	"Assessment which is appropriate to the purpose for which it is used and appropriate to the nature of that which is being assessed; it includes more **practical, realistic and challenging approaches** to assessment than traditional written methods; sometimes used in contrast to objective testing, which is viewed by some as not being authentic."
Spady (1994:189)	"The **process of gathering information directly pertinent to the quality of a performance** that 'perfectly embodies' all of the defined aspects of the performance – hence the term 'authentic'."
Van der Horst & McDonald (1997:168)	"... authentic assessment which thus concerns the **measurement of complex performances and higher order thinking skills in real-life** context."

The essence of authentic assessment is therefore that it happens as if in real life. Spady (1994:189) and Van der Horst & McDonald (1997:168) elaborate on authentic performance assessment that includes a learner who actually demonstrates how to organise, plan, design and produce a real-life activity. The learning tasks as described in Chapter 4 adhere to this requirement. The learners were not used to it and wanted to learn facts to reproduce for good grading. They did not understand the meaning of the use of a PowerPoint slide show for presentation to a governing body of a school [Chapter 4].

Van der Horst & McDonald (1997:189) summarise the following advantages and disadvantages of authentic assessment as in Table 100.

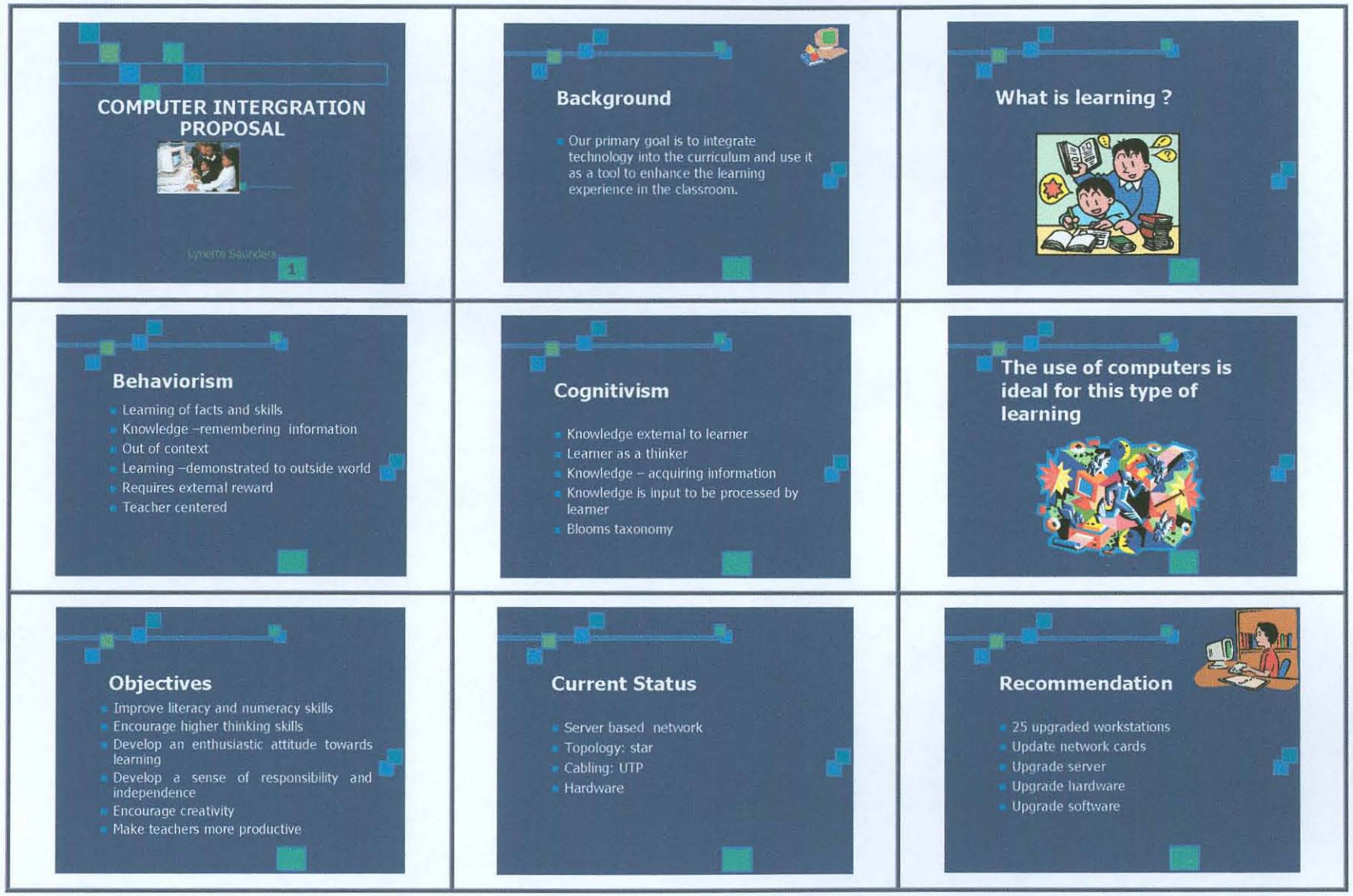
Table 100: Advantages and disadvantages of authentic assessment

Advantages of authentic assessment	Disadvantages of authentic assessment
Support learner diversity, abilities and cultural background	Time-consuming in some cases
Motivational with reference to relevance to learner	Requires more sources and resources, careful planning for effective tasks
Gives an holistic perspective of learners' abilities and performance in real-life	Assessment is more complicated
Monitor learners' performance with real-life activities	
Authenticates the learning situation	

In this study the benefits outnumbered the disadvantages. The learners had scope to apply their knowledge and skills in a authentic way to their own cultural environment when they designed a website for their specific educational purposes and prepared a PowerPoint slide show for the implementation of computer centre in their own school. On the other hand the learners had enough time (120 notional hours of learning) [Chapter5], they had access to unlimited sources and resources (internet, library, expert advice), and although the assessment may have been more complicated to some extent, the end result is much more satisfactory and lasting. Learners can apply what they learn, e.g. some learners mentioned the relevance to their daily lives and some even changed their careers. Figure 16 contains some of the slides (without notes) of a PowerPoint slide show a learner used to present a proposal for the computer centre to the governing body of the St. James School. This proposal was accepted by the governing body in 2002 and will be implemented in 2003 as indicated in the copy of the e-mail in Figure 17 (Saunders, 2002)[35].

[35] Note: This is a copy from the original as received from the educator and should not be edited for language

Figure 16: PowerPoint slide show on "Computer Integration Proposal" (Saunders, 2002)



This proposal was an authentic learning experience for the learner as demonstrated in the e-mail from the learner to the co-ordinator as copied in Figure 17.

Figure 17: E-mail that accompanied the PowerPoint slide show (Saunders, 2002)

----- Original Message -----

From: Lynette Saunders

To: Annette de Jager

Sent: Saturday, November 09, 2002 1:11 PM

Subject: COMPUTER integration PROPOSAL.ppt

Dear Annette

Here is the PPT presentation that I used to sell the idea of the computer centre to the principal, staff and governing body. I used different parts of it to suit the different audiences. As you can see it gives the whole picture of what I have gained from the course. It was exciting to apply the knowledge and skills (this has really been an integration experience). Everything just seems to have fit into place and one thing lead to another- The website - donations- upgrade-etc. I will be the dedicated computer teacher next year and I am looking forward to the challenges that lie ahead with confidence and much enthusiasm.

This would never have been possible without your guidance, and encouragement.

I have certainly benefited from your constructivist approach to this course. I suppose you could say that I have now been fully converted to OBE as I have had first hand experience of it.

Thank you so much for adding another dimension to my teaching career.

Lynette

2.4.4 Formative assessment

Formative assessment allows for both the learner and the assessor to monitor progress, make amendments, provide feedback to reflect on and to improve future performance in order to maximize their learning (Mabaso, 2001:168; Mokhobo-Nomvete, 2000:6; Olivier, 2000:68; Ramotsehoa & Mabaso, 2001:127; Siebörger & Macintosh, 2001:24; Van der Horst & McDonald, 1997:168). It is more developmental than judgemental and relies on self-assessment and / or peer assessment to distinguish strengths and weaknesses in a formal (e.g. tests) or informal (e.g. questions and observations) way.

Formative assessment may include formal tools like checklists, quizzes, question and answer, assignments, standardised tests, classroom tests, portfolios, performance tasks, interviews or informal tools like journals, observations, question and answer, comments, assignments (Van der Horst & McDonald, 1997:173). It was not intended to determine whether the learner had successfully achieved the stated outcome or not, but for feedback on the learner's learning and as a learning tool (Jonker, 1997:21; Mokhobo-Nomvete, 2000:6).

Formative assessment was applied where the learners were exposed to an introduction to what was expected of them in the authentic class activities that served as formative assessment practices. They went home and elaborated and improved on these activities when they prepared for the learning tasks. In the follow-up class activity the learners had the opportunity to discuss and reflect on what they had done in order to develop and maximize their learning. Examples of formative assessment are discussed and referred to in Chapter 4.

2.4.5 Summative assessment

Summative assessment assesses final competence at the end of the learning programme in order to make judgements about achievements and does not modify the learner's learning (Conley, 2002; King, 1999; Mabaso, 2001:169; Mokhobo-Nomvete, 2000:6; Olivier, 2000:68; Ramotsehoa & Mabaso, 2001:127). Van der Horst & McDonald (1997:168) add to this and state that it is "a summary of the learner's performance – all forms of assessment are added together and averaged to serve a summative purpose at the end of the unit, term or year." It requires the collection of sufficient, appropriate evidence on which judgement about achievement against the relevant unit standards can be made. The results of formative assessment should be taken into account in making this final judgement (King, 1999).

The main purpose is to make a statement about the competence of a learner at a stage when the learner is ready to be assessed, which is usually conducted at the end of a lesson, a unit or a course (Olivier, 2000:68; Siebörger & Macintosh, 2001:24; Van der Horst & McDonald, 1997:172). In content-based learning summative assessment practices were characterised by testing learners' recall of knowledge. In outcome-based learning summative assessment practices will reveal information about the teaching as well as the learning that has taken place and can be conducted in various ways, e.g. interviews, observations and standardised tests (Van der Horst & McDonald, 1997:172).

Summative assessment may also include formal tools, e.g. inquiry, work projects, standardised tests, classroom tests, interviews, portfolios and performance tasks or informal tools, e.g. discussions, observations, work projects and feedback (Van der Horst & McDonald, 1997:173).

Summative assessment is assessment for judging achievement and is carried out when a learner is ready to be assessed (Mokhobo-Nomvete, 2000:6).

All the activities of a learner are included in the portfolio of evidence. Formative assessment activities are included and at the end a final assessment date is determined to give the learner an opportunity to validate the evidence.

2.4.6 Continuous assessment (CASS)

Continuous assessment takes place over a period of time during the learning process and the learners have a variety of ways to demonstrate competence that can be used for formative purposes. The emphasis is mainly to support the learner developmentally, give feedback on learning and on managing the future process rather than accentuating the unit standards achieved by the learner at the end of the learning and it aims to be positive and constructive with recorded or documented evidence of the learner's work (King, 1999; Mabaso, 2001:169; Ramotsehoa & Mabaso, 2001:127; Siebörger & Macintosh, 2001:25; Van der Horst & McDonald, 1997:7). Continuous assessment is not the gathering of traditional tests results, but authentic assessments of skills, knowledge and attitudes and should be included as criterion-referenced activities (i.e. measuring individual performance against clearly defined standards). King (1999) and Nielsen (1997:294) regard the greatest advantage of continuous assessment to be that it allows the learners the opportunity to progress at their own pace.

2.5 The requirements for assessment of outcome-based learning

According to Brennan & Shah (2000:16), HSRC (1995:18), Mabaso (2001:95, 164) Olivier (2000:6, 68), Siebörger & Macintosh (2001:11) and Spady (1994:149) the requirements of assessment for outcome-based learning are as indicated and applied in Table 101 to this study.

Table 101: The requirements of assessment in context of this study

Requirements	Context in this study
Assessment must assess and be in context of specific outcomes as well as critical cross-field outcomes and be linked to outcomes and outputs and not content and inputs	The unit standards are explained and handed out The learning tasks are handed out and explained The learning programme is explained The facilitation of learning provides for transparency The final assessment is transparent and learners can question their results
Learners must have a clear understanding of what is being assessed as well as the impact it will have on their learning and progress	All learners must be duly informed about all the activities regarding the assessment. The assessment procedures are explained
Principles of transparency, fairness, reliability and validity must be complied with	All learners must have insight in any assessment practices
An integrated assessment framework including formative and summative assessment methods	Evidence in the portfolio of evidence include formative (class work- and learning tasks) and summative (final assessment activities) assessment
Methods and assessment instruments must be according to what is being assessed	Class-work, learning tasks, discussions, interviews and tests are assessed against an assessment matrix, observation checklists and a test memorandum
Assessment methods must be criterion-referenced and not norm-referenced	The assessment criteria are clearly stated and are not content-based but outcome-based
After assessment there must be clear indication of areas for improvement	After assessment learners receive a document indicating the competence and not yet competence (all included in the portfolio) After final assessment the learners can view the assessor's results
Recording of results is vitally important	The results are recorded and handed to the accreditation body (UP in the case of this study)

2.6 Changes in the assessment practices

Mabaso (2001:161), Spady, (1994:7) summarise the shift in assessment practices as in Table 102.

Table 102: Content-based assessment compared to outcome-based assessment

Entity	Traditional Practice	Outcomes-based Practice
Focus	Content and learning ability; limited to one educational stage (grade) and time-frame	➢ Learning outcomes and practice ➢ Life-long learning ➢ Time is manipulated to the advantage of the learner
Foundation	Curriculum defined by a central body and treated as as an end in itself	Qualification and unit standards as defined by standards generating processes
Assessment requirements	Integral part of the learning programme and often treated as an end in itself	Linked to the learning programme and focuses on the application of competence as per outcomes and assessment criteria
Evidence	➢ Assignments and examinations; as determined by the syllabus ➢ Norm-referenced ➢ Summative evidence ➢ Passive learners when evidence of competence is rated ➢ Bad performances become part of the learners' history ➢ Ranking	➢ Evidence collected through a variety of methods in the appropriate context ➢ Criterion-referenced ➢ Formative and summative evidence ➢ Learners are proactive about evidence

3 Assessment and the learning programme

The design and development of the learning programme is fundamental to the assessment of outcome-based learning as explained in Chapter 4. Apart from the need for alternative ways of assessment, the need for integrated assessment still exists.

3.1 The need for alternative ways of assessment in the learning programme

Siebörger & Macintosh (2001:35) states that assessment is essential to outcome-based learning because assessment is the vehicle to measure to what degree learners have achieved the outcome. The need for alternative ways of determining learners' performances can no longer be ignored. Siebörger & Macintosh (2001:59) and Van der Horst & McDonald (1997:13) further emphasise that assessment can no longer be seen as a once-off happening, but that learners need feedback and they must be assisted to try again to improve their performance for competence. Further opportunities for assessment are essential.

The following are real-life experiences of evidence of a once-off performance where content-based examinations determine the "pass" or "fail" of a learner:

➢ A learner accumulated a predicate of fifty-six percent through tests, examinations and assignments in a course in the Faculty of Health Sciences during 2001. When writing a once-off examination the learner achieved a final mark of forty-three percent. The learner is not allowed to write a supplementary examination (requirement is forty-five percent) and has to repeat the

subject in 2002. The further implication is: the learner has to take this single major third year subject (Work Physiology) during 2003 – losing out on a year of this learner's existence and economic productivity (Technikon Pretoria, 2001).

- During the June 2002 examination at a local higher education institution about four-hundred learners did a supplementary examination in a first year course (Mercantile Law I). The supplementary paper was set for 60 minutes and counted forty marks. To pass the subject learner had to accumulate twenty marks in this paper. A single "pass" or "fail" opportunity (University of Pretoria, 2002).
- A learner has performed well in all the aspects of the preparation for the final board examination of the South African Institute for Chartered Accountants (SAICA). After completing a first degree, an honours degree, the advanced certificate in auditing, the certificate of theory in accountancy and practical experience, to register as a chartered accountant a candidate has to pass two final written board examinations, one in March and one in November. The learner is exposed to two papers during each session and the only feedback the learner receives is either a pass or a fail, without any opportunity to have access to not yet competent performances or improvement (South African Institute for Chartered Accountants, 2002).

In an outcome-based learning assessment system these learners would have had an opportunity to improve on their performances after in-depth feedback from an educator.

3.2 Integrated assessment

"Integrated assessment means that form of assessment which permits the learner to demonstrate applied competence and which uses a range of formative and summative assessment methods" (Norms and Standards for teacher Education, Training and Development, 1997:115). A learner is accredited with a qualification if the learner accumulates credits through integrated assessment. The HSRC (1995:15) document concludes that to obtain the qualification, the learner undertakes a final assessment establishing whether he or she has integrated all the learning, and whether he or she is able to use it in specific contexts.

According to the HSRC (1995:54) and King (1999:12) integrated assessment of competence provides evidence of a learner's ability to deal with familiar and predictable and/or unfamiliar and unpredictable contexts and is an integral part of outcome-based learning.

Mabaso (2001:164) emphasises that assessment is an holistic and integrated process of aspects of performance like knowledge, understanding, problem-solving, technical skills, attitudes and ethics. This evolves in the assessment of more than one outcome, assessment criteria and unit standards together using a number of assessment methodologies and instruments. King (1999:12) elaborates on the principle of integrated assessment in South African outcome-based learning. Table 103 is a compilation from King (1999) and lists the principles of integrated assessment and the application in this study.

Table 103: Integrated assessment in context of this study

Integrated assessment	Context in this study
The way in which knowledge, skills and attitudes are explicitly identified in specific outcomes, assessment criteria and range statements [Chapter 4]	Each specific outcome is written in terms of the assessment criteria and range statements [refer Chapter 4 section 3.2.1 for the unit standard]
The demand for evidence of achievement through different kinds of processes and performances [Chapter 6]	The portfolio of evidence provides for different kinds of processes and performances as described in Chapter 4 section 3.2.4.3 and Chapter 6 section 2.3
Applying skills rather than reproducing facts or ideas Promote the performance of complex tasks Involve authentic products or solutions Tasks that are set in a meaningful context that brings together various skills and ideas Skills that can be transferred to different contexts	The learning activities are directed towards the higher cognitive levels of Bloom's taxonomy of the cognitive domain of learning [refer Chapter 4 section 3.2.4.2 for the learning tasks and section 3.2.4.3 for integrated class activities] The learner has to find information, compile an authentic task to be presented to an audience in real life according to the learner's own context and skills., e.g. creating the PowerPoint slide show for a governing body to explain the implementation of a new computer centre for the institution
This evolves in the assessment of more than one outcome, assessment criteria and unit standards together using a number of assessment methodologies and instruments	Learning tasks were holistic where learners had to integrate knowledge and skills to be assessed against different methodologies [refer Chapter 6 section 2.3]

3.3 Assessment concepts

The learner is assessed against the specific and critical cross-field outcomes of the qualification or unit standard. In this study the qualification contains five unit standards that are explained in Chapter 3 section 3.4.1 and Chapter 4 section 3.2.1. The concepts of assessment criteria and range statements need more explanation.

3.3.1 Assessment criteria

To determine whether a learner is competent against the specific and critical cross-field outcomes of a qualification or unit standard, the educator measures the learner against the assessment criteria of the specific outcome. Assessment criteria are the criteria (standards of measurement) included in a unit standard designed to determine the achievement of specific and essential outcomes. They state the evidence against which the achievement by learners may be assessed. Minimum performance criteria indicate the minimum standards that a learner has achieved (King, 1999; Van der Horst & McDonald, 1997:72).

According to the Norms and Standards for Teacher Education, Training and Development, (1997:116) assessment criteria are the following:

- Derived directly from the outcome and provide evidence that the learner has achieved the outcome
- Indicate in broad terms the observable processes and products of learning which serve as culminating demonstrations of the learner's achievement
- Form a logical set of statements of what achievement could or should look like

3.3.2 Range statements

According to the Norms and Standards for Teacher Education, Training and Development, (1997:116) the range statements provide sufficient details of exactly what and how much learning marks an acceptable level of achievement of an outcome and should therefore indicate the level of complexity and the extent of rigour that the learners are expected to master as follows:

- Should detail the equipment, materials, methods or processes the learners should use to demonstrate that they can achieve the outcomes
- Should indicate critical areas of content and context which the learners should engage in, in order to reach the acceptable level of achievement
- Can be used to create units at different levels with the same outcomes and assessment criteria

The assessment criteria and range statements of the specific outcomes in the NTG 471 unit standard in context of this study

The assessment criteria and the range statements of the specific outcomes in the NTG 471 unit standard are applied as in Table 104. It indicates that this study adheres to assessment criteria and range statements of the specific outcomes for assessment.

Table 104: Assessment criteria of the specific outcomes in the NTG 471 unit standard

Specific outcome	Assessment criteria	Range statements
Identify, describe and apply knowledge on Web-based design (SO1) **CO as per unit standard**	1.1 Demonstrate knowledge of sound design principles	
	1.2 Design a website for educational purposes	Apply design principles Storyboard the website Use an appropriate software program
	1.3 Publish the website	Submit an accessible URL
Understand and apply the principles and application of networks (SO2) **CO as per unit standard**	2.1 Apply knowledge of the components of a network	LAN, MAN, WAN
	2.2 Apply knowledge of the typology of a network	Bus, Star, Ring
	2.3 Apply knowledge of the cabling of a network	Co-axial, UTP / STP
	2.4 Apply knowledge of the types of a network	Server-based, peer-to-peer
	2.5 Apply knowledge of the administration of a network	Compile a strategy for the implementation of a network in the institution according to the needs

These assessment criteria and range statements give the scope of the assessment and are applied and referred to in the assessment instruments used for the assessment of this NTG 471 unit standard.

4 Assessment and the facilitation of learning

During the facilitation of learning different role players contribute to the assessment, i.e. the learner, the assessor, the assessment advisor, the internal moderator, the external moderator, the institution, the registration body and the accreditation body.

4.1 The learner

The learner is the person who wants to submit evidence to be assessed to determine competence regarding the specific outcomes for a qualification. The learner must have a clear indication of the outcomes, the conditions, the time and the criteria to determine competence and all learners must receive a copy of the specific outcomes and assessment criteria (King, 1999; Siebörger & Macintosh, 2001:10, 17; Spady, 1994:11). The learners become active participants and involved in their own assessment by making decisions about when and how assessment will take place as far as the assessment method, time, period, comments on the level of difficulty of the assessment and the nature of evidence are concerned (Mabaso, 2001: 164,171; Siebörger & Macintosh, 2001:8).

To adhere to these requirements the following happened:

- Learners were issued with the unit standard
- The educator explained the unit standard to the learners
- The educator explained the learning programme, the conditions and the criteria to determine competence
- The learners performed all activities in the learning programme against the unit standard
- The learners compiled a portfolio of evidence
- The learners contributed to decision making on the time and date of assessment

4.1.1 Self-assessment

The learner may do a self-assessment that must correlate with the assessment done by the assessor (Spady, 2001:11). Self-assessment will stimulate meta-cognition, ownership and responsibility to contribute to the learning process (Van der Horst & McDonald, 1997:201).

4.1.2 Peer-assessment

*Learners can become involved in assessing each other by judging assessment products using pre-*determined criteria (Siebörger & Macintosh, 2001:8).

4.1.3 Co-operative learning assessment

In a co-operative learning environment the learners and the educator assess each team's contribution to the task and can include individual and team assessment (Van der Horst & McDonald, 1997:133).

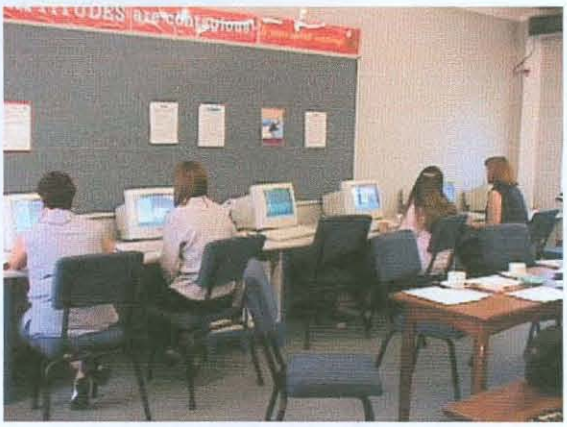
Co-operative learning in the context of assessment in this study

There was no time for co-operative learning assessment (self or peer assessment) and the new idea was to introduce it in the next cycle. However, the learners in Durban and Newcastle prematurely shaped into a natural co-operative learning team with unbelievable vitality and synergy. The result was that when they received their summative learning tasks, they spontaneously grouped together for discussion without even considering the assessor. After the discussion each learner created her own slides for the PowerPoint presentation. The evidence of these activities were photographed as in Figure 18.

Figure 18: Co-operative learning during summative assessment (Durban and Newcastle)

Durban learners discussing the problem

Durban learners creating their own part of the presentation



Durban learners contributing to the final product

Newcastle learners discussing the problem

The learner in the context of assessment in this study

The learners played an important role in as far as they had to collect evidence for competence against the unit standard. Table 105 indicates that this study adheres to the needs of the learner.

Table 105: The learner in context of assessment in this study

The learner	Context in this study
The learner must have a clear indication of the outcomes, the conditions, the time and the criteria to determine competence	The co-ordinator makes sure that all learners are well-informed by visiting the different training venues to explain the process to the learners because the educators themselves are inadequately prepared to do so.
Learners are issued with the unit standard	Learners are issued with the unit standard when they meet with the educator on the first day. If the meeting with the co-ordinator is before that initial meeting, the co-ordinator hands out a unit standard to each learner.
The educator explains the unit standard to the learner	The educators are not prepared and informed to explain the unit standard, and therefore the co-ordinator does so
The educator explains the learning programme, the conditions and the criteria to determine competence	Learners do not understand how to design and develop their own learning programme and the educator have to provide guidelines
The learner performs all activities in the learning programme against the unit standard	Both educators and learners receive the documentation of activities against the unit standard
The learner compiles a portfolio of evidence	The learners have the opportunity to be creative in the compilation of the portfolio of evidence
The learner contributes to decision-making on the time and date of assessment	The learners and the educators decide on the time and date of assessment
Self-assessment, peer-assessment, co-operative learning environment are encouraged	Learners have limited exposure to these opportunities during this cycle of the reaction research

Analysis and synthesis

- Understanding of outcome-based learning does not come naturally to educators or learners
- It takes time to inform them and it takes more time to bring them to a full comprehension of what the changes are. After a year of exposure to a process of unit standards and assessment both educators and learners still put such questions to the co-ordinator as: "What do you expect us to do?" When the educators and learners are referred to the assessment criteria in the unit standard they say: "O, now we understand!"
- However, notwithstanding regular visits by the co-ordinator and the effort to explain, the educators go beyond what is expected of the learners and overload learners with irrelevant information pertaining to the requirements of the unit standard.
- Learners applied self-assessment and peer-assessment without evidence, i.e. when the co-ordinator received portfolios of evidence, learners and educators indicated competence against the specific outcomes of the unit standard without any substantiated evidence of competence. When the co-ordinator asked about this, both the educators and the learners articulated, "I just know I can do it!" They did not realise that to know how to do something is not valid and reliable evidence of competence.

Recommendations

When introducing integrated assessment in outcome-based learning:

- All stakeholders must be well-prepared and well-informed about all processes and procedures through continuous communication and negotiations
- It takes time for educators and learners to adapt to the idea that methodologies alternative to what they are used to, are acceptable
- An educator or learner only understood after iterative self-exposure and partaking as if in an action research environment, was facilitated

This study is a pilot study in outcome-based learning and assessment practices. Self-assessment, peer-assessment and co-operative learning assessment need further research and need to be implemented in the next cycle.

4.2 The assessor

"Learning is no longer something that is 'done to' the learner, but something that the learner is actively involved in. As such, the role of the assessor has changed: from being a 'gate-keeper', who uses assessment to prevent learners from developing further, to a supportive guide who has the success of the learner at heart – so that the learner can gain access to further learning" (SAQA: Discussion Document for Public Comment, 2000).

Assessment is an integral element of learning facilitation and as such educators of learning are engaged in assessment (SAQA: Discussion Document for Public Comment, 2000).

Assessors are described as (HRSC, 1995:146; Du Pré, 2000:ii):

- People who assess learners and candidates for recognition of prior learning and award credits (and qualifications) to learners who demonstrate the required competence specified in the assessment criteria of a unit standard and qualification
- The person who is registered by the relevant Education and Training Assurance Body in accordance with criteria established for this purpose by a Standards Generating Body, to measure the achievement of specified National Qualifications Framework standards and qualifications; and therefore 'constituent assessor' has a corresponding meaning [Chapter 3]
- The person who must design the assessment according to the unit standard, collect and evaluate reliable evidence and decide whether the learner is competent or not yet competent.

An assessor will be a trained person with the following qualities (HRSC, 1995:146; Mabaso, 2001:171; SAQA, 1999:24):

- Be competent and experienced in the area of assessment
- Have completed a training programme in assessment which achieves assessment standards encoded at progressive NQF levels
- Have a sound knowledge of the national standards in their respective areas of expertise
- Display interpersonal skills for good communication
- Professionals that can maintain confidentiality on learners' performance

4.2.1 The role of the assessor in terms of the learner

The role of the assessor in terms of the learner and in context of this study is explained in Table 106 (Mabaso, 2001:171; Olivier, 2000:110; SAQA, 1999:23; SAQA: Discussion Document for Public Comment, 2000).

Table 106: The role of the assessor in terms of the learner in context of this study

The role of the assessor	Context in this study
Inform the learner about the qualification or unit standard's requirements	All learners are informed about the qualification and the unit standard when the co-ordinator (who acts as assessor) visits the training venues
Support and guide the learner: ➢ Inform the learner about the assessment activities to be performed ➢ Standard and level of performance ➢ Type and amount of evidence needed ➢ Responsibility regarding the collection of evidence	The co-ordinator (who acts as assessor) informs the learners about the assessment activities: ➢ A portfolio of evidence, consisting of class work, learning tasks, tests and alternative information ➢ Learners are well-informed with regards what is expected of them concerning the standard and performance: it is clearly indicated that it must be authentic so that their colleagues or the community can understand what they represent in all learning tasks ➢ The type and amount of evidence are indicated in the learning programme and learners are well-informed ➢ The responsibility regarding the evidence is given in the format of instructions to declare that it is the learner's own work (refer validity of evidence)
Help the learner plan the assessment	Learners are guided by information and explanations
Discuss and inform the learner about the timing of the assessment	Educators and learners decide when they are ready. There are no pre-determined timetables
Conduct the assessment and give feedback	Assessment is conducted and feedback given as all assessments are accessible to all learners

4.2.2 The role of the assessor in terms of the assessment process

To be able to fulfil the role of assessor in terms of the learner, the assessor has to do the following in terms of the assessment process and in context of this study as is explained in Table 107 (Mabaso, 2001:171; Olivier, 2000:110; SAQA, 1999:23; SAQA: Discussion Document for Public Comment, 2000).

Table 107: The role of the assessor in terms of the assessment process in context of this study

The role of the assessor	Context in this study
Understand and become familiar with the unit standard or qualification	The co-ordinator who acts as assessor writes the unit standard and qualification
Plan and design the assessment (or source appropriate to assessment methods and instruments and modify these if necessary)	The co-ordinator who acts as assessor plans the assessment to consist of the different artefacts and measuring instruments
Collect the evidence for assessment of learner's performance in accordance with the relevant ETQA's principles and policies	The co-ordinator collects the portfolios of evidence as the evidence of competence and this is in accordance with the HETQA requirements. The co-ordinator is a trained assessor.
Evaluate the evidence against the unit standard or qualification, make a judgement about the competence of the learner and authenticate the evidence	The co-ordinator who acts as assessor evaluates the evidence against the assessment criteria
Make an assessment decision, i.e. 'competent' or 'not yet competent'	Competent is indicated by "1", not yet competent is indicated by "0"

4.2.3 The role of the assessor in terms of the legislative requirements

Assessment must be conducted according to the relevant ETQA principles and policies. Once an assessment has been done, the assessor has to comply with the following ETQA requirements (Meyer, 2001:304; SAQA: Discussion Document for Public Comment, 2000):

- Complete all relevant documentation and forward the results to the relevant ETQA
- Forward the results to the relevant ETQA for certification
- Comply with the ETQA's moderation requirements
- Review the assessment process and implement changes where necessary
- The assessor must meet with the requirements attached by the NSB or the ETQA to the assessment of the unit standard or the qualification

In this study the HEI acts as the ETQA until all of these structures are in place.

4.2.4 Registration of assessors

Assessors will have to undergo thorough training in assessment techniques to increase consistency and precision of assessment practices (Shechtman, 1992:32). Good qualifications do not necessarily contribute to good assessment practices but experience is a crucial credential of an assessor (Shechtman, 1992:36).

Assessors must register with the relevant ETQA (the HETQA). To register the assessor must have achieved the generic assessor standard and this achievement must be recorded on the National Learner Record Database (NLRD) (SAQA: Discussion Document for Public Comment, 2000). The assessor must demonstrate competence at, or preferably above, the level of the subject / field of expertise in which the assessment is being executed.

The generic assessor standards fall under the ETDQA [refer chapter 3]. Once the assessor has been credited with the assessor standards and meets the requirements, the assessor should apply to the relevant ETAQ for registration as an assessor for the specified qualification or standards. Nobody will be registered as a generic assessor, but an assessor must be able to assess in a variety of environments.

For SAQA, the assessor is any practitioner responsible for assessment of the achievement of learning outcomes (SAQA: Discussion Document for Public Comment, 2000). An assessor is a traditional teacher, lecturer or trainer who administers assessment in addition to facilitating learning, or a person alien to the learning environment. In order to register as an assessor, the individual has to meet the requirements for the expertise of an assessor. Table 108 summarises the expertise of an assessor and the tick indicates that the assessor in this study has the expertise (SAQA, 2002) (on next page).

Table 108: The expertise of an assessor in context of this study

Expertise	Comments	In this study
Subject matter expertise / occupational / contextual	➢ Know what is expected of candidates with reference to standards	✓
	➢ Subject matter and or occupational expert	✓
	➢ Keep in contact with developments in occupational field	✓
	➢ Have a relevant occupational qualification	✓
	➢ Understand technical terminology	✓
	➢ Have a prerequisite number of years' experience	✓
Education, training and development (ETD) expertise	➢ Know curriculum and trainers through regular contact and provide trainers with detailed feedback	✓
	➢ Use established assessment principles and processes	✓
	➢ Take language factors into consideration	✓
	➢ Honesty, fairness, reliability, consistency, integrity	✓
	➢ Respect and sensitivity	✓
	➢ Demonstrate a broad understanding of outcome-based forms of assessment and the NQF	✓
	➢ Have the necessary training	✓
	➢ Ensure that the relationship between learner and assessor is conducive for assessment	✓
	➢ Ask for feedback	✓
	➢ Ensure that environment is beneficial and provide feedback	✓
Assessment expertise	Know how:	✓
		✓
	➢ To interpret the assessment criteria	✓
	➢ To use assessment guides if available	
	➢ To ask candidates for feedback on assessment to monitor and improve assessment	
	➢ Demonstrate:	
	➢ The skill of planning assessment	✓
	➢ That they are able to select or design assessment instruments activities and materials	✓
	➢ That they can collect evidence from a variety of sources and guide learners to collect evidence	✓
	➢ That they can communicate effectively	✓
	➢ That they can evaluate and judge evidence and make decisions	✓
	➢ The ability to implement appropriate recording and reporting methods for results	✓
	➢ An understanding of moderation requirements	✓
	➢ The ability to ask feedback on assessment to improve	✓
	➢ The ability to evaluate assessment process	✓
	➢ That they have undergone assessment training	✓
Planning, administrative and management skills	Demonstrate that they can implement comprehensive information systems to ensure that the administrative and reporting requirements are managed	✓
Interpersonal skills	Good communication skills, communicate effectively with learners to enable learners to perform optimally during assessment, including the ability to create an enabling environment, foster integrity and confidentiality	✓

4.3 Recognition of prior learning (RPL)

There are many skilled people who lack formal qualifications. The ETDQA will encourage training providers to provide recognition of prior learning (RPL) services for skilled and experienced individuals to present evidence of the competence to achieve a qualification without undergoing training programmes (ETDP SETA, 2001). This principle is not implemented in this study and will be attended to in the next cycle.

4.4 The assessment advisor

Internal assessment is administered and marked by educators. The assessment advisor is an expert in the workplace who can advise and guide the assessor (Mabaso, 2001:173). If an assessor is not available, an assessment advisor can assist in the assessment. In this study a qualified assessor does the assessment.

4.5 The Internal Moderator

HRSC (1995:146), King (1999) and Mabaso (2001:173) describe the internal moderator as the person who is responsible for national consistency and public confidence. In order to maintain the quality management system, the verifier must have completed training by the relevant ETQA or SETA. The internal moderator must confirm:

- The assessment practices
- The assessment plans
- The profiles of evidence

At the moment these practices are not yet in place and UP appoints the internal moderator.

4.6 The External Moderator

ETQAs are responsible for moderation of learning outcomes in education and training. The moderator checks the assessment against a set of agreed criteria for fair, valid and reliable measurement against the outcomes (Du Pré, 2000:22). The external moderator ought to be from a body separate to the organisation and at the moment UP appoints an external moderator from another HEI.

5 Assessment and the portfolio of evidence

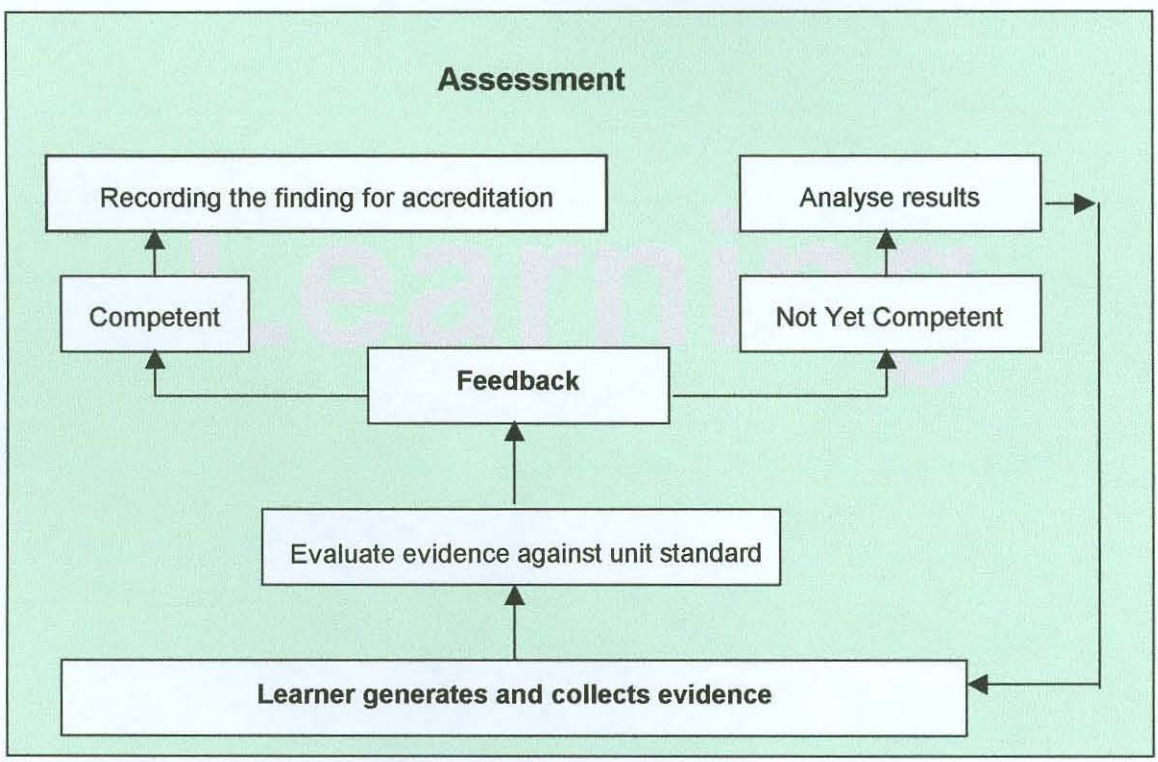
Olivier (2000:21) states that "(Q)ualifications are nationally agreed and internationally comparable statements of learning achievements of unit standards. The essence of each qualification will be that learners will be able to prove that they achieved outcomes on one of the eight levels, irrespective of how and where it was learned". This statement emphasises a structured process of assessment to ensure the quality of the qualification.

The following sections explain how this is achieved through an integrated process of assessment.

Assessment is an iterative process of a variety of formative and summative assessment methods of evidence gathered such as portfolios, simulations, workplace assessments, and oral and written examinations (Du Pré, 2000:50). Mabaso (2001:164) identifies three steps in assessment that are represented in Figure 19, i.e.:

- Generating and collecting evidence from the learner
- Evaluating the evidence of the learner against the unit standards
- Recording the findings of the evaluation for accreditation purposes

Figure 19: The iterative process of assessment



5.1 Generating and collecting evidence from the learner

The learners generate and collect evidence of learning during the facilitation of the learning programme. They compile a portfolio of evidence that adheres to the requirements in Chapter 6. Addendum 17 refers to the best example and Addendum 18 to the worst example of a portfolio of evidence for the NTG 471 unit standard for the 12 credits of the FDE(CAE) qualification.

5.2 Assessment of the evidence of the learner against the unit standards

5.2.1 What is assessed?

The written examinations of the evaluation of content-based learning fail to demonstrate the growth of the learner (Nielsen, 1997:302). For fair and balanced assessment of a learner's competence every learner must be provided with a variety of opportunities in different ways and across different contexts to demonstrate competence. Learners must have a clear understanding of the outcomes and what they are expected to know, are able to do and value at particular stages of learning (King, 1999).

In outcome-based learning the specific and critical cross-field outcomes are assessed, i.e. the "demonstrable and assessable end products of a learning process" [Chapter 3 section 4.3] (Mokhobo-Nomvete, 2000:3). The outcomes are assessed in terms of the cognitive, affective and psychomotor domains [Chapter 3 section 5.1.1, 5.1.2, 5.1.3].

Table 109 gives an indication of what artefacts could be used for assessment of the cognitive domain and how these are included in this study (Van der Horst & McDonald, 1997:176).

Table 109: Artefacts to assess the cognitive domain

Domain	Assessment artefact	Application in this study
Evaluation	➢ Essays (Comparison) ➢ Projects (evaluating process and product) ➢ Portfolio (judging the merit, value of contributions)	✓ ✓
Synthesis	➢ Tests (Essay) ➢ Projects ➢ Problem solving ➢ Portfolio	✓ ✓ ✓
Analysis	➢ Written tests (objective items with classifying, coding, criteria) ➢ Assignments ➢ Portfolio	✓ ✓ ✓
Application	➢ Written tests (objective items, problem solving) ➢ Observation of simulations ➢ Performance tasks ➢ Projects	✓ ✓ ✓ ✓
Comprehension	➢ Written tests (objective items) ➢ Observation of discussions ➢ Assignments ➢ Interviews	✓ ✓ ✓
Knowledge	➢ Written tests (objective items) ➢ Observation of answers	✓ ✓

Table 110 gives an indication of what activities and instruments could be used for assessment of the affective domain and how these are included in this study (Van der Horst & McDonald, 1997:177).

Table 110: Activities and instruments to assess the affective domain

Domain	Assessment activity or instrument	Application in this study
Characterisation	➢ Learners' responsibilities ➢ Learners' projects ➢ Learner debates	✓ ✓ ✓
Organising	➢ Observation of choices	✓
Valueing	➢ Interviews ➢ Questionnaires ➢ Essay tests	✓ ✓ ✓
Responding	➢ Observations of participation ➢ Interviews	✓ ✓
Receiving or attending	➢ Observations of discussions ➢ Questionnaires	✓ ✓

Table 111 gives an indication of what activities and instruments could be used for assessment of the psychomotor domain and how these are included in this study (Van der Horst & McDonald, 1997:177).

Table 111: Activities and instruments to assess the psychomotor domain

Domain	Assessment instrument	Application in this study
Reflex and skilled movements	➢ Learners' responsibilities ➢ Learners' projects ➢ Learner debates	✓ ✓ ✓

Analysis and synthesis

- The portfolio of evidence includes artefacts that adhere to the requirements for Bloom's taxonomy of cognitive skills, e.g. the learning tasks [Chapter 4 section 3.2.4.2 as in Table 53], the class-work [Chapter 4 section 3.2.4.3 as in Table 57], tests [final assessment] and performance tasks [final assessment]
- The learning tasks [Chapter 4 section 3.2.4.2 as in Table 53], the class-work [Chapter 4 section 3.2.4.3 as in Table 57], tests, observations and performance tasks [final assessment] contribute to the affective domain and the learners communicate their experiences along the lines of one of the following examples:
  - There is need for some "calming of the waters" when learners are expected to apply outcome-based learning principles and to find their own information, e.g. on design principles, instead of just getting a handout from which they simply reproduce factual knowledge
  - "This course brought a completely new dimension to my life. I have been in solitary confinement in my teaching, but this course opened new horizons to me. I am so excited about outcome-based learning!"
- Learners have enough opportunity to take responsibility for their own learning and their input determines their output. In the case of a high percentage of computer skills, there are ample opportunities to develop psychomotor skills for keyboard and mouse activities.

5.2.2 The evidence to be used for assessment

Traditional evaluation practices are tests and examinations from textbooks. In outcome-based learning an alternative assessment approach is to write outcomes in such a way that non-traditional forms of assessment could be incorporated such as to compile a portfolio of evidence (Beyleveld & Jama, 2002:115; Van der Horst & McDonald, 1997:179). Conley (2000) and Olivier (2000:50) state that the steps of the integrated and holistic learning programme, i.e. prepare, interact, perform, assess and conclude [Chapter 4 section 3.2.4] become part of the learning process and consequently part of what will be assessed as well.

In this study a portfolio of evidence reflects all the activities and performances of the learner to be assessed for competence against the specific and critical cross-field outcomes. This is the rationale for including assessment of the portfolio as a measurable contribution of competence. All competences are regarded as equally important.

5.2.3 The principles of assessment

In order to provide for acceptable assessment of learning the assessment has to adhere to the requirements as discussed in the following sections, in alphabetical order.

5.2.3.1 Authenticity

Authentic assessment means that the assessment is executed as if in a real-life situation with real-life performance assessment tasks by the learner (Hayden & Thompson, 1998:65; Mabaso, 2001:167). These tasks are important as it indicates the learner's competence in a real-life situation. The portfolio of evidence includes class work that the learners execute in the presence of the educator as in real life, learning tasks that the learner must prepare as if in real-life, and the final assessment and all observations or interviews are in accordance to real-life situations. There is therefore no reason to fear examinations because the learners know what is expected of them from the unit standard and the learning activities in context of the unit standard.

Authenticity in context of this study

This qualification is a real-life experience for the learners as they can apply everything in their real-life situation. All activities and assessment contributions are as authentic as possible and prepared by the learner [Chapter 4, Chapter 5]. Table 112 explains the way in which the learner has to verify the authentic portfolio of evidence. Each page of the document must contain the header and footer information as indicated in this example.

Table 112: Instructions for the authentic portfolio of evidence

NTG 471: 1/2002 – 2 February 2002

URL's for the Internet

Requirements for the portfolio to be authentic, valid and reliable

As we are doing the FDE(CAE) which involves computers, all of the current tasks will be done on a computer.

The students will assemble a portfolio of evidence of their work. Therefore every document for assessment of the student must be available and include the following in the header and footer of each page.

Header

- The unit standard number (NTG471)
- The learning task number as in Chapter 4)1/2002
- The date when the learning task is created (2 February 2002)
- The identification for the learning task as per Chapter 4 (URL's for the Internet)

Footer

I, ...(name and surname), whose student number is ....., declare that I have created this document on the ..... (date) for the module .....

Witness: .....

Contact details of witness:.....(physical address as well as telephone number)

- See example at bottom of this page.
- Every task will have a module, a number, a date and a topic in the header of each page.
- See example at top of this page.
- Please note that these documents will not be regarded as just learning tasks for academic purposes. This must be done as in real-life situations.

Each page in the portfolio of evidence must include the header and footer and must be signed and dated by the learner

I, Anna Joubert, whose student number is 2031316, declare that I have created this document on 2 February 2002 for the module NTG 471

Witness: Maria Jansen

Contact details of witness: 213 Peter Street, Kommetjie 0123 4562

5.2.3.2 Consistency

Although human judgement can be a problem and assessors need training to ensure agreement, within the clearly specified assessment criteria and range statements there will be much more consistency (Page, 1994:128; Spady, 1994:47).

Consistency in context of this study

The assessment criteria and range statements are clearly described [Chapter 4, Chapter 5] and the learners are informed beforehand what to expect. Learners can give input and discuss and comment on the assessment.

5.2.3.3 Fairness and bias

Fairness and bias means that the conditions for each candidate will be the same and that each candidate has the same opportunity to perform to avoid discrimination (Mabaso, 2001:167; Mokhobo-Nomvete, 2000:4; Olivier, 2000:69; Siebörger & Macintosh, 2001:11; Van der Horst & McDonald, 1997:174). Siebörger & Macintosh (2001:11,13) emphasises that fairness means that learners must regard the assessment as fair and that it does not in any way hinder or advantage a learner. He also states that if assessment is valid and reliable, it will be fair. Fairness can be influenced by the following factors (Mokhobo-Nomvete, 2000:4; Siebörger & Macintosh, 2001:13):

- The weight allocated to each part of the content
- Assessment techniques, methods, instruments and material
- Instructions and questions
- Administration of assessment, e.g. time, resources
- Marking
- Inequality of opportunities, ethnic, gender, age, disability, social, class

Fairness and bias in context of this study

It was not fair to allow some learners to use paper-based materials and others had to use computer technology. More time was given to certain learners to complete tasks and in some cases more attention was given to learners who needed it. Language was a problem that had to be considered carefully because in most learning situations all facilitation of learning occurs in a second language environment for both educator and learners. Misunderstandings were possible and two learners used this as an excuse to terminate their studies stating that to "the language used was not conducive for learning".

5.2.3.4 Feedback

Learners need as much feedback as possible. Feedback motivates and directs the leaner to improve performance (Van der Horst & McDonald, 1997:175).

Feedback in context of this study

Learners complained from 1998 to 2000 of not receiving any feedback on assignments and tasks in various training centres. A fair assessment as introduced in 2001 relies heavily on formative assessment practices where regular feedback contributes to the progress of the learner. As one educator reported:

"The one learner is so much weaker than the other learners. We all try to encourage her and help her, but her work is far below the acceptable. She needs constant help when she is working on the computer, her written English is very hard to follow."

5.2.3.5 Flexibility

In some circumstances the assessment may need to be altered to accommodate the learner, as long as it measures the same skill that it intended to measured (Mabaso, 2001:167; Mokhobo-Nomvete, 2000:6; Olivier, 2000:69). It also provides for a variety of methods and instruments that will suit the learner best, providing that they are fair, reliable, valid and practical.

Flexibility in context of this study

More time was allocated because students have low typing skills. Some learners are slow learners and needed more time to complete learning tasks.

5.2.3.6 Holistic

Assessment should be integrated and an holistic approach maintained in contexts of all the domains of learning and outcomes (Van der Horst & McDonald, 1997:175).

Holistic in context of this study

All learning tasks in the learning programme included all aspects of the specific outcomes and cannot be separated but distinguished [Chapter 4].

5.2.3.7 Objectivity

The assessor must be objective in assessment and this contributes to the fairness and reliability (Van der Horst & McDonald, 1997:175).

Objectivity in context of this study

An educator reported the following about a learner to the assessor (NC):

"Bottom line: I strongly object to her obtaining the qualification. I avoided talking like this because it could be affecting your judgement, but my conscience is shouting that I can't let it go without saying anything either."

The assessor must assess the learner with objectivity.

5.2.3.8 Relevance

The assessment must be relevant to the outcomes of the standard or qualification and for the learners' real-life situations (Van der Horst & McDonald, 178).

Relevance in context of this study

Learners who could make the paradigm shift prefer assessment in outcome-based learning to content-based examinations. During the facilitation of learning the learners expressed their satisfaction as in the following example: "I have learnt an incredible amount of work and my computer is no more a white elephant!"

This indicates that the learner's learning and assessment are relevant to what is expected in real life.

5.2.3.9 Reliability

Reliability of assessment means the consistency of measurement of whatever is to be measured, i.e. the results will be the same under different circumstances or every time the assessment is done (Mabaso, 2001:167; Mokhobo-Nomvete, 2000:4; Siebörger & Macintosh, 2001:12; Van der Horst & McDonald, 1997:174). Factors influencing the reliability can be the assessor (subjectivity or different assessors), assessment instruments (e.g. questions, interviews, tests, etc.), the assessment environment (Olivier, 2000:69). Simple, clear and unambiguous assessment instruments and methods will support reliability of assessment. To avoid variance in judgements, assessments should be administered in the same or similar conditions. Reliability is ensured in the constants of the specified standards, outcomes, assessment criteria and competences upon which assessment is planned and administered and is regardless of assessor or learner (Mokhobo-Nomvete, 2000:5).

Reliability in context of this study

The reliability of assessment in context of this study can be accepted as far as the statement that 'the results will be the same under different circumstances or every time the assessment is done' refers to the different training centres in South Africa [Chapter 4] where assessment is conducted as well as the different artefacts in the portfolio of evidence [Chapter 6].

5.2.3.10 Sufficiency

Sufficiency means that all evidence is adequate with regard to the assessment criteria, i.e. there is enough and not too much or too little evidence (Mabaso, 2001:168; Olivier, 2000:70). Sufficiency needs to be flexible and open for discussion.

Sufficiency in context of this study

The assessment adheres to sufficiency in as far as there is no duplication of the evidence but alternative opportunities provide evidence of all the requirements of the unit standard.

5.2.3.11 Transparency

Assessment requires total transparency. Transparency means that the learner must know how the correct judgement about competence has been made (Mabaso, 2001:167; RMC Research Corporation, 2002).

Transparency in context of this study

There were no restrictions and all learners could discuss any problems with the assessor at any time, or follow the formal route in the regulations for dispute and appeals.

5.2.3.12 Validity

Validity of assessment means that the assessment must measure what it is intended to measure and is crucial for assessment (Mabaso, 2001:166; Mokhobo-Nomvete, 2000:4; Siebörger & Macintosh, 2001:11,12; Van der Horst & McDonald, 1997:174). Evidence must be collected from supportive and related outcome contextual activities and continuous assessment will improve validity of the performance of a learner (Olivier, 2000:69; Siebörger & Macintosh, 2001:26).

Validity in context of this study

The internal validity related to the same group of learners but different circumstances, e.g. the class-work, learning tasks and assessment activities. The external validity related to different training centres where learners received the same questions and performed consistently.

5.2.4 Evaluation

Evaluation and assessment are very often used as the same concept. "Evaluate" can be broken up into e – value- ate, which indicates that a 'value' is given to something (Van der Horst & McDonald, 1997:169). Table 113 summarises the conceptualisation of "evaluation".

Table 113: Conceptualisation of "evaluation"

Author(s)	Conceptualisation of "evaluation"
King (1999)	"Evaluation is the process whereby the information obtained through assessment is interpreted to make judgements about a learner's competence."
Lancaster (2001:95)	"Evaluation refers to the process of implementing quality assurance of the assessment and moderation procedures to ensure that they are fair, reliable and valid."
Van der Horst & McDonald (1997:169)	"... the process of making a decision about the learning of the learner, using information gained from formal and informal assessment ... to answer the question: 'How good?' or 'How well?'."
Wolfson, (2001:238)	Evaluation is the key to ensuring legitimate and effective learning interventions i.e. to determine the value of a project or system

According to section 2.2 assessment is about the **process of the performance** through activities and support of the learner while observations are made and evidence is gathered to measure the competence of a learner against the outcomes. Evaluation is about the **judgement of information gathered from these performances** to determine competence of the learner against the outcomes.

5.3 Recording the results of the evaluation for accreditation purposes

All the discussed legislative structures are not yet in place in the higher education band and the present requirement of the HEI is still a pass or fail mark for a learner. To comply with this description a 50% competence is defined as a pass mark for a learner. Some factors must be taken into consideration when recording the results, like the scaling of competence and the number of assessors.

5.3.1 Scaling of competence

Gannon-Leary, Hare and Parker (1999:7) indicate that the National Vocational Qualifications [NVQ] in Britain requires no grey areas, and a candidate is either competent or not competent. This is supported by Ibarra (1998) from Mexico and Gross (1994:469) describes a similar event where skills are broken down to items and the examiner uses a "yes" or "no" to indicate whether the competence of performance has been achieved.

RMC Research Corporation (2002) gives examples of scaling and refers to options like:

- Emerging, proficient, exceptional
- 1, 2, 3, 4, 5
- Beginning, developing, accomplished, exemplary
- A, B, C, D

The scaling is restricted to "competent" and "not yet competent" and the assessment matrix is similar to the assessment criteria and the range statements of the unit standard. The recording is an allocation of "1" if the learner is assessed and competent against the specific outcome as required for the principles of assessment, and "0" if the learner is not yet competent [Addendum 15].

5.3.2 The number of assessors involved

Gross (1994:473, 482) researched the feasibility of more than one assessor per learner. The research was conducted to determine the interrater-reliability and whether subjectivity affects results. Some of the findings are as follows:

- Logistical and cost factors have to be taken into consideration, e.g. small venues over a distance may not be economical for more than one assessor to visit for assessment, as is the case in this study
- One assessor per candidate is sufficient, but disparities could be settled by a second assessor and the presence of a second assessor may contribute to alertness and honesty
- Learners were satisfied with the results of one assessor
- The statistical impact increased as the same assessor applied the same criteria, the results were verified by an internal as well as external moderator and there was a similar mean score for all aspects
- Candidates were offered a discussion of the assessment and an opportunity to improve on the aspects that were not corresponding

Whereas several enquiries were made pertaining to the traditional content-based learning results, no queries were received on the assessment practices in this study. Educators and learners preferred assessment practices as explained in this study to content-based learning and examinations.

6 Outcome-based assessment of competence against the unit standards or qualification

King (1999:12) states that more emphasis must be on formative, classroom-based assessment rather than summative assessment such as external examinations, and that learners' achievements must be gathered over a period of time in a number of different ways. The following sections describe how the assessment was conducted.

6.1 Assessment techniques

Conley (2000) and King (1999) refer to the assessment techniques as summarised in Table 114.

Table 114: Assessment techniques

Assessment techniques	Application in this study
-Diagnostic assessment, i.e. indication of what the learner can currently do	Class-work and developing learning tasks were examples of diagnostic assessment used in this study
Performance-based assessment	All activities in this study were directed towards the performance-based assessment where learners had to perform authentic learning tasks to prove their competence
Self assessment: Learners make judgements about their own learning by identifying what they know and their misconceptions for critical reflection	It cannot be taken for granted that learners can do self-assessment. Learners thought that if they were satisfied that they could do a task, it indicated competence, they did not understand that only valid and reliable evidence is acceptable even for self-assessment
Peer assessment	Learners had the same attitude towards peer-assessment as towards self-assessment, i.e. they did not regard the evidence to be important or valid enough to prove the competence of their peers
Assessor assessment	Assessors who were not trained assessors experienced the same problems with self-assessment and peer assessment and did not understand the concept of evidence to prove the competence of the learner

Assessment techniques are not natural activities for assessors or learners and this study emphasises the need for all stakeholders to be informed about assessment in outcome-based learning in South African education, training and development.

6.2 Assessment activities

Table 115 outlines the variety of assessment strategies and how they can be used to gather data of evidence of competence as presented by Conley (2002), Johnson (2002), Mokhobo-Nomvete (2000:5, 6), Olivier (2000:110), RMC Research Corporation (2002), Siebörger & Macintosh (2001:27,28), Van der Horst & McDonald (1997:192,207-208).

Table 115: Assessment activities in context of this study

Strategy	Explanation in context of this study
Assignments / Case studies	Assignments involve descriptions such as written essays or case studies and must be authentic
Concept mapping	Identify and link key words and the ability to show understanding of relationships
Demonstrations	A demonstration is a concrete and observable activity to explain procedures and strategies
Fieldwork	Involves planning, investigation and data-collection skills and application
Interviews	Interviews present the work that the learner has researched to the assessor. Interviews and oral interviews can be disturbing for learners and the educator will have to try to be neutral, empathetic, attentive, encouraging, patient, well-prepared and allow enough time
Investigations	Learners can demonstrate investigative abilities, prediction and manipulative skills
Journals	A journal is a place where learners express personal reactions and to speculate on events, themes and ideas
KWLs	"Know", "Wish to know" and "Learned" = to be given to learners to reflect
Observation	Watching while work is in progress reflects learners' attitudes, communication and process skills
Oral / written presentation	Checklists are usually used to do marking on the spot. Pay special attention to subjective interpretation that can be supported by video or tape recordings. Do the following for understanding and application of knowledge: Present research orally Assessment: Observation, Checklists Example: Presentation
Portfolio	Samples of work selected by learners to show development and understanding and progress over a period of time. A collection of the evidence of a learner's work developed over a period of time Assessment: Comparison against outcomes Example: Assignments, Notes, Drawings, Statements, Records, Photographs
Projects	Task undertaken by group or individual within a prescribed outcome. A project needs planning, research, discussion and presentation. Higher levels of Blooms taxonomy. Assessment: Observation Example: Include a report, dissertation, model, computer programme, exhibition, poster, portfolio
Reports / Written work	Written activities can provide lasting evidence for assessment. Written assignments can be interpreted differently, and for validity and reliability more than one assessor must give a mark, and the assessment criteria must be very clearly indicated in the unit standard
Role-play	Clarify and show depth of understanding and communication Simulations Written responses to a task Assessment: Discussions, Marking Examples: Essays, Case studies, Dissertation, Study
Written and practical tests	Although tests and especially multiple-choice tests are regarded as simple to create, administer and grade, it doesn't necessarily indicate a true understanding of the material. It can be valuable for knowledge, though

Although a variety of activities can be applied to do assessment, the approach is to include all these activities into one portfolio of evidence [Chapter 6] and to assess these against the specific outcomes of the unit standard. The use of completed portfolios as examples can contribute to the understanding of what is required for the learning process (Sherry, 2000).

6.3 Assessment instruments

Assessment methods and instruments must be valid and practical, e.g. assessing competence in reading will involve reading activities (Mokhobo-Nomvete, 2000:5). Assessing computer competence involves computer activities. Both the nature of the activity, for instance in this qualification a computer screen can be photographed as an example of observation, and the nature of the instruments, e.g. both a checklist or matrix as being most suitable for an observation of the activity on a computer screen, must meet the assessment criteria specified in the specific outcome of the unit standard.

Some assessment instruments may be direct and some may be indirect. Observation gives direct evidence of the skills, but indirect evidence of understanding. Responses to questions give direct evidence of understanding but indirect evidence of skills. Both kinds of evidence in appropriate balance will provide enough evidence to infer that the learner is competent (Norms and Standards for Teacher Education, Training and Development, 1997:117). However, an effective assessment instrument models how things work in the real world. Different ways and techniques are used to gather evidence to assess progress throughout the learning process. The literature survey refers to a variety of assessment instruments. The following compilation has been made from Lancaster (2001:104), Mabaso (2001:169-171), Mokhobo-Nomvete (2000:5), Oberg & Freeman (1996:8), Olivier (2000:110), SAQA, (1999:29), Siebörger & Macintosh (2001:41) and Van der Horst & McDonald (1997:191).

6.3.1 Checklists

Checklists are acceptable as assessment instruments when the result is supported by evidence (photographs, video, reports, etc.) to avoid subjectivity and the Hawthorne-effect[36], i.e. learners behave differently because they know they are being assessed.

A well-designed checklist will adhere to the following:

- It is a way of measuring skills that cannot be measured by paper-based tests
- It can reduce subjectivity if supported by evidence
- It includes the assessment criteria in the outcome to be assessed

The disadvantage of a checklist is that it is time-consuming.

Checklists used in this study indicated a "1" for competence and a "0" for not yet competent. There were no other rating scales against the outcome. The observation checklist that was used during the final assessment of learning for the NTG 471 module is represented in Table 117. This checklist was designed for the summative assessment tasks as presented in Table 116.

[36] Mouton & Marais (1993: 88) explain the Hawthorne-effect as if people feel they are 'guinea-pigs' being experimented with, or if they feel that they are being 'tested' and must make a good impression, or if the method of data collection suggests responses or stimulates an interest the subject did not previously feel, because the measuring process may distort the experimental results.

Table 116: Summative assessment learning tasks for NTG 471

Summative assessment
Task 1: Design Principles Find the following URL: http://www.lmp.co.za Create a document in *Word* and save it as your student number. Create a *header* for the document and add your student number. Create a *footer* for the document with the **date** (left) and **Task 1** (right). Number the page in the *header,* center alignment. Create a table with two columns and six rows. Label the first column "Design Principles" and the second column "Evaluation". List five design principles for a website in the five rows of the first column. Evaluate the given website with reference to these five design principles in the second column. Make a printout of the document. Task 2: Website Create a new website with two web pages. Demonstrate the following skills in a **structured document (do not repeat anything!)**: change font type, change font size, change font color, underline, bold, italics, center, insert table, bullets, numbering, use graphics, background, make links between the two pages. Make a printout of the document. Task 3: Networking A school with 600 learners and limited funding approaches you to advise them with the planning of a computer centre. Insert a new page in your *Word* document of Task 1 with the heading "Computer Centre". Use WordArt. Insert a table with three columns and six rows. Label the first column "Network", the second column "Recommendation" and the third column "Reason". Label the second row (all in the first column) "Components of a network" and the third row "Topology", the fourth row "Cabling", the fifth row "Type of network" and the sixth row "Five uses for the centre". Complete the table with your choice of the suitable network and the reason for your choice. Make a printout of the document. Hand in all tasks

Table 116 represents the learning tasks for the observation list in Table 117.

Table 117: The observation checklist for summative assessment in module NTG 471

Observation during final assessment		Competent	Not yet competent
Find Website with given URL	1		
Create document in Word	1		
Save document	1		
Design principles (list)	1		
Design principles (apply)	1		
Launch html editor	1		
Create website	1		
Save website	1		
Change background	1		
Change font colour	1		
Change font size	1		
Apply bullets and numbering	1		
Insert a graphic	1		
Make a hyperlink	1		
Insert table	1		
Print website	1		
Identify topology of network	1		
Identify cabling of network	1		
Identify LAN, MAN, WAN	1		
Identify peer-to-peer / Server-based	1		
Identify uses of a computer centre	1		
Total for observation checklist	**22**		

The checklist in Table 118 is the instrument for measuring the competence of a learner to compile a portfolio of evidence [Chapter 6].

Table 118: The observation checklist in module NTG 471 for the portfolio of evidence

Evidence		Competent	Not yet competent
Submit a portfolio of evidence	1		
Portfolio is a structured document	1		
Portfolio is reliable	1		
Portfolio is valid	1		
Assignments are authentic	1		
Assignments are current	1		
Portfolio is complete (all activities)	1		
All headers and footers are correct (for validity)	1		
Applicable table of content	1		
Appropriate CV (to determine authenticity of activities)	1		
Portfolio includes Unit Standard	1		
Portfolio includes all Learning Tasks	1		
Portfolio includes printouts of relevant URLs	1		
Printout of the website (Project 1)	1		
Printout of Computer Networks (Project 2)	1		
Storyboard	1		
Project 2 presentable to audience	1		
Educational structured website	1		
Class activities are included	1		
Class assessments are included	1		
Class assignments are included (as per handout)	1		
All documents signed by learner			
All documents signed by witness			
Total for observation checklist	**23**		

6.3.2 Matrix / Rubric

Goode & Thomen (2001:196, 197) and Sherry (2000) have implemented assessment in a course and differentiate between 'highly competent', 'competent', 'does not meet the criteria' and 'unacceptable'. They used different kinds of rubrics (e.g. 'product rubrics', 'learning process rubrics' and 'a juried process') that are criterion-referenced means of assessment of learners' competence without allocating marks, which is in the context of an outcome-based learning approach. They found the rubric time-consuming at first but speeding up the more they used it. They also found it to be consistent and that learners were more confident, with improvement in their performance and technical skills.

This study implements an assessment matrix for class work and a final assessment opportunity and is presented in Table 119.

Table 119: Assessment matrix for the NTG 471 module

Studentnumber:	**Self-assessment**		Peer assessment		**Tutor assessment**	
New Technologies (NTG 471): Assessment Matrix						
Specific Outcomes	**Assessment Criteria**	**C**	**NYC**	**Range Statements**	**C**	**NYC**
Specific Outcome 1 **Identify, describe and apply knowledge on web based design**	i. Design a web site for educational purposes			Use an appropriate software program		
	ii. Demonstrate a knowledge of sound design principles			Apply design principles		
	iii. Publish the web site			Submit a URL		
Specific Outcome 2 **Understand the principles and application of networks**	i. Knowledge of the components of a network			i. LAN		
				ii. WAN		
				iii. MAN		
	ii. Knowledge of the typology of a network			iv. Bus		
				v. Star		
				vi. Ring		
	iii. Knowledge of the cabling of a network			vii. Co-axial		
				viii. UTP		
	iv. Knowledge of the different types of networks			ix. Server-based		
				x. Peer-to-peer		
	v. Knowledge of the administration of networks			xi. Compile a strategy for the implementation of a network in the institution according to the needs		
				xii. Knowledge of common concepts, e.g. sharing		
Total for assessment matrix						**22**

Signed Assessor:_____

Signed learner:_____

Signed peer:_____

A typical class activity matrix is presented in Table 120 and this was designed and used for allocation of class activity competence [Chapter 4].

Table 120: Example of a class activity matrix

Evidence		Competent	Not yet competent
Submitted a document	1		
Submitted homework on relevant design principles	1		
2 x URL printouts for evaluation	2		
Printouts on design principles for evaluation	2		
Interpretation of design principles	2		
Storyboard of two pages	2		
Front Page skills: Create a document, save new pages	2		
Skills: Table, font colour, font type, font size, graphics	5		
Signed documents (for validity)	1		
Total	18		

6.3.3 Interview sheet

Interview sheets can be used during interviews with learners and usually consist of a list of questions to be asked of the learner against the outcomes.

Interview sheets are acceptable as assessment tools when the result is supported by evidence (audio tapes, photographs, reports, video, etc.) to avoid subjectivity and the Hawthorne effect (learners behave differently because they know they are being assessed) (Van der Horst & McDonald, 1997:192).

The interview sheet in this study is similar to the assessment matrix as presented in Table 119 or as in Addendum 2, where learners were asked to perform activities against the specific outcomes of the unit standard.

6.3.4 Tests / Objective items / Essay type of tests

Traditional tests and examinations are ignored completely in outcome-based learning. Knowledge must be tested in an authentic environment (Van der Horst & McDonald, 1997:188). Tests are still essential for assessment and must be included in the portfolio of evidence and used to assess the basic knowledge as well as complex and critical concepts or facts.

Objective items include multiple choice, matching, fill in the blank and true / false questions, short answers. This kind of test can easily be used to determine competence in the knowledge, comprehension and understanding level of cognitive skills.

Essay type tests consist of a number of questions to be answered by the learner and marked according to a marking memorandum. Although these tests include all levels of Bloom's taxonomy of cognitive skills, marking can be subjective and the questions may only cover a small section of the content.

The learners wrote tests that include all types of questions as per Addendum 9.

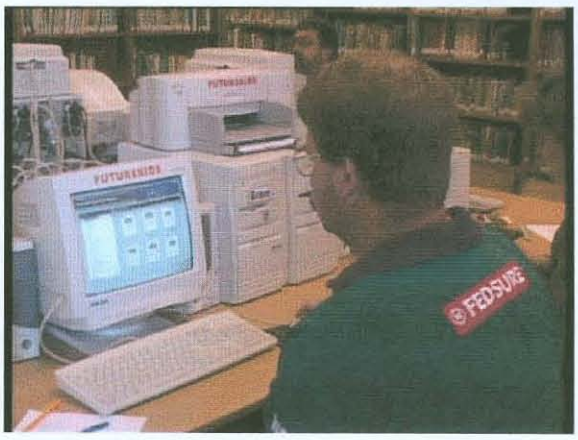
Application in this study

The photographs in Figure 20 indicate how the screens of the monitors and the learners can be photographed for authentic, valid and reliable evidence of competence.

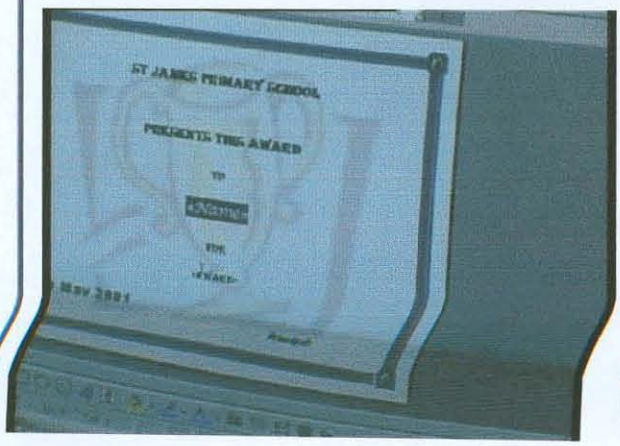
Figure 20: Examples of photographic evidence in assessment

Evidence of competence inserting graphics

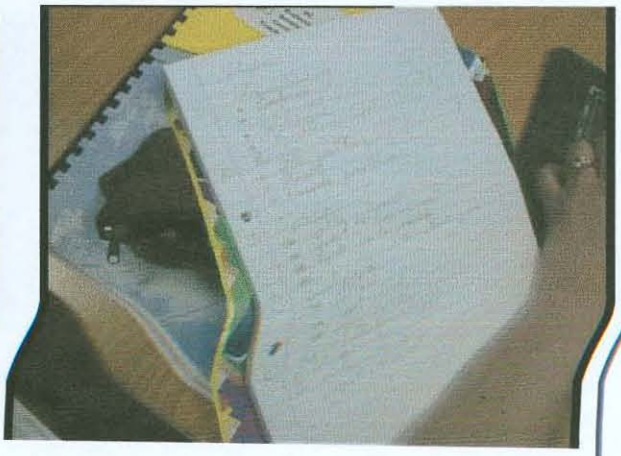
Evidence of competence using Microsoft Publisher



Evidence of competence using Microsoft Word



Evidence class-notes



7 Conducting and calibrating assessment

7.1 Planning of assessment

Siebörger & Macintosh (2001:9) states that assessment is planned at the beginning of a year for the benefit of the learners for regular feedback and motivation. The aim is to support the learner as far as the competence with reference to the assessment criteria of the specific outcome in the unit standard is concerned. Planning assessment includes gathering information, analysing the results of assessment, feedback, re-assessment and final recording of the results.

7.1.1 The assessor

The assessor plans and prepares the assessment of the learners. Planning and preparation include knowledge of the unit standard, specific outcomes, assessment criteria and range statements that a learner must achieve to be competent for attaining a qualification. It also includes the documentation for assessment by and communication with the educators to recommend a suitable date for assessment.

7.1.2 Preparing the learner for assessment

The assessor must inform the learner about the assessment. This includes the following aspects as explained in Table 121 (Mabaso, 2001:176, Smith, 2001:193; Spady, 1994:42).

Table 121: Aspects to consider when preparing the learner for assessment

Aspects to consider	Application in this study
Standards The learner should be provided with the unit standard, the learning outcomes to be assessed, the set of assessment criteria, and the requirements must be explained to the learner	All learners were provided with the unit standard, and the assessor visited all the venues to explain to the learners the requirements for a portfolio of evidence in context with the legislative structures of South African education, training and development
Assessment details The learner must be provided with the following information: assessment venue, the assessors and the assessment methods to be used; there must be no surprises	All learners were informed about all the aspects of the assessment in advance including the venue, the assessment methods and no surprises
Readiness Assessment should only be executed when a learner is ready for assessment	Although this is an important factor to consider, the results of the learning has to be submitted to the HEI within a certain timeframe and because of distances, assessment could not be done with single learners on demand This should be a serious consideration because some learners need more time than others
Variety The learner may contribute to the evidence by deciding which will be the best evidence to prove competence	This study is aimed at the process of learning and a learner includes all activities for evidence to demonstrate the process of growth
Anxiety Anxiety is a common denominator to almost all learners. Always give learners as much information regarding the assessment process and procedures as possible	Although the learners were all very well informed, some did not consider the assessment as a display of their competence, but still regarded it to be a right or wrong, pass or fail examination situation which caused tremendous stress

Although the assessor visited the different venues in the beginning of the module and explained to all of them the process and procedure of outcome-based learning assessment, neither the educators nor the learners had ever before been exposed to alternative methodologies than tests and examinations for a reproduction of content and a pass or fail result. This alternative way was something that they had not yet experienced and they did not really know what to expect when the first module was assessed.

Some learners did not take it seriously and did not even turn up for the assessment information discussions or for the final assessment.

The contribution made from the feedback of the open-ended questionnaire, as well as the evidence in the photographs in Figure 20, indicate that the learners eventually found the assessment much more relaxing and acceptable than formal examinations.

7.1.3 Conducting assessment of learning

Assessment consists of a series of activities that take place to obtain information and evidence about a learner's progression and competence in achieving outcomes (Olivier, 2000:32). Assessment of learning is to determine what the learners are able to do with what they know and understand [Chapter 3]. Learners too often regurgitate knowledge for the sake of the qualification, and can very seldom remember what they have learned for much longer than after they had applied it in the test or examination (Spady, 1994:51). As soon as a once-off examination has been completed, learners relax and forget the detail. This statement has been confirmed in this study as learners keep demanding "notes to know what factual knowledge they have to learn" for examinations or "enough time to learn" before the assessment. They do not experience learning as a process and not a product.

The importance of repetitive assessment on outcomes over a period of time cannot be ignored and neglected. The emphasis is no longer on the knowledge, but on skills for access to knowledge. In this unit standard the learners were required to find design principles to be applied in a Web site. The skill is to access the information and use it, find the references and resources, that will support the knowledge, rather than to be able to list these design principles from memory. Once they have found the information the next skill will be to apply these principles in and authentic environment.

Mabaso (2001:177-179) indicates that the aspects listed in Table 122 must be taken into consideration when conducting assessment of learning as in context of this study.

Table 122: Aspects to consider when conducting assessment

Aspects to consider	Application in this study
Environment The environment must be free from bias	Although the assessor tried to create a bias-free environment, lack of technical support and infrastructure frustrated learners, e.g. internet facilities at the venues, learners arriving late, learners talking to one another
Adhere to the plan Do not deviate from the assessment plan without careful consideration of the consequences	The assessor resolutely adhered to the assessment plan
Level of expression The language and instructions during assessment must be carefully selected in such a way that it will not influence the quality of the assessment	In the South African situation all training is in a second language environment and a learner is allowed to ask a question regarding the clarity of the task during formative and summative assessment events
Evidence Evidence must be sufficient, be collected in the most direct way possible, authentic, reliable, valid and relate to the candidate's current competence	The portfolio of evidence must be handed in on the date of the final assessment (a pre-determined date). The final assessment is done in the presence of the learner and educator
Application of assessment principles Assessment must be conducted in terms of the assessment principles in section 5.2.3 for quality assurance	The assessor should adhere to all the assessment principles as discussed in section 5.2.3

7.1.3.1 Making judgements

Mabaso (2001:179) states that the assessment is concluded when the assessor makes a decision about the competence of a learner against the outcomes within the set of principles of validity, authenticity and sufficiency. Judgements are always subject to human considerations and it is therefore important that outcomes, assessment criteria and range statements must be as unambiguous as possible (Siebörger & Macintosh, 2001:40). Communication between stakeholders is essential and learners complete a questionnaire that gives them the opportunity to comment after the assessment. This questionnaire is an open-ended questionnaire as demonstrated in Addendum 1.

7.1.3.2 Providing feedback

Feedback is important to determine the performance of a learner against the specific outcomes as well as whether the learner will be awarded a qualification or whether the learner will be re-assessed against certain selected outcomes (Mabaso, 2001:181). Feedback for the educator will be an indication of areas for further training as well an indication of the success of the training. From this the educator can determine areas for improvement or changes.

7.1.3.3 Review the assessment design and process

According to Einstein (2002) anyone who has never made a mistake has never tried anything new. Whenever trying something new, it is clear that there will be mistakes and that nothing is perfect and there is always room for improvement and more than enough to learn from mistakes. The importance of the review and reflection can never be under-estimated. The honest person will value the review of the assessment as a means to discover the weaknesses in the design and the process of assessment as well as to rectify insufficiencies in the unit standards [Chapter 3, Chapter 4], the learning programme [Chapter 4], the facilitation of learning [Chapter 5] and the portfolio of evidence [Chapter 6] (Mabaso, 2001:181).

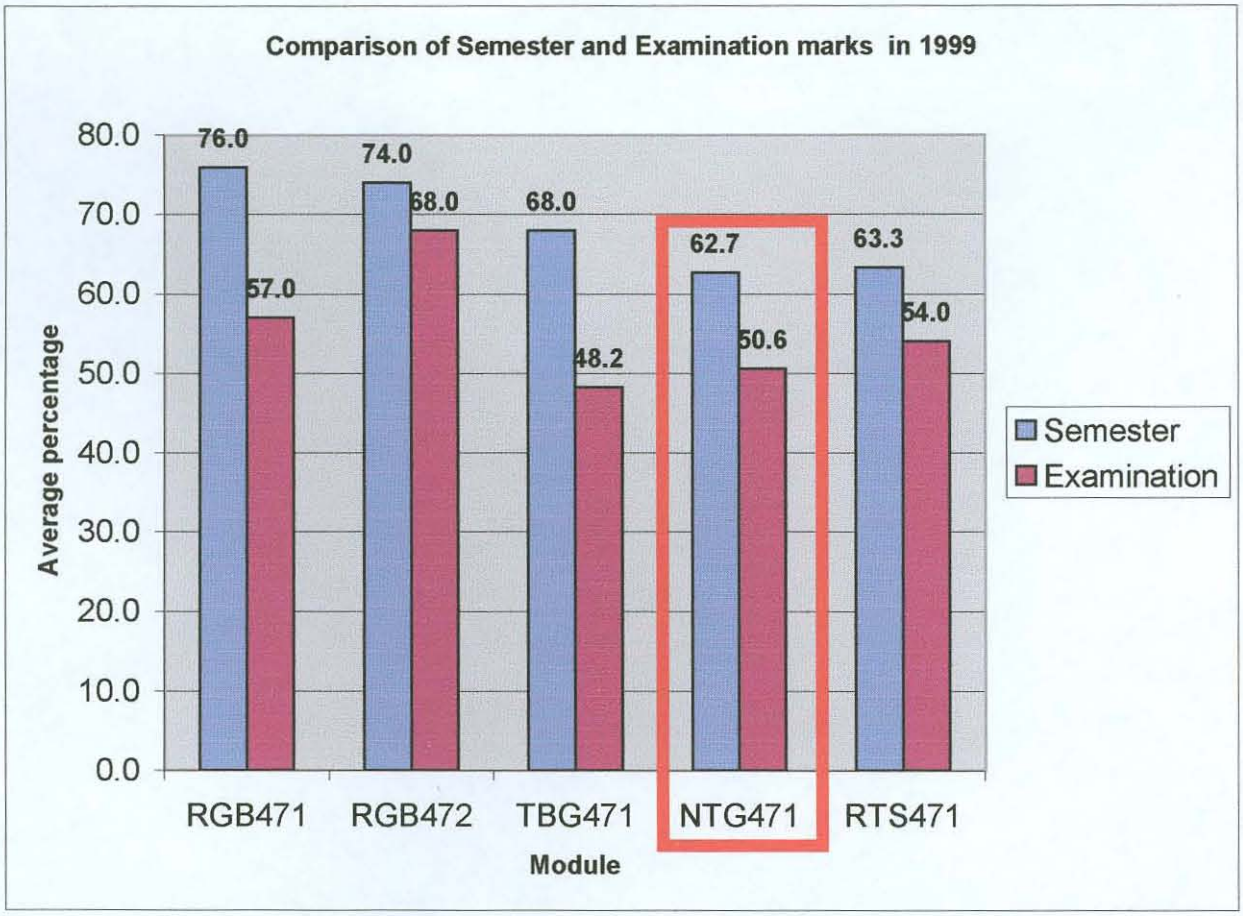
7.2 The calibration of assessment

To understand the calibration of assessment in this study it is necessary to view the traditional content-based marks as well as the alternative assessment marks.

7.2.1 Content-based marking

The content-based marks consisted of a semester mark allocated to learners in a right-wrong marking of lower level cognitive skills in Bloom's taxonomy of learning according to a predetermined memorandum, against a formal examination mark that included higher level cognitive skills of application and evaluation. The data of one year (1999) is used in Figure 21 to demonstrate the discrepancy between the content-based semester and examination marks for the FDE(CAE) qualification. This example is similar to all the other years (1997, 1998, 2000) that this qualification was presented in a content-based learning environment. The NTG 471 module is highlighted in red.

Figure 21: Comparison between content-based semester and examination marks



This discrepancy as illustrated in Figure 21 in a content-based system is the major concern of this study that caused the challenging idea [Chapter 2] to determine whether assessment in outcome-based learning will deliver a similar result.

7.2.2 Outcome-based calibration of assessment

The calibration of the assessment occurs according to the data explained in Table 123, with reference to Olivier (2000:111).

Table 123: Explanation of the calibration of assessment

Aspects to consider	Application in this study
Assessment is a continuous process and part of the learning process, i.e. the learners become actively involved in their own assessment	The assessment was executed over a period of time; from the start until the conclusion of the learning programme (approximately three months) and everything that was assessed had to be part of the learners' activities to prove competence
Learners are assessed against various sets of criteria during the learning programme	Learners were assessed against their class-work, a final assessment matrix, test marks, their portfolio of evidence and observation checklists
Learners are given the opportunity to provide evidence to prove achievement of outcomes	The evidence to be collected is compiled in a portfolio and available as visual proof of the competence of the learner
Moderation ensures consistency	To be discussed in Chapter 8

7.2.3 Data considered for the calibration

The second year learners (TBG 471, NTG 471, RTS 471) in 2001 were exposed to the portfolio of evidence in 2000, but they were not assessed against it as these portfolios were regarded as invalid and unreliable because of inconsistency and misunderstanding [Chapter 6]. Due to the fact that this study has to be handed in before the final marks for the 2001 first year learners for RGB 471 and RGB 472 who became the 2002 second year learners for TBG 471, NTG 471 and RTS 471 are available, a valid comparison between 2001 and 2002 TBG 471, NTG 471 and RTS 471 could not be included. Table 124 summarises the availability of data for this interpretation.

Table 124: Available data for this interpretation

Modules	2000	2001	2002
RGB 471 and RGB 472	Exposure to portfolio of evidence but invalid and unreliable; implementation of final assessment through observation practices	Portfolio of evidence assessment	Qualification terminates and is not presented any longer
TBG 471, NTG 471, RTS 471	Exposure to portfolio of evidence but invalid and unreliable; implementation of final assessment through observation practices	Portfolio of evidence assessment	Final results not yet available

7.2.4 The average of each module for the different artefacts

According to Table 123 assessment is a continuous process where the learner is involved in activities that are assessed against various sets of criteria. Addendum 15 represents the compilation of marks in this respect for the example module of this study, i.e. the NTG 471 module of the FDE(CAE) qualification. This typical mark sheet includes the following data:

- The training centres (Row 1)
- Numbering learners (Row 2)
- The student numbers to ensure anonymity (Row 3)

- Topic for assessment (Row 4, Row 6)
- Total marks for topic (Observation checklist: Row 5 = Row 11, Portfolio assessment: Row 7= Row 9, Assessment matrix: Row 8, Test mark: Row 10, Assessor assessment = Row 12, Class work = Row 13)
- Grand total for assessment (Maximum value for competence = Row 14)
- Grand total and percentage for learner (Row 15, Row 16)
- The actual average per topic is presented in the last column of the page.

The averages of all the artefacts in all the modules were calculated according to the presentation of the data in Table 125 and this data is represented in Figure 22 for the first year learners (RGB 471 and RGB 472) of 2001, and for the second year learners (TBG 471, NTG 471, RTS 471) of 2001 [Chapter 4] as explained in Table 124.

The deviation from the average for the content-based examination is presented in Figure 23 and the deviation from the averages for the outcome-based assessment is presented in Figure 24. The real values for the deviation form the averages are represented in Addendum 12.

Table 125: Competence measuring list of the NTG 471 module for the FDE(CAE) in 2001 [1/3 pages]

		Klerksdorp														Durban				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5
Studentnumber		2032414	2032410	2032418	2032408	2032292	2032290	2032626	2032404	2032400	2032334	2032406	2032412	2032402	2032420	2031798	2031806	2031808	2031802	2031790
Observation Checklist for NTG 471																				
Find Website with given URL	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1		1	1
Create document in Word	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Save document	1															1				1
Design Principles (list)	1	1	1	1		1	1	1		1		1	1	1	1					
Design Principles (apply)	1																			
Launch html editor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Create website	1		1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Save website	1	1	1	1		1	1	1	1	1	1	1	1	1		1	1	1	1	1
Change background	1		1	1	1				1			1	1		1	1	1	1	1	
Text: font color	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1	1	1	1
Text: font size	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1
Text: font type	1	1	1	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1
Bullets / Numbering	1		1	1	1	1	1	1	1	1		1	1	1	1	1	1		1	1
Insert graphic	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Make Hyperlink	1		1	1		1		1	1	1		1	1		1	1	1		1	1
Insert table	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1	1	1	1
Print website	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Identify topology	1	1				1										1			1	1
Identify cabling	1	1				1													1	1
Identify LAN, MAN, WAN	1															1			1	1
Identify Server-based / Peer-to-peer	1															1				
Identify uses of computer centre	1																			
	22	13	15	15	11	16	10	14	14	14	7	15	15	12	13	18	14	11	17	17
Portfolio assessment																				
Submit portfolio	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Portfolio reliable	1	1		1	1			1		1			1		1	1	1			
Portfolio valid	1																		1	
Assignments authentic	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Assignments current	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1
Portfolio complete (all Learning Tasks)	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1	1		
Unit Standard	1	1	1	1	1	1	1		1	1	1	1	1						1	1
Learning Tasks	1	1	1	1	1	1	1		1	1	1	1	1	1	1				1	
URL printouts	1	1	1	1		1	1	1	1	1		1	1	1						1
Structured portfolio document	1	1	1		1	1	1	1	1	1		1	1	1		1		1		
Header and Footer correct	1			1	1			1												
Applicable Table of Content	1	1	1	1	1	1	1	1	1			1	1	1	1				1	
CV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Printout of website (Project 1)	1	1	1	1	1		1	1		1		1	1	1		1	1	1	1	1
Printout of Computer networking (Project 2)	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Storyboard	1	1	1	1	1	1	1	1		1		1	1	1		1	1	1	1	1
Project 2 to be presented to audience	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Structure of Website	1	1	1	1	1		1	1		1		1	1	1		1	1	1	1	1
Class information	1	1	1	1	1	1	1		1	1		1	1	1	1				1	1
Class assignments (as per information)	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1			
Class assessments	1	1		1	1	1	1	1	1	1		1	1	1	1					
All documents signed by student	1															1				
All documents signed by witness	1			1	1		1						1		1				13	
	23	19	17	20	20	16	19	17	15	18	5	18	20	17	12	14	12	11		12
Assessment matrix	22	19	18	20	14	19	11	9	5	6	19	6	13	6	8	17	20	20	20	19
Portfolio assessment mark	23	19	17	20	20	16	19	17	15	18	5	18	20	17	12	14	12	11	13	12
Test mark	25	16	16	19	20	13	15	21	14	20	21	15	17	16	20	17	17	19	16	16
Observation Checlist	22	13	15	15	11	16	10	14	14	14	7	15	15	12	13	18	14	11	17	17
Assessor Assessment	46	43	35	41	39	29	21.5	41.5	25	24	22	25	33.5	27.5	22	23.5	32.5	34	31	29.5
Classwork	20	16	16	16	17.2	14	16	14.8	11.2	17.2	0	16	16	15.2	5.2	11.6	12.2	12.2	12.6	12.2
Total	158	158																		
Total		126	117	131	121	107	93	117	84	99	74	95	115	94	80	101	108	107	90	106
Percentage		80	74	83	77	68	59	74	53	63	47	60	72	59	51	64	68	68	57	67
Benaamde punt vanaf die totale punt																58	61	61	63	61
Class assessment marks (50)		40	40	40	43	35	40	37	28	43		40	40	38	13	29	31	31	32	31

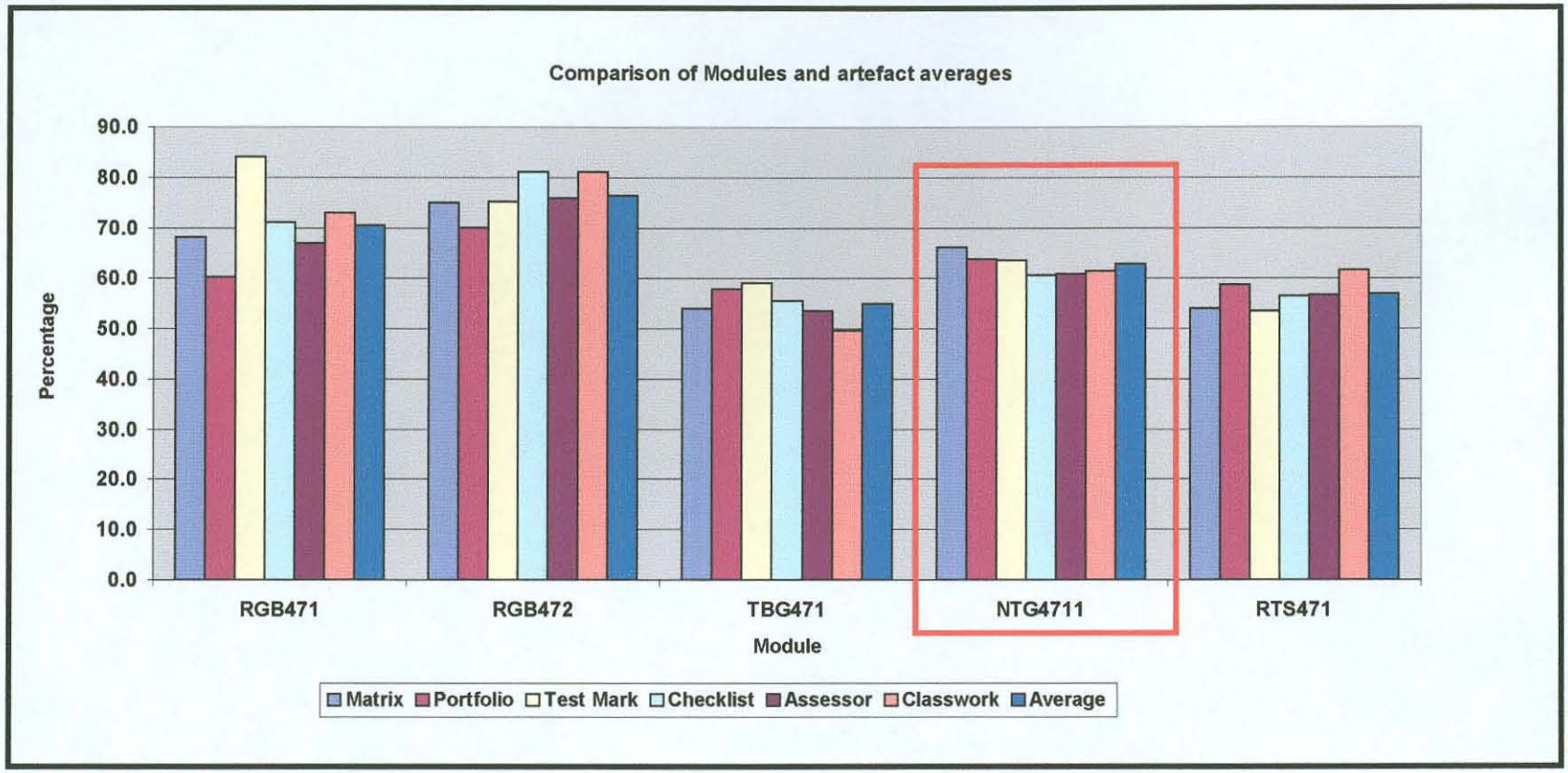
Table 125 [continue]: Competence measuring list of the NTG 471 module for the FDE(CAE) in 2001 [2/3 pages]

										Newcastle				Rustenburg					Randburg
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Studentnumber	2027458	2031004	2026606	7922159	2030998	2031804	20317949	2031006	2031792	2031744	2031742	2031736	7327366	2032260	2032288	2032252	2032256	2032258	2032380
Observation Checklist for NTG 471																			
Find Website with given URL	1	1				1	1				1	1	1	1	1	1	1	1	1
Create document in Word	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1	1
Save document										1	1	1	1	1	1	1	1	1	1
Design Principles (list)										1	1			1	1	1	1	1	
Design Principles (apply)																			
Launch html editor	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Create website	1		1	1	1	1	1	1	1		1	1	1	1	1	1	1		1
Save website	1		1	1		1	1		1	1	1	1	1	1					1
Change background	1	1	1	1	1	1		1	1			1	1	1	1	1	1	1	
Text: font color	1	1	1	1	1	1	1	1			1	1		1	1	1	1	1	1
Text: font size	1	1	1	1	1	1	1	1	1			1		1	1	1	1	1	1
Text: font type	1	1	1	1		1	1	1			1			1	1	1	1	1	1
Bullets / Numbering	1	1	1	1		1	1	1	1	1	1								1
Insert graphic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Make Hyperlink			1	1		1	1		1			1	1	1	1	1	1	1	1
Insert table	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1	1
Print website	1	1	1	1		1	1	1	1				1	1	1	1		1	1
Identify topology		1									1	1	1	1		1	1	1	1
Identify cabling		1										1		1					1
Identify LAN, MAN, WAN													1		1		1	1	
Identify Server-based / Peer-to-peer												1							
Identify uses of computer centre																	1		
	13	13	13	13	7	14	12	10	10	7	13	15	13	17	14	15	16	15	15
Portfolio assessment																			
Submit portfolio	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Portfolio reliable	1					1	1												
Portfolio valid							1												
Assignments authentic	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1
Assignments current	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1
Portfolio complete (all Learning Tasks)	1				1		1							1	1	1	1	1	1
Unit Standard						1						1	1	1	1	1	1	1	1
Learning Tasks													1	1	1	1	1	1	1
URL printouts								1								1		1	
Structured portfolio document	1			1		1	1							1	1	1	1	1	1
Header and Footer correct																			
Applicable Table of Content														1	1	1	1	1	1
CV	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1
Printout of website (Project 1)	1		1	1	1		1	1	1			1	1	1	1	1	1	1	1
Printout of Computer networking (Project 2)	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Storyboard	1		1	1		1	1	1	1	1				1	1	1	1	1	1
Project 2 to be presented to audience	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1		1
Structure of Website	1		1	1	1	1	1	1	1			1	1	1	1	1	1	1	1
Class information												1	1						1
Class assignments (as per information)	1		1			1	1		1					1	1		1	1	1
Class assessments																			1
All documents signed by student							1												
All documents signed by witness							1												
	13	6	10	10	9	12	16	10	10	3	2	10	11	15	15	15	15	15	17
Assessment matrix	20	10	18	19	13	15	16	9	12	3	2	8	10	20	14	20	20	18	20
Portfolio assessment mark	13	6	10	10	9	12	16	10	10	3	2	10	11	15	15	15	15	15	17
Test mark	20	17	18	21	10	15	19	17	17	10	13	16	14	19	18	15	19	17	20
Observation Checlist	13	13	13	13	7	14	12	10	10	7	13	15	13	17	14	15	15	15	15
Assessor Assessment	32	27	30.5	26	28	21.5	31	26	8	28	30	11	40	36	32	36	31	34	33.5
Classwork	12.6	9.4	11.4	11.4	8.6	10	12	9.2	7.4	6.6	7.8	8	11.4	10.8	9.6	0	10.4	10	13.6
Total																			
	111	82	101	100	76	88	106	81	64	58	68	70	99	118	103	101	110	109	119
	70	52	64	64	48	55	67	51	41	36	43	44	63	75	65	64	70	69	75
Beraamde punt vanaf die totale punt	63	47	57	57	43	50	60	46	37	33	39	40	57			65			68
Class assessment marks (50)	32	24	29	29	22	25	30	23	19	17	20	20	29	27	24		26	25	34

Table 125 [continue]: Competence measuring list of the NTG 471 module for the FDE(CAE) in 2001 [3/3 pages]

												Waterkloof														Port Elizabeth				
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53		
Studentnumber	2032376	2031918	2031840	2032370	2032398	2031740	2032378	9915051	2032372	2032254	2032374	9931513	2032144	2032242	7439067	2026288	7727607	9071989	7315295	2030656	2025908	2030300	2029978	7933142	9824995	2025830	7718616	2031702	2031700		
Observation Checklist for NTG 471																															
Find Website with given URL	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Create document in Word	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Save document	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Design Principles (list)	1	1	1	1	1	1	1	1	1	1	1			1	1			1	1						1			1	1		
Design Principles (apply)											1														1						
Launch html editor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Create website	1	1		1	1	1	1	1	1	1	1	1			1			1				1	1	1	1		1	1	1		
Save website	1	1	1	1	1	1	1	1	1	1	1	1										1	1		1			1	1		
Change background		1								1			1		1		1	1	1		1	1	1		1	1	1				
Text: font color	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1	1	1	1	1	1	1	1	1	1	1		
Text: font size	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1		1		1	1	1	1	1		1	1	1		
Text: font type	1	1	1	1		1	1	1	1	1	1	1	1		1		1					1	1					1	1		
Bullets / Numbering		1	1	1	1	1	1	1	1	1	1	1	1				1		1		1	1	1		1	1		1	1		
Insert graphic		1		1	1		1	1	1	1			1		1	1	1	1	1		1	1	1	1	1	1	1	1	1		
Make Hyperlink								1		1					1		1	1	1			1	1					1	1		
Insert table	1	1		1	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1		
Print website	1	1		1	1	1	1	1	1	1	1	1			1		1	1	1	1			1					1	1		
Identify topology	1	1		1	1	1	1		1	1	1	1					1												1		
Identify cabling	1	1		1	1	1	1		1	1	1	1					1	1									1	1	1		
Identify LAN, MAN, WAN				1	1		1								1												1	1	1		
Identify Server-based / Peer-to-peer																												1	1		
Identify uses of computer centre																												1	1		
																												1			
	14	17	10	17	16	15	17	15	16	18	16	14	9	2	15	6	15	13	13	7	10	14	15	10	14	9	13	19	20		
Portfolio assessment																															
Submit portfolio	1	1	1	1	1	1	1		1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Portfolio reliable															1		1	1		1		1	1	1			1				
Portfolio valid																															
Assignments authentic	1	1	1	1	1	1	1		1	1	1	1	1		1		1	1	1	1		1	1	1	1		1		1		
Assignments current	1	1	1	1	1	1	1		1	1	1	1	1		1		1	1	1	1		1	1	1	1	1	1		1		
Portfolio complete (all Learning Tasks)		1		1	1	1	1		1		1				1		1	1	1			1	1	1			1	1	1		
Unit Standard	1	1	1	1	1	1	1		1		1	1			1		1	1				1	1	1			1	1	1		
Learning Tasks	1	1	1	1	1	1	1		1	1	1	1		1	1		1	1				1	1	1					1		
URL printouts															1		1	1	1	1	1	1	1	1	1	1	1	1	1		
Structured portfolio document			1	1	1	1			1	1		1		1	1		1	1	1	1		1	1	1	1				1		
Header and Footer correct															1								1					1	1		
Applicable Table of Content			1	1	1	1			1		1	1	1	1	1		1	1		1		1	1	1	1	1	1	1	1		
CV	1	1			1	1	1		1		1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Printout of website (Project 1)		1	1		1	1	1		1		1	1			1		1	1	1	1		1	1	1			1		1		
Printout of Computer networking (Project 2)	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1	1			1	1	1	1	1	1	1	1		
Storyboard		1	1	1	1	1	1		1	1	1	1	1	1	1		1	1	1	1		1	1	1	1	1	1	1	1		
Project 2 to be presented to audience	1	1	1	1	1	1	1		1	1	1			1	1			1	1			1	1	1	1		1	1	1		
Structure of Website		1	1		1	1	1				1	1			1		1	1	1	1		1	1	1			1	1	1		
Class information		1	1	1	1	1			1	1	1	1			1	1				1					1			1	1		
Class assignments (as per information)	1	1	1	1	1	1	1		1	1	1	1	1		1	1	1	1	1	1		1	1	1	1	1		1	1		
Class assessments		1	1	1	1	1	1		1	1	1	1	1		1	1	1	1	1	1		1	1		1	1					
All documents signed by student					1		1																								
All documents signed by witness																							1								
	9	15	13	14	18	17	16	0	16	11	16	16	9	6	20	5	17	18	14	14	3	18	20	17	13	10	14	13	18		
Assessment matrix	11	21	9	11	21	21	21		21	18	12	14	5	10	19	0	20	16	14	4	0	19	19	17	3	4	11	20	20	13.9	66.2
Portfolio assessment mark	9	15	13	14	18	17	16	0	16	11	16	16	9	6	20	5	17	18	14	14	3	18	20	17	13	10	14	13	18	13.4	63.9
Test mark	14	12	10	18	18	22	15	18	15	18	18	14	9	8	16	11	16.5	15	18	13	13	17	18	6	9	13	14	20	14	15.9	63.7
Observation Checlist	14	17	10	17	16	15	17	15	16	18	16	14	9	2	15	6	15	13	13	7	10	14	15	10	14	9	13	19	20	13.3	60.7
Assessor Assessment	27	24	21.5	32	33	37.5	30	30	37.5	31	34	29	24.5	11.5	27	5	29.5	29.5	26.5	24	21	36	45	30.5	26	27	35	41	27	29.2	60.8
Classwork	9.8	11.6	8.2	12	13.8	14.6	12.8	8.2	13.6	12.4	12.4	11.2	7.6	9.2	18.4	10	15.2	17.6	15.2	15.6	13.2	16	18	16	12.4	14.4	16	16	19	12.3	61.4
Total																															
	85	101	72	104	120	127	112	71	119	108	108	98	64	47	115	37	113	109	103	78	60	120	135	97	77	77	103	129	118	97.5	
	54	64	45	66	76	80	71	45	75	69	69	62	41	30	73	23	72	69	65	49	38	76	85	61	49	49	65	82	75	61.7	62.8
Beraamde punt vanaf die totale punt	49	58	41	60	69	73	64	41	68	62	62	56																			
Class assessment marks (50)	25	29	21	30	35	37	32	21	34	31	31	28	19	23	46	25	36	44	36	39	33	40	45	40	31	36	40	40	40		

Figure 22: A comparison of the average of each module for the different artefacts for 2001



This graph represents the calibration of assessment for the FDE(CAE) modules in 2001. For an holistic overview, Figure 23 and Figure 24 must be taken in consideration and the discussion will follow after these.

Figure 23: Indication of deviation from the average in semester and examination marks

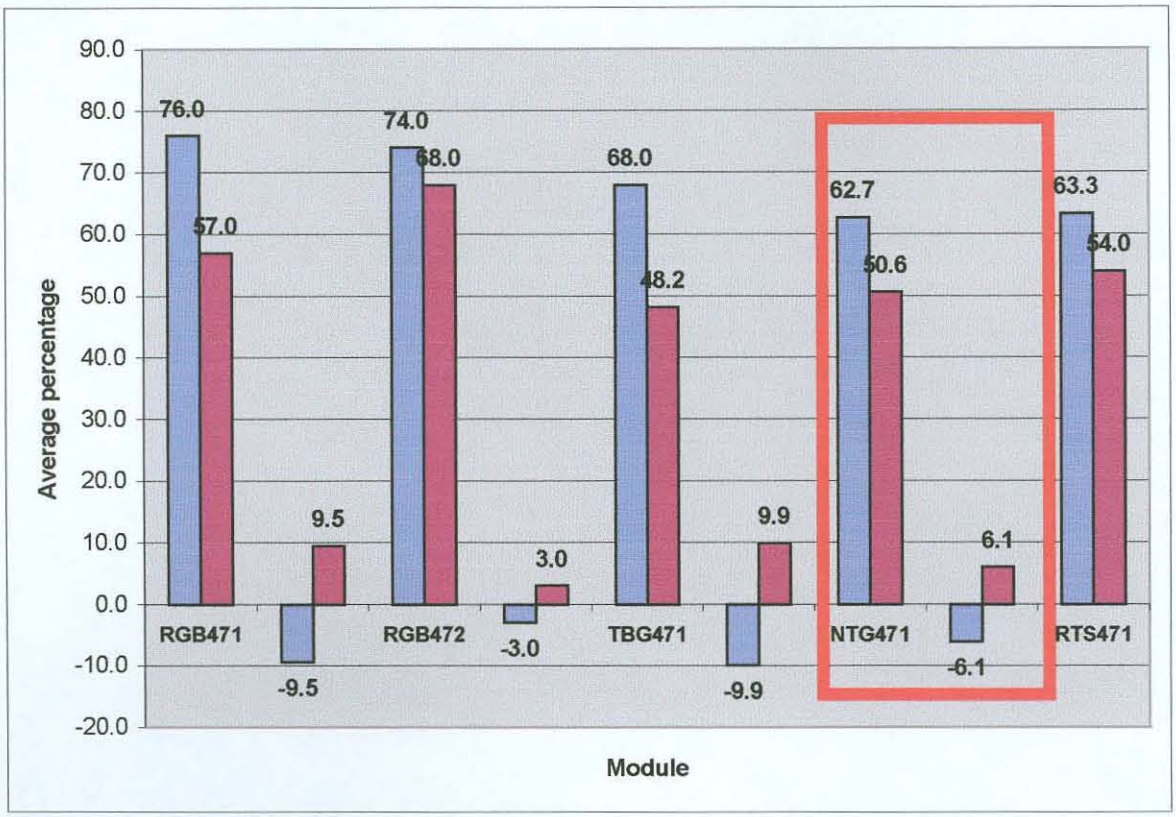
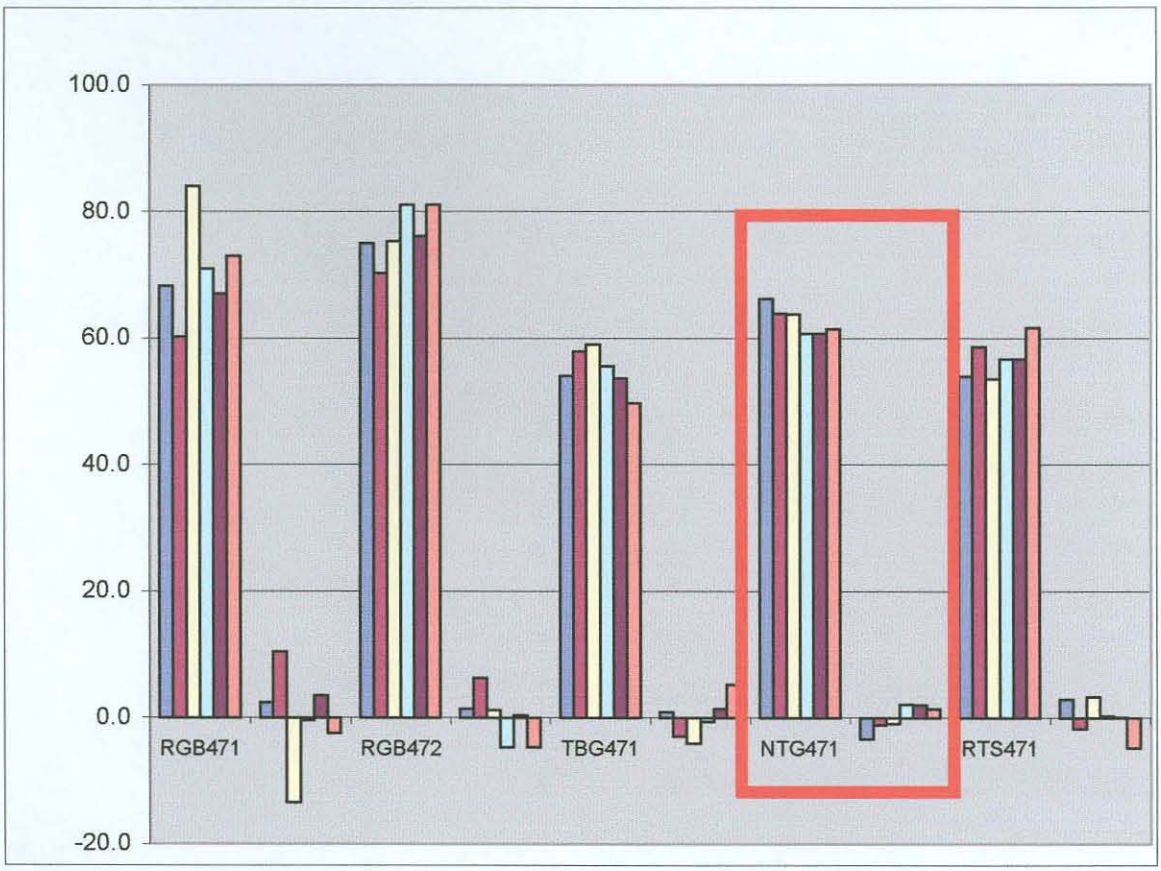


Figure 24: Indication of deviation from the average in assessment of the different artefacts



Analysis and interpretation of the data in Figure 22, Figure 23 and Figure 24

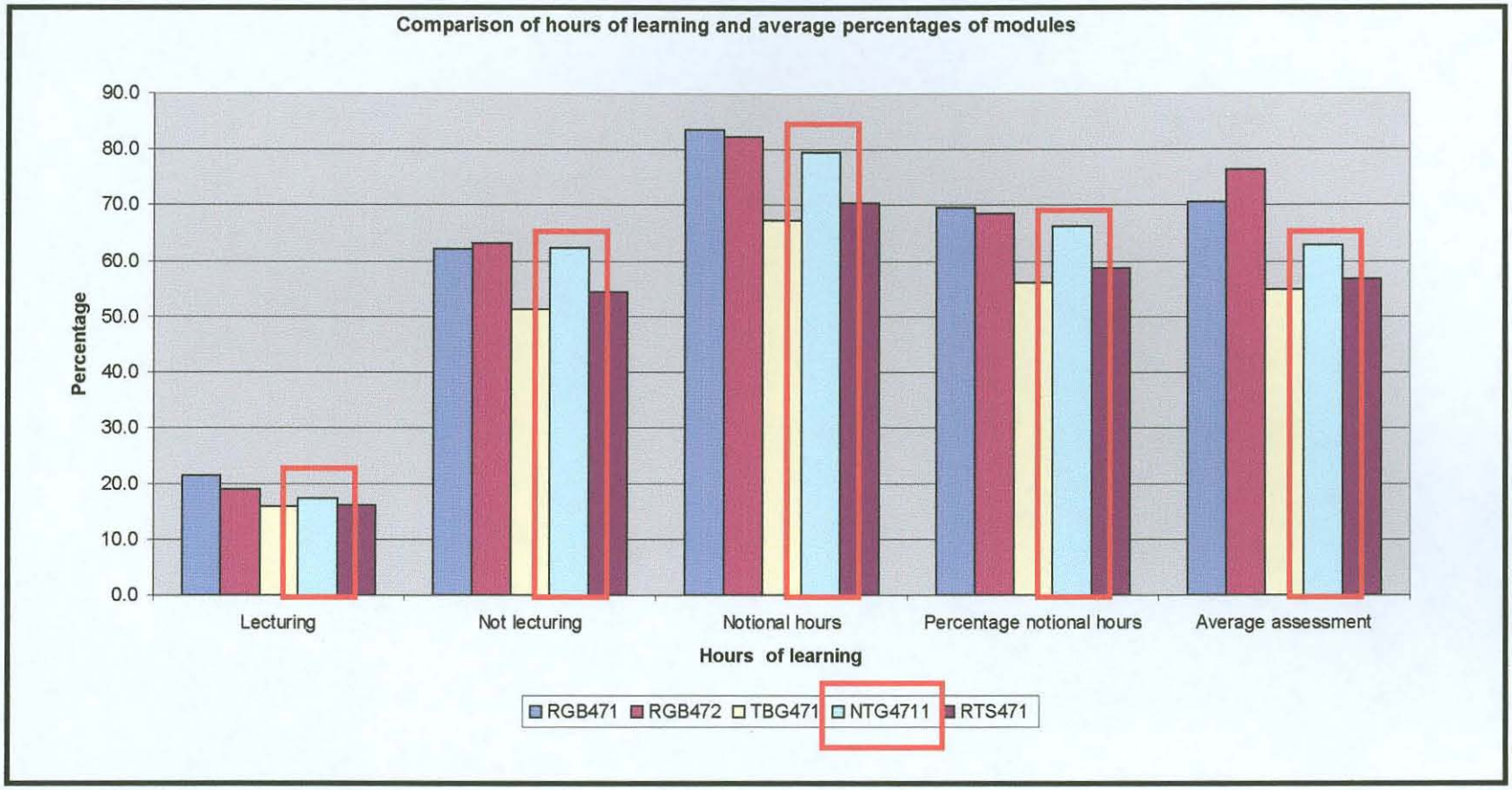
The data in Figure 22 reveals a consistency in the averages of the different artefacts used for measurement in the assessment of a learner. Although the major focus is on the NTG 471 module the interesting discrepancy in the RGB 471 module may be explained according to the following interpretation:

- The higher test mark for RGB 471: The apparently high average for the test mark in the RGB 471 module can be contributed to the fact that the learners could refer to the computer screen for answers as well as the fact that the questions included basic knowledge. Another explanation is that some of these learners were fairly computer literate in basic computer skills (word processing and spreadsheets) when they entered for the course and that could have a positive effect on the result.
- The lower portfolio mark for RGB 471: This mark is lower than the other averages which could be explained by the fact that this was the first time that these learners (first years in 2001) have were exposed to the portfolio of evidence and that the remarkable overall increase in the average for RGB 472 is a result of to the learners' adapting to the alternative way of assessment. As the FDE(CAE) qualification terminates in 2002 there are no first year learners and an interesting comparison of year 2001 and year 2002 RGB 471 and RGB 472 modules is not available.
- The portfolio mark for TBG 471, NTG 471 and RTS 471: The modules are presented in the order TBG 471, RTS 471 and then NTG 471. The increase in the averages in the portfolio assessment mark could be contributed to the fact that the learners were exposed to this way of assessment and an extrapolation could include a final maximum competence in a compilation of the portfolio of evidence.
- The lower average for TBG 471: The overall lower average mark for this module could be contributed to the fact that the content of this module is rather theoretical as it addresses the philosophical roots of content-based learning versus outcome-based learning.
- Consistency: The consistency in average marks cancels the discrepancies between the semester marks and the examination mark and may contribute to a better achievement of competence of the learners.

7.2.5 The correlation between the notional hours of learning and the averages for each module

Figure 25 represents the average percentage notional hours of learning against the average percentage of each module.

Figure 25: Comparison of percentage notional hours of learning and averages in performance for the modules



Analysis and interpretation of the data in Figure 25

- Correlation between the notional hours of learning and the averages for the modules: According to Figure 25 and Table 50 the average lecturing time is less than the officially required 22,5/21 hours and it also indicates that the average non-lecturing time is less than the required 97,5 – 99 hours [Chapter 4 section 3.2.2]. The average notional hours of learning is therefore less than the required 120 notional hours of learning and as a percentage consistent with the average for each module except for the RGB 472 module.
- The deviation for the RGB 472 module: The deviation for the RGB 472 module may be explained in context by the fact that the learners were more computer literate and they could spend less time on learning basic skills, but they could spend more time on authentic application of these skills.
- The practical implication of the notional hours of learning: Although more research would be necessary to confirm this statement, it may be deducted from this information that if the learners spend more time on learning they may become more competent and that the idea of notional hours of learning for the average learner is not as far-fetched as some people may expect [Chapter 3].
- The correlation between achievement and notional hours of learning: It is also evident from the results and interpretation of the open-ended questionnaires that the lower achievers spent less notional hours of learning per module than the high achievers.

7.3 The action research and the learning programme

A cyclic procedure is characteristic of action research [**Chapter2**]. The following tables presents the cyclic events of action research in the context of assessment of the learning for the NTG 471 unit standard of the FDE(CAE) qualification. Table 126 represents the contribution of the assessment of the learning in this study in 1997.

Table 126: 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** Chapter 3	**Learning programme** Chapter 4	**Facilitation of learning** Chapter 5	**Evidence of learning: the portfolio**	**Assessment of learning**	**Quality assurance** Chapter 8
1997				Chapter 6	Chapter 7	
Idea				Traditional assignments were submitted	Traditional semester mark and summative examinations	
Plan				Students handed in traditional assignments	Students' assignments and examinations were marked against a fixed memorandum	
Action / Observe				Unsatisfactory results because of a lack of motivation and technological infrastructure for students	Unsatisfactory results because of discrepancy between semester mark and final mark of students	
Reflect / Evaluate				Alternative strategies had to be considered	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 test and examinations with unsatisfactory results.

Table 127 represents the contribution of the assessment of the learning in this study in 1998.

Table 127: Action research application in this study for 1998

The cyclic and spiral iterative nature of the action research in this study						
Cycle	**Legislative framework and educational concepts in South African education** Chapter 3	**Learning programme** Chapter 4	**Facilitation of learning** Chapter 5	**Evidence of learning: the portfolio**	**Assessment of learning**	**Quality assurance** Chapter 8
1998				Chapter 6	Chapter 7	
Idea				Traditional assignments were submitted, not really authentic	Traditional semester mark and summative examinations	
Plan				Students handed in traditional assignments	Students' assignments and examinations were marked against a fixed memorandum	
Action / Observe				Unsatisfactory results because of a lack of motivation and technological infrastructure for students	Unsatisfactory results because of discrepancy between semester mark and final mark of students	
Reflect / Evaluate				Alternative strategies had to be considered	Alternative strategies had to be considered	

There was no remarkable difference between 1997 and 1998, but it became clear that there was a need for alternative learning and assessment methodologies.

Table 128 represents the contribution of the assessment of the learning in this study in 1999.

Table 128: Action research application in this study for 1999

The cyclic and spiral iterative nature of the action research in this study						
Cycle	**Legislative framework and educational concepts in South African education Chapter 3**	**Learning programme Chapter 4**	**Facilitation of learning Chapter 5**	**Evidence of learning: the portfolio**	**Assessment of learning**	**Quality assurance Chapter 8**
1999				**Chapter 6**	**Chapter 7**	
Idea				Co-ordinator assumed that every educator would be able to set learning tasks for learners to create a semester mark as required by UP	Thinking of alternative ways to determine the learners' performance	
Plan				To give educators and learners freedom to create learning tasks for accumulation of a semester mark	To give more detailed instructions as to what is expected in the learning tasks and submissions for evaluation purposes	
Action / Observe				Educators and learners used the templates from the hosting company to create learning tasks and determine semester marks in a content-based environment	Educators are asked to change the template-driven activities and forced to think divergently, introducing more exciting tasks and structured mark allocation	
Reflect / Evaluate				There must be a real change in collecting evidence of learning	Educators still used the templates and disregarded the instructions to change	

This was the first year of the partnership between the HEI and NGO. Educators did not understand the change in the approach and still allocated marks according to fixed prescribed memoranda and mark sheets while learners wrote examinations.

Table 129 represents the contribution of the assessment of the learning in this study in 2000.

Table 129: Action research application in this study for 2000

The cyclic and spiral iterative nature of the action research in this study						
Cycle	Legislative framework and educational concepts in South African education Chapter 3	Learning programme Chapter 4	Facilitation of learning Chapter 5	**Evidence of learning: the portfolio**	**Assessment of learning**	Quality assurance Chapter 8
1998				**Chapter 6**	**Chapter 7**	
Idea				Introduce a portfolio of evidence	Read about assessment and the process and procedures, the legislative requirements for assessment of a portfolio of evidence of competence	
Plan				Introduce a portfolio of evidence. Give guidelines and support to educators and learners	Assess the portfolio of evidence against the specific and critical cross-field outcomes of the unit standard	
Action / Observe				Major problems occurred with reference to the compilation of a portfolio of evidence because neither educators nor learners had been exposed to this activity before	Assume that the educators and learners will know how to assess the portfolio of evidence according to the prescribed documentation	
Reflect / Evaluate				A complete disaster as regards "perfect tasks", validity and reliability	Neither educators nor the learners understood what was expected	

The learners compiled a portfolio of evidence for the first time. This was as a trial exercise for alternative assessment methodologies, but not very successful. Learners wrote examinations at the end of the year.

Error! Not a valid bookmark self-reference. **represents the contribution of the assessment of the learning in this study in 2001.**

Table 130: Action research application in this study for 2001

The cyclic and spiral iterative nature of the action research in this study						
Cycle	**Legislative framework and educational concepts in South African education Chapter 3**	**Learning programme Chapter 4**	**Facilitation of learning Chapter 5**	**Evidence of learning: the portfolio**	**Assessment of learning**	**Quality assurance Chapter 8**
2001				**Chapter 6**	**Chapter 7**	
Idea				Educators and learners will be exposed to a portfolio of evidence as the legal documentation for performance against the unit standard with support and guidance	To introduce a complete, new structure of information about assessment practices and perform a legal assessment in outcome-based learning	
Plan				To implement a comprehensive portfolio of evidence and explain to educators and learners what will be expected of them	Visit venues and explain to educators and learners what it is about; educators have to report activities to co-ordinator to become partners in the process	
Action / Observe				Visit educators and learners and explain the legislative and educational concepts of outcome-based learning requirements and the role of a portfolio of evidence	Implement the visits to the venues, explaining, getting the educators involved and partners in the process	
Reflect / Evaluate				An incredible learning curve and the information gained from this activity could be used as a valid and reliable modus operandi to determine learner performance in outcome-based learning	A successful implementation of assessment in outcome-based learning; incredible amount of information gathered and still a lot to learn	

The assessment of the portfolio of evidence had been successfully implemented. The information gained from this activity is very valuable and could be used in future.

Table 131 represents the contribution of the assessment of the learning in this study in 2002.

Table 131: Action research application in this study for 2002

The cyclic and spiral iterative nature of the action research in this study						
Cycle	**Legislative framework and educational concepts in South African education Chapter 3**	**Learning programme Chapter 4**	**Facilitation of learning Chapter 5**	**Evidence of learning: the portfolio**	**Assessment of learning**	**Quality assurance Chapter 8**
2002				**Chapter 6**	**Chapter 7**	
Idea				Elaboration on the full implementation of an outcome-based portfolio of evidence for learning	Elaboration on the full implementation of an outcome-based assessment strategy including lessons learnt from the past	
Plan				No new addition to present portfolio of evidence; an attempt to determine whether there was an improvement after the implementation and experiences of the previous year on the learners' portfolio performance	To complete the action research cycle with as much success as possible	
Action / Observe				Educators and learners exposed in 2001 were more comfortable and had a better idea of what was expected	Improved on the processes and procedures and included more activities to be monitored for assessment purposes	
Reflect / Evaluate				In most cases an improvement and a better understanding of the purpose of the portfolio of evidence as a legal document of performance	Learners were more comfortable and accepted the alternative way of assessment as a process and procedure to determine competence	

This was the last year of the FDE(CAE) qualification. At the time of the submission of this study the final results for 2002 were not available. The indications are that the effort to implement a portfolio of evidence in a qualification is progressing towards an acceptable alternative way of assessment.

8 Evaluation of the assessment of learning

The following summarises the findings of the study on the evaluation of the assessment of learning 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 126 to Table 131 and in context of the requirements that all participants must contribute to the assessment of learning.

8.1 Content

Various aspects emerged from the portfolio of evidence:

- Learners copied from one another. The learning tasks were identical except for the change in names of schools or people (this will also be referred to in Chapter 8).
- The portfolio of evidence must indicate reliability and consistency in the competence of the learner. In some cases the learners submitted controversial activities where there was no correlation between different learning tasks, e.g. in the NTG 471 module the design principles as in the information the learner found on the website and the compilation of ten design principles in a structured document, differed completely [Chapter 4].

8.2 Physical environment

According to the agreement between the partners, UP and FKSA, the latter had to provide the entire infrastructure for the qualification to be presented without any restrictions. However, the poor technical quality as regards the internet and proper network facilities was frustrating and time-consuming to learners who referred to this as follows, "I found the exam a nightmare in terms of computers not working and the internet and general network that was down". Learners express the "need to do a course in the physical maintenance of a computer, because much time spent 'learning' goes towards the maintenance of the computer".

8.3 Time

Siebörger & Macintosh (2001:60) refers to time as a major problem for assessment practices. Time constraints can be overcome by co-operative learning environments, clustering of outcomes and easier marking strategies for tests and examinations, e.g. computer-based testing. Experiences in this regard included the timetable, time for assessment and time for marking.

8.3.1 Timetable

Although the learners are exposed to formative and continuous assessment in an outcome-based learning environment, the learner can decide when he or she is ready for final assessment and can then submit a request to be assessed.

- In a formal education situation with a great number of learners it is not always practicable to assess individuals on demand and in this study all participants agreed on a time that suited everybody. This caused some problems because some learners did not regard this assessment as seriously as examinations and brought up innumerable and unacceptable excuses in order not to attend the assessment.
- Learners did not regard the assessment as serious because the impression that the learners had about this qualification was that it was just another "Futurekids course" and they therefore did not relate it to a formal university qualification. They did not take it seriously enough to attend to the assessment timetable.

- Learners knew about the assessment well in advance, and although they diarised it they still demanded to be treated as exceptions to the rule when something happened, e.g. a friend's wedding, and they could not attend (Ra). They then wanted to be treated individually and set individual dates for assessment, which was impossible as distant venues and large numbers of learners had to be dealt with.

8.3.2 Time for assessment

- It is obvious that there are fast and slow learners and that slow learners cannot be rushed. Although a three-hour time-frame for the final assessment was appointed some learners were granted more time than others because of factors like typing skills and slower thought processes. This proved beneficial to the learners but for understandable reasons a learner could not be granted unlimited extra time.
- Another remarkable observation was that the allocated time, the required maximum of three hours, was enough. Even if learners do get more time they do not necessarily perform better because they think they know more and need more time, but they actually only progress in a closed circle of iterative actions without making any significant progress towards a better conclusion.

8.3.3 Time for marking

Marking can be time-consuming in outcome-based learning but Siebörger & Macintosh (2001:62) indicates that marking can be reduced by self-assessment and peer assessment, as well as clear outcomes and learner involvement as to what is expected for competence. Marking in big classes needs more research, but if the educators are trained assessors and the learners get more involved in their own learning, marking can be reduced substantially.

8.4 Co-ordinator

The co-ordinator acted as assessor and found the assessment much more satisfying than single content-based examinations. The atmosphere was much more relaxing and the assessor could support the learners and guide them towards a better performance through assessment of competence.

8.5 Educators

- Educators were involved in the formative and continuous assessment activities of the learners. One educator revealed that although she knew how the assessment should be done, she was not honest with the co-ordinator and it did not happen as reflected in her report to the educator.
- It is very clear however, that all educators will have to be trained as assessors before the real understanding of assessment can take place.
- Educators did not give enough feedback and guidance to the learners.

8.6 Learners

- Initially learners felt unsure about assessment because they "were not sure what assessment would be like."
- Aristotle said: "What we have to learn to do we have to do to learn." After exposure to outcome-based learning and an alternative way of assessment the learners made comments such as:
  - "At last OBE is starting to make sense: co-operative learning is there for higher order thinking skills and the meta-cognition makes the student think!"
  - "I have been able to broaden my understanding of OBE"
  - "Valuable focus on Bloom's taxonomy, with a variety of opportunities to see education through new eyes."
  - "I enjoyed learning about SAQA and the NQF and it starts making sense to me because everything is practical and applicable."
  - "I was confused at first but now I understand that SAQA is within reach, relevant and manageable and not boring and far away."
- The learners preferred a process of formative, summative and continuous assessment to content-based examinations and verbalised their experiences as follows:
  - "I enjoyed the assessment because I could apply my knowledge."
  - "I enjoyed the assessment component of the qualification."
  - "For all my moaning and feeling inadequate, I am sure I have learnt a lot."
  - A very positive result of outcome-based learning is that learners learnt to look at themselves critically as reflected in the following comments pertaining cognitive and affective skills:
  - "I finally understand what my lecturers tried to teach us when I was studying."
  - "At the beginning, during and almost to the end, I hated what I was doing; in the end I have to admit that I enjoy the knowledge that I have gained."
  - "I was very negative in the beginning, but in the end I was motivated and I now know how to evaluate myself in the OBE environment.'
  - "Eventually I developed insight into my own teaching and the processes involved. I am trying now to also introduce psychomotor skills into outcomes."
- "I came form a content-based learning background. The mind-shift towards outcome-based learning and constructivism takes some time; far more preparation time is required for OBE, but the results are far better!" Siebörger & Macintosh (2001:40) agrees that in the beginning the work will be much more, but in the end there will be so many opportunities available that it will make it much easier.

- "I acknowledge the changes taking place in my own understanding. It is interesting to notice the changes towards constructivism in myself and the progress towards meta-cognitive skills."
- Once the learners have accepted the challenges of life-long learning and meta-cognition they have the experience beyond belief of "lots of long nights getting lost inside assignments…had to make myself switch off and go to bed!"
- Learners reflected on outcome-based learning as practical and authentic, leaving room for creativity, creating opportunities for communication, sponsoring a feeling of empowerment, requiring hard work but rewarding and agree that the self-study took more time, but that they know more than when just being spoon fed.
- Negative comments included that some learners were resentful and did not want to work together as in a team and other experienced that they could not apply what they had learnt because they were prescribed by authorities how to teach learners and were not allowed to facilitate learning.

8.7 Assessment of outcomes

Learners experienced the assessment as "fair and well-evaluated", "far more preferable to exams because it tested what we have got in our heads", "fair, it is just that the first experience is always not easy, but we know what is expected next time", "I enjoyed the final assessment but I was nervous" and "I was happy about the whole assessment".

Learners also preferred the relaxed atmosphere and the communication during the assessments made the learners feel at home and relaxed.

8.8 Learners with special needs

Training and assessment must be conducted with consideration of learners with special needs (Van der Horst & McDonald, 1997:174). In this particular research there were no learners with special needs, but if there had been, they would have been accommodated accordingly to their needs.

8.9 Cultural diversity

Training and assessment must be conducted with consideration of cultural differences (Meyer & Mokoele, 2001:4; Nielsen, 1997:303; Ramotsehoa & Mabaso, 2001:134). In the South African context this means that the learner should have the language, literacy and social experiences to be assessed against the competence.

The phenomenon that a vast majority of the learners did not grow up in a reading culture and are first or second generation literates as described by Nielsen (1997:305) is common practice in South African education. Language is a common problem as most education and training in higher education and training in South Africa includes second language medium for both the educator and the learner. This sometimes resulted in learners complaining that the language used in the lecture was "not conducive to learning".

Some of the students entering the post graduate phase of higher education are not only under-prepared, but also use inappropriate coping skills to survive in an unfamiliar environment, relying on 'rote learning' to memorise content – without understanding (Goode & Thomen, 2001:195). This was very well experienced in this study and learners commented that they "do not have the background knowledge", "assessment had no value for me", "do not think I cope, it is difficult, no time for explanation" and "too much work".

We must not assume or take it for granted that learners entering this qualification have the knowledge, skills and attitudes that are expected of them at level 6 of the NQF. Those are still additional skills that they have to acquire to change from the 'right or wrong' and the 'what the teacher wants' attitude to using critical and divergent thinking skills, analysing entities with problem-solving skills.

9 Summary

We live in a world of problems that can no longer be solved by the level of thinking that created them (Albert Einstein). We will have to start thinking differently. One of these challenges is the way in which we determine whether learning has really taken place. As failure of learners means an intolerable waste of physical and human resources, a once-off examination has to be replaced by a sound quality assessment system as described in this chapter.

Assessment should be the one aspect of the learning process that has to change significantly (Technikon Pretoria, 2002). The biggest disadvantage of assessment in outcome-based learning is the single factor that it needs a paradigm shift from grades to competence. Outcome-based learning is hard for many parents and educators to grasp readily and society, parents and learners all still want to know what the symbol or percentage of achievement of a learner is (Spady, 1994:97). On the other hand, assessment of competence actually equalises all achievements into a situation of a hundred percent competence. However, once this change has been made, there is an increase in the motivation of the learners and a better morale ensues both positive indications of acceptance of assessment of learning.

The experiences in this study confirm the report of Nielsen (1977:311) and Spady (1994;112, 122, 125) on the possible results of the implementation of outcome-based learning, namely that there may be lower dropout rates and a better learning culture is established.

With reference to the report of Beyleveld & Jama (2002:118) that conventional methods still dominate the assessment and that these methods of assessment give the learners the message that factual recall of knowledge is still the most important, there is a danger that new methods are introduced only for the sake of change. This study is the novice effort to contribute to the changing of assessment activities, habits of learners and the culture of learning in South Africa. It is common knowledge that learners are used to relaxed attending of classes and only resort to studying seriously a day or two before a test or examination. The example in this study indicates that assessment becomes part of the learning process as well as the road to success and should be the single most important influence on student learning (Beyleveld & Jama, 2002:118; Olivier, 2000:70).

The impact of all the aspects described in the previous chapters on the assessment of learning is inevitable. If the legislative and educational concepts are not clearly understood, the learning programme not well facilitated and the portfolio of evidence of learning not valid and reliable, the effect will be on the assessment [Chapter 3, Chapter 4, Chapter 5, Chapter 6, Chapter 7, Chapter 8].

Chapter 3 is a discussion of 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 has been introduced in Chapter 4. Chapter 6 describes the portfolio as the evidence of learning that has been introduced in the learning programme in Chapter 4 and compiled during the facilitation of learning in Chapter 5. Chapter 7 addresses the assessment of learning in outcome-based learning in South African education, training and development. Chapter 8 verifies the quality assurance of the process of assessment in outcome-based learning, training and development in South Africa.