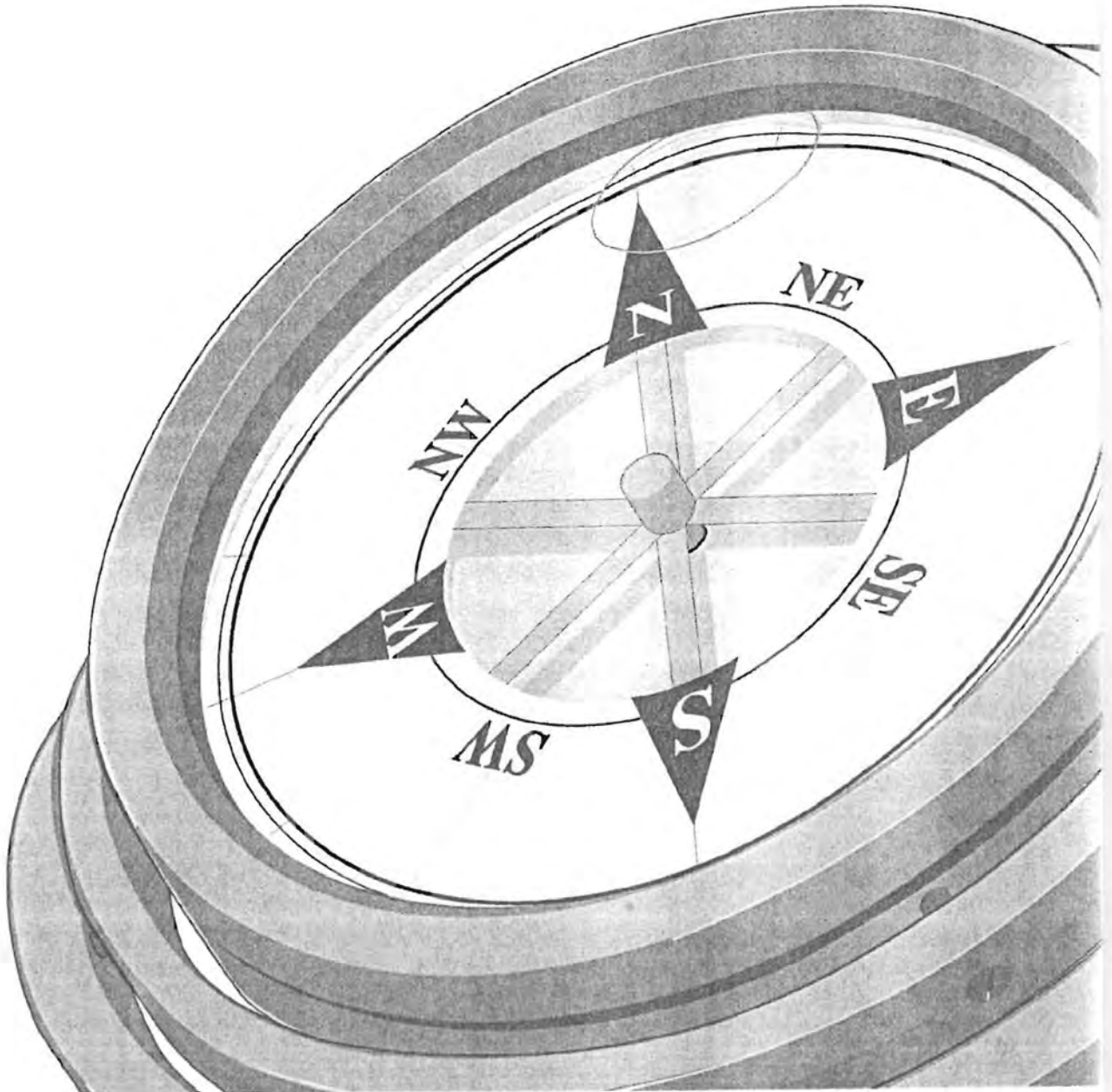# Orientation

1

1.1 Introduction

This chapter will provide an orientation to this research and is presented as follows:

- Background;
- Research problem;
- The purpose of the research;
- The research programme;
- Presentation of the research.

1.2 Background

"Academic, occupational and professional requirements will no longer be stated in terms of the input of content or the time taken. Instead, the emphasis will be on the acquisition of applied competencies which will be described using outcomes." (Department of Education, 1997c:51).

In the past, an educator was regarded as qualified on the basis of a recognised qualification that emphasised the time a learner spent on acquiring the qualification, but in the future, qualifications will be defined in terms of their outcomes and these will be assessed in an integrated manner that emphasise the *competencies* of the educator.

Since 1995, all education in South Africa should be based on an Outcomes-based Education model. According to the Department of Education (1997c:59) an educator qualification that is based on the outcomes-based education model, will consist of three dimensions, namely the professional, occupational and academic dimensions. Knowledge and understanding are seen as part of the academic dimension (*knowing that*) while the occupational dimension is concerned with the skills that should be required (*knowing how to*). The professional dimension concerns the values and attitudes or orientation that are integrated into the other two dimensions.

Emphasis is placed on the integration of the academic, occupational and professional dimensions of an outcome within three kinds of competencies (foundational, practical and reflexive) and with an ethical value orientation that constitutes professionalism and applied competence. In this context one needs to engage in an integrated assessment procedure that can capture the complexity and nuances of a learner's knowledge, skills and values, before one can make valid judgements (Department of Education, 1997c:69).

The South African Council for Educators (SACE) has been established to act as the guardian of the professionalism of educators and in order to practise as an educator in South Africa, registration is compulsory. The SACE has also set standards, criteria and a specific code of conduct that teachers have to adhere to as a pre-requisite for registration and licensing. Educators will have to renew their licenses regularly (possibly every three years). Specific professional requirements will have to be fulfilled in order to qualify for re-licensing e.g. "*successful completion of in-service programmes, performance appraisal for developmental purposes and demonstrated compliance with the Code of Conduct.*" (Department of Education, 1997c:43). However, logistical problems may arise as educators are expected to submit lengthy paper-based evidence that they qualify for re-licensing. It was suggested that the SACE be linked to the South African Qualifications Authority (SAQA) database to enable them to have access to each educator's qualifications. Another means of obtaining this important information, is by using electronic portfolios.

Electronic portfolios can also be used for assessment purposes in the learning environment, especially when an Outcomes-based Education (OBE) model is implemented. Many researchers, including Tillema (1998) indicated that electronic portfolios have many uses, one being that it can function as an alternative assessment tool. It can also be used to inform other people (e.g. the educator or peers) about the learner's skills and competencies and allow the learner to demonstrate these skills and competencies.

The development of technology and the Word Wide Web (WWW), created a platform that can be used for many different purposes, including education and training. Computer technology is also relatively accessible to many people and creates a vehicle for learners to market themselves as well as enabling them to compare their competencies nationally and internationally. Although electronic portfolio development requires a very high level of computer skills and include many time consuming activities, there are many advantages to using electronic portfolios.

1.3 The research problem

Computer-assisted Aids for Education (RMX 880) is one of the compulsory modules of the MEd (Computer-assisted Education (CAE)), MEd (Information Technology (IT)) and MA (Information Science (IS)) qualifications of the University of Pretoria. Most of the learners that register for these qualifications are educators. They will have to comply with the licensing standards as set by the SACE, and for this reason the presenter of this module for 1999 decided to implement electronic portfolio assessment in this module. In doing so, the

learners will be equipped with a tool for lifelong learning, while presenting their assignments to the module presenter in the form of an electronic portfolio. Based on the assumption that the computer skills of the group of learners who will register for this module will vary, it is also assumed that the presenter of this module will experience problems with the implementation of electronic portfolio assessment in this module. The presenter needed a model for implementing portfolio assessment as a strategy, due to a lack of knowledge and skills regarding:

- The processes and procedures to be followed when implementing electronic portfolio assessment in educator training, while taking into consideration the diverse group of learners registered for this module;
- The input of the presenter before the implementation phase;
- The presenter's role regarding the provision of applicable tools, to enhance electronic portfolio compilation;
- The assessment criteria and assessment instrument(s) an educator will need to develop to assess the electronic portfolios.

This research is an attempt to provide such a model.

1.4 The purpose of this research

The purpose of this research is to establish a model for the implementation of electronic portfolio assessment in education.

To be able to establish such a model, an attempt will be made to establish:

- The processes and procedures that need to be followed when implementing electronic portfolio assessment in educator trianing, taking into consideration the diverse group of learners;
- The input of the presenter before implementing electronic portfolio assessment;
- The presenter's role in providing instruments/tools for the learners, to ensure successful implementation of electronic portfolio assessment;
- The development of assessment criteria and an assessment instrument for electronic portfolio assessment.

1.5 The research programme

The research programme consists of the following phases:
- Analysis of the training environment context;
- Construction of tools for compiling electronic portfolios;
- Implementation of strategies pertaining to electronic portfolios assessment;
- Revision of the tools used for compiling electronic portfolios;
- Designing of a model for implementing electronic portfolio assessment.

1.5.1 Analysis of the training environment context

The training environment should be analysed regarding the purpose of the module, the skills levels of the learners and the relevant literature.

An analysis of the purpose of the module will be made, taking into consideration:
- The outcomes of the module;
- The content of the module.

The skills levels of the learners will be analysed regarding their level of:
- Computer skills;
- Critical thinking skills;
- Creative ability;
- Communication skills.

A comprehensive literature study will be done. International literature regarding the following topics will be investigated in detail:
- Education in South Africa, with special reference to Outcomes-based Education, the role of the National Qualifications Framework (NQF) and the South African Qualifications Authority (SAQA);
- Teacher education, including teacher qualifications and the role of the South African Council for Educators (SACE);
- Electronic portfolios, the types and uses of electronic portfolios, as well as its components;
- Electronic portfolio assessment and the criteria involved in the construction of an assessment instrument.

1.5.2 Construction of tools for compiling electronic portfolios

The learners will be provided with tools to enable them to construct electronic portfolios. These tools will have to make provision for learners with different levels of computer skills and should be designed and developed accordingly.

The design will be done, based on the results of the analysis and will include setting design specifications for:

- Microsoft Word 97 portfolio templates;
- On-line guides to accompany the templates;
- An assignment to provide the learners with the task to compile an electronic portfolio;
- The presentation of appropriate journal articles.

The development based on the design specifications will be done, and the following will be developed:

- Microsoft Word 97 portfolio templates;
- On-line guides to accompany the templates;
- The formulation of an assignment;
- Presentation of applicable journal articles.

1.5.3 The pre-implementation and implementation phases of electronic portfolio assessment

The implementation of electronic portfolio assessment will be preceded by a pre-implementation phase that includes the following:

- The development of a schedule for the module;
- The establishment of an electronic list server and bulletin board;
- The development of a CD ROM with all the information regarding this module;
- The development of a questionnaire regarding the computer skills of the learners;
- The establishment of preliminary arrangements regarding the processes and procedures the learners need to follow;
- The development of an electronic slideshow to provide learners with the theoretical background regarding electronic portfolios;
- The development of a demonstration of the processes and procedures followed while compiling the electronic portfolios;

- The development of a questionnaire regarding these processes and procedures;
- The development of assessment criteria and an assessment instrument for electronic portfolio assessment.

The implementation phase will consist of the following:
- Presenting an orientation to the learners regarding the module they are registered for;
- Providing an introduction to the educators, and presenting the CD ROM containing the information regarding the module and assignments;
- Administering the questionnaire regarding computer skills;
- Processing the results of the questionnaire regarding computer skills;
- Presenting the electronic slideshow and the demonstration to the learners;
- Administering the questionnaire regarding processes and procedures followed while compiling the electronic portfolios;
- Assessing the electronic portfolios;
- Processing the results of the questionnaire regarding the processes and procedures followed while compiling the electronic portfolios;
- Evaluating the processes and procedures followed by the learners.

1.5.4 Revision of the tools used for compiling electronic portfolios

The feedback from the learners regarding the provided templates, will determine whether revised templates should be developed. The revision of the templates will be done based on the feedback from the learners, to meet their specified needs.
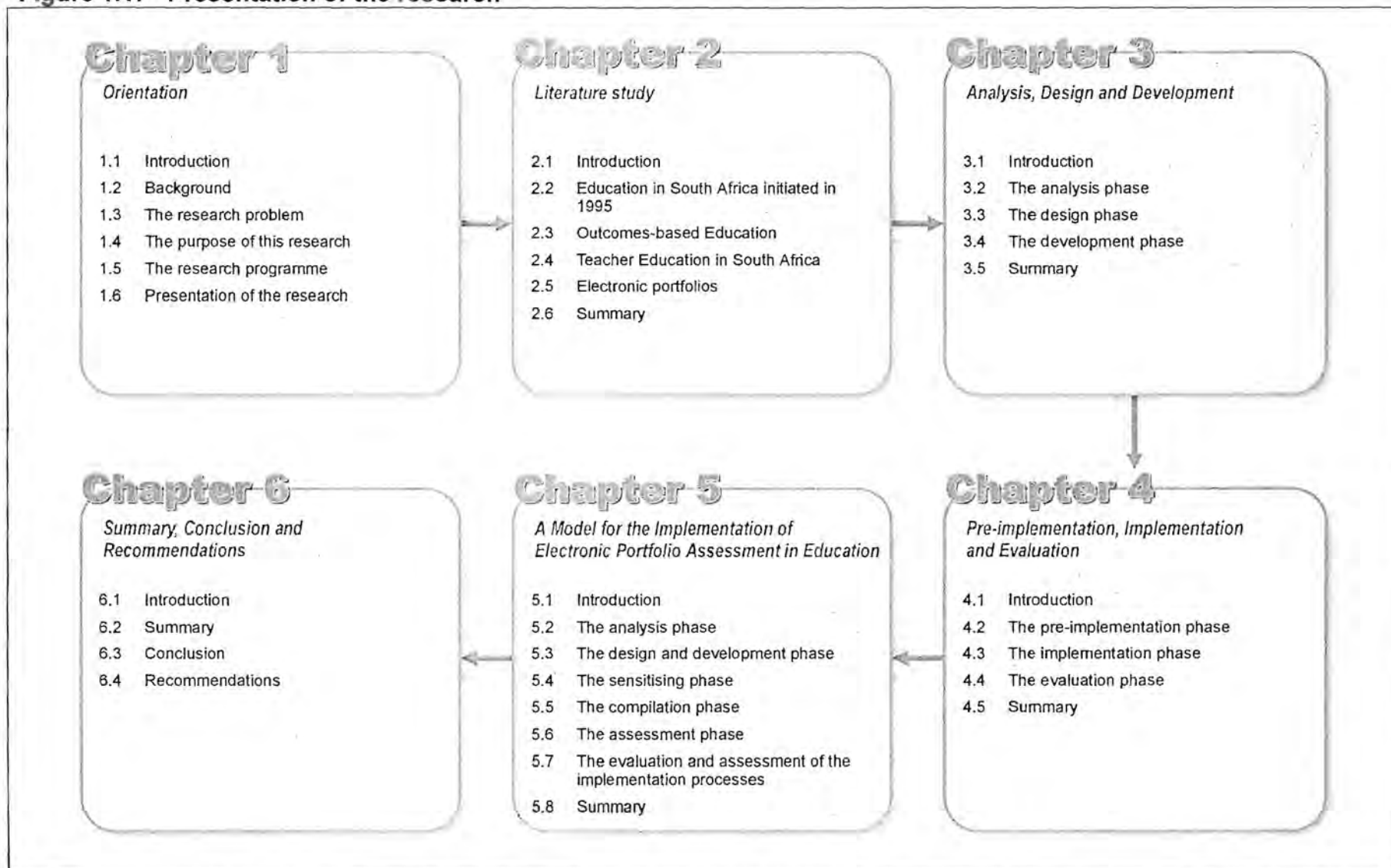
1.5.5 Designing a model for implementing electronic portfolio assessment

A model for the implementation of electronic portfolio assessment in education will be designed and developed.

1.6 Presentation of the research

The research will be presented in 6 chapters, as presented graphically in Figure 1.1.
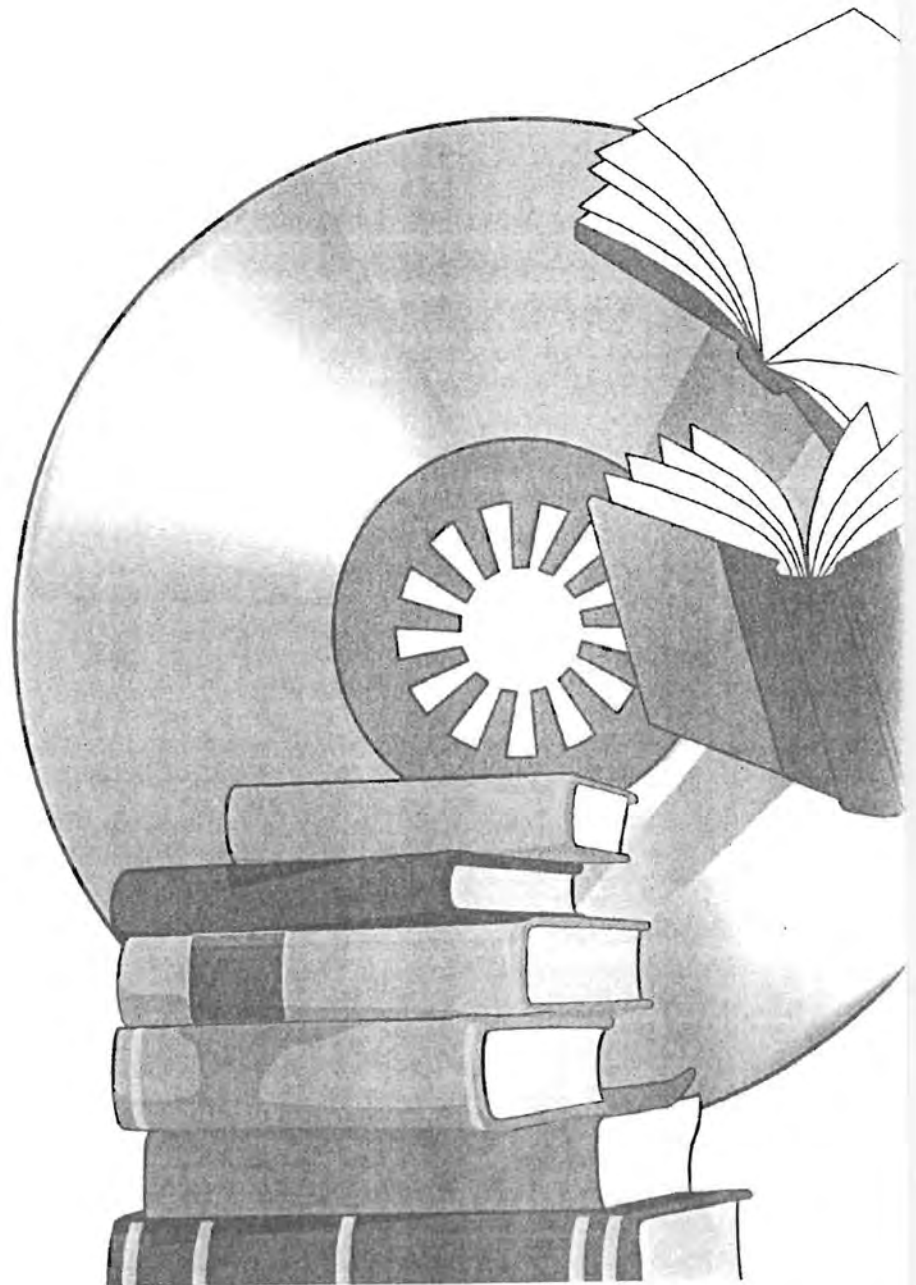
Figure 1.1: Presentation of the research

Chapter 1
Orientation

1.1 Introduction
1.2 Background
1.3 The research problem
1.4 The purpose of this research
1.5 The research programme
1.6 Presentation of the research

Chapter 2
Literature study

2.1 Introduction
2.2 Education in South Africa initiated in 1995
2.3 Outcomes-based Education
2.4 Teacher Education in South Africa
2.5 Electronic portfolios
2.6 Summary

Chapter 3
Analysis, Design and Development

3.1 Introduction
3.2 The analysis phase
3.3 The design phase
3.4 The development phase
3.5 Summary

Chapter 6
Summary, Conclusion and Recommendations

6.1 Introduction
6.2 Summary
6.3 Conclusion
6.4 Recommendations

Chapter 5
A Model for the Implementation of Electronic Portfolio Assessment in Education

5.1 Introduction
5.2 The analysis phase
5.3 The design and development phase
5.4 The sensitising phase
5.5 The compilation phase
5.6 The assessment phase
5.7 The evaluation and assessment of the implementation processes
5.8 Summary

Chapter 4
Pre-implementation, Implementation and Evaluation

4.1 Introduction
4.2 The pre-implementation phase
4.3 The implementation phase
4.4 The evaluation phase
4.5 Summary

Literature Study

2

2.1 Introduction

The literature study, as presented in this chapter provides an overview of the new educational system in South Africa, initiated in 1995 (Departement van Onderwys, 1995). The structures, frameworks, acts and policy documents regarding the educational environment, specifically Higher Education and Training (HET), are investigated. The use of electronic portfolios in education is closely related to assessment, and therefore the main focus of this literature study will be on the views and research results of many researchers working in the field of electronic portfolios, portfolio development and assessment. Figure 2.1 is a graphical presentation of the contents of Chapter 2.

Figure 2.1: The information presented in Chapter 2
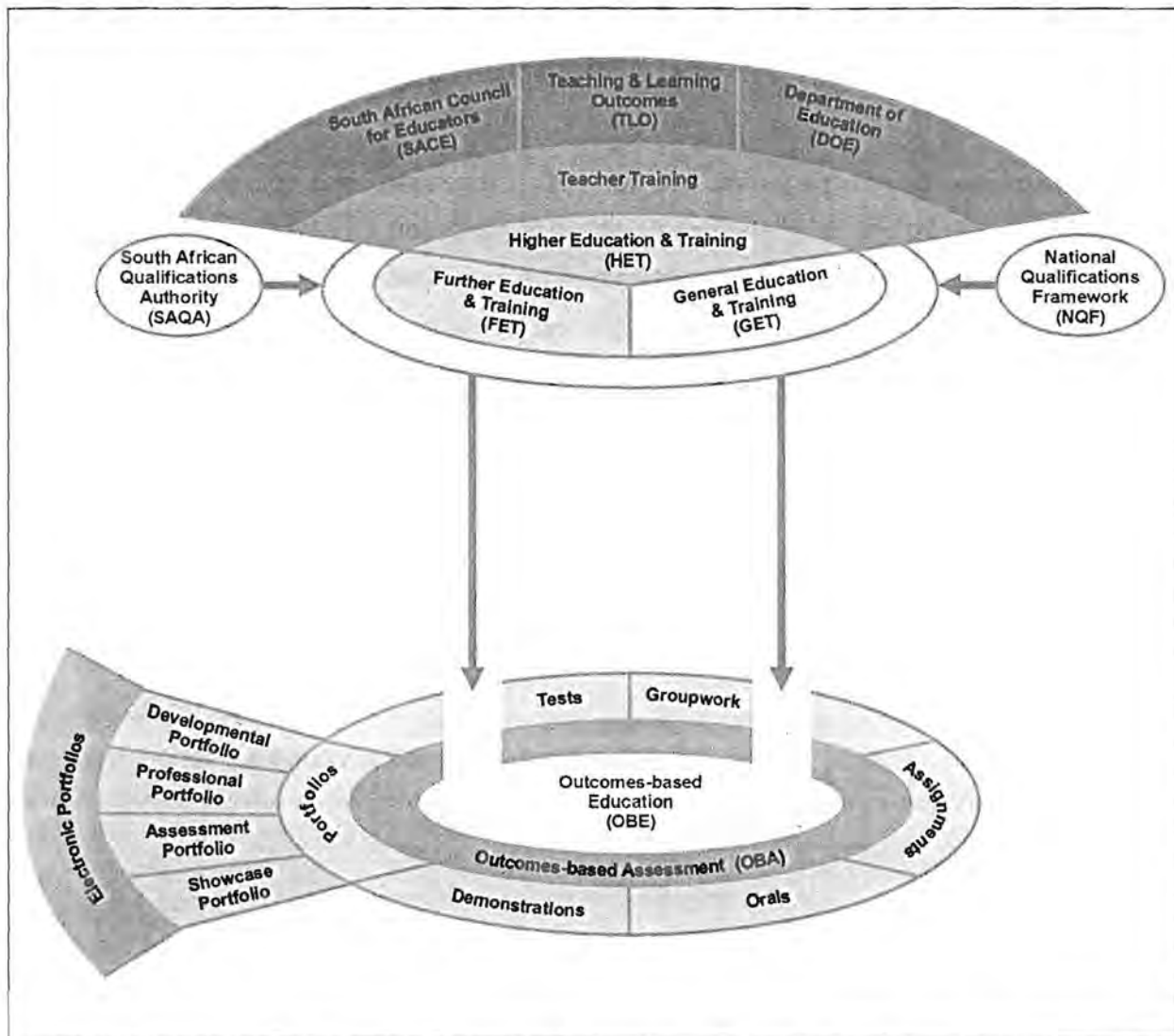
2.2 Education in South Africa initiated in 1995

South Africa's education system is in a process of widespread change since 1995 and a complete paradigm shift is being made, suggesting changes to the entire educational process (Department of Education, 1997a). The aim of these changes is to produce more qualified learners, who are equipped to deal with the demands of "... *an increasingly competitive world*" (Department of Education, 1997a:6). Transforming a complete educational system does not happen overnight, and therefore new structures are established to determine and implement this transformation process.

The National Qualifications Framework (NQF) and the South African Qualifications Authority (SAQA) are two of the important driving forces in the transformation process.

2.2.1 The National Qualifications Framework

The National Qualifications Framework (NQF) was established with the purpose to provide a framework for urgent reforms necessary in South African education and training (HSRC, 1995:5). The framework can be presented as a matrix that indicates the levels and bands of the new education and training dispensation. Figure 2.2 is a graphical representation of the NQF levels and bands as adapted from the Government Gazette (Department of Education, 1997b:12).

The objectives of the National Qualifications Framework (NQF), according to the Department of Education (1997c:35), are:
- To create an integrated national framework for learning achievements;
- To facilitate access to education and mobility and progressions within education, training and career paths;
- To enhance the quality of education and training;
- To accelerate the redress of past unfair discrimination in education, training and employment opportunities, to contribute to the full personal development of each learner for the social and economic development of the nation at large.

The first and foremost purpose with the NQF is to provide a framework for transformation in education and training in South Africa. Setting national standards for education and training is also one of the reasons for the establishment of the NQF. The national standards "... *were housed within a qualifications framework designed to promote lifelong learning, integrate*

Figure 2.2: **The levels, bands and fields of the NQF (Adapted from the Department of Education, 1997b:12)**

NQF LEVEL	BAND	DESCRIPTION	TYPE OF QUALIFICATION		
8 7 6 5	Higher Education and Training Band (HET)	• Consists of 4 levels • Divided into 12 fields • Field 08: "Education, Training and Development"	Doctorates ↑ ¦ ¦ ¦ ¦ Diplomas		
4 3 2	Further Education and Training (FET)	• Consists of 3 levels • Divided into 12 fields	Certificates		
1	General Education and Training (GET)	• Consists of 4 phases • ABET levels 1-4 • Traditional School education • Grades 0-9	Senior Phase	ABET Level 4	
			Inter-mediate Phase	ABET Level 3	
			Foun-dation Phase	ABET Level 2	
			Pre-school	ABET Level 1	

education and training, recognise learning gained outside of formal institutions and allow for flexible, portable credits and qualifications ..." (SAQA, 1997:3).

2.2.2   The South African Qualifications Authority

The South African Qualifications Authority (SAQA) was established when the SAQA act (4 October 1995:Gazette No 16725) was passed (SAQA, 1997:4). *"The mission of SAQA is to ensure the development and implementation of a National Qualifications Framework."* (Department of Education, 1997c:35).

"The functions of SAQA are to:
- *oversee the development of the National Qualifications Framework (NQF);*
- *formulate and publish policies and criteria for registration of bodies responsible for establishing education and training standards and the accreditation of bodies responsible for monitoring and auditing achievements in terms of standards and qualifications;*
- *oversee the implementation of the NQF;*
- *advise the Minister of Education and Labour on registration of standards and qualifications;*
- *be responsible for the finances of SAQA".* (Department of Education,1997c:35).

It consists of a chairperson and nominated members from the following sectors: labour, business, universities, technikons, teachers' and technical colleges, adult basic education and training, early childhood development, the teaching profession, and special education needs (SAQA, 1997:4). SAQA has authority over the NQF.

The National Standards Bodies (NSBs) form an integral part of SAQA. Applicable organisations are invited to nominate persons to serve as members of a specific National Standards Body (NSB). Each NSB is composed of a maximum of 6 representatives each from the 6 categories of organisations, namely, government departments, organised business, organised labour, providers of education and training, critical interest groups and community/learner organisations (Suid-Afrikaanse Kwalifikasie-Owerheid, 1998).

The functions of the NSBs will, among others, be to:
- Define the boundaries of their specific domain;
- Define a framework for the establishment of Standard Generating Bodies (SGBs); and
- Ensure that the work of the SGBs meet the requirements of SAQA regarding registration of standards and qualifications (Suid-Afrikaanse Kwalifikasie-Owerheid, 1998:44).

Each NSB may establish SGBs for the specified domain. A Standard Generating Body is composed of not more than twenty five nominated members. The functions of the SGBs will, among other, be to:

- Generate standards and qualifications in specifically identified sub-domains and levels, corresponding with the requirements of SAQA;
- Revise and update standards;
- Recommend standards and qualifications to the NSBs (Suid-Afrikaanse Kwalifikasie-Owerheid, 1998:48).

The establishment of SAQA, the NSBs and SGBs, provides structures to oversee the implementation of the changes in the education system. One of the most drastic changes and the feature that distinguishes the new education system form the old, is the implementation of Outcomes-based Education (OBE).

2.3 Outcomes-based Education

OBE is to be implemented in all areas of education, from early childhood development to higher education to adult basic education. According to Bonville (1996) OBE is designed to produce learners who will be able to function well in the changing world that we live in, while Manno (1994) indicates that OBE will bring about social changes in society.

But what exactly is Outcomes-based Education?

2.3.1   Definitions of Outcomes-based Education

According to Spady (1994:1) "*Outcome-Based Education means clearly focussing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences.*".

According to Education Week on the Web (1999) Outcomes-based Education is an educational theory "... *that guides curriculum by setting goals for students to accomplish.*" (http://www.edweek.org/context/glossary/obe.htm) – the main focus being the goals or outcomes. McNeir (1993) confirms this by describing OBE as a model that "... *defines learning not by what students have been taught, but by what they can demonstrate they have learned.*" (http://interact.uoregon.edu/ossc/INTROS/INT0493.HTM).

Brennan (1999) describes outcomes from a parents perspective and indicates that "... *outcomes in education is a bit like milestones that we use to describe the development of a child*." (http://www.acsa.edu.au/networks/netpages/obe_june.htm). Outcomes should become more complex as the child grows older and more matured. The same principle is applicable regarding academic outcomes – the more a learner "matures", the more complex the academic outcomes will become.

According to Boschee & Baron (1993) OBE is learner-centered education, designed to emphasise results and it is based on the belief that all individuals can learn. OBE can only be implemented under the following conditions:

- What the learner must learn (the outcome(s)) is clearly described and set out;
- The progress of each learner is assessed according to his/her demonstrated skills or competencies;
- Individualisation in terms of learner's needs and/or potential is accommodated.

2.3.2 What are outcomes?

According to Spady (1994:2) outcomes are "... *clear learning results that we want students to demonstrate at the end of significant learning experiences*.". The emphasis in OBE is on what learners can *do* and not only what they *know*. The Department of Education (1997a:24) describes and outcome as follows: "*The 'outcome' is the result of the learning programme; what the learner knows, can do, values and wishes to be like*.".

It is obvious that the knowledge and skills obtained during the learning process will determine how and what the learner will be able to demonstrate at the end of the learning cycle. This does not emphasise the importance of knowledge only but the way the knowledge is applied as it is the most important aspect that will be assessed during the learning process.

When educators set outcomes for their learners, it is important that adequate and clear descriptions of the outcomes will be presented. It is no longer acceptable to indicate outcomes as "being able to understand or know something", but words like *describe*, *explain*, *design* or *produce* should rather be used (Spady, 1994:2). According to Brennan (1999) clear and visible outcomes will remove many misunderstandings and put learners and educators in a partnership to achieve better results regarding learning outcomes.

According to the Department of Education (1997c:75) the outcomes for educator training should consist of three dimensions, namely the occupational, academic and professional

dimensions, integrating knowledge, skills and values. Educator training is part of the Higher Education and Training Band (HET) and this implies that all HET qualifications will need to adhere to these set dimensions.

Kirstein ([s.a].:http://www.angelfire.com/me/louiskirstein/obe.html) defines outcomes according to Boschee & Baron (1993) as "... *future oriented, publicly defined, learner-centered, focussed on life skills and context, characterised by high expectations of and for all learners and sources from which all other educational decisions flow.*".

2.3.3 Assessment in Outcomes-based Education

OBE implies that the learners are responsible for their own learning and progress (Department of Education, 1997a:6). Assessment is a continuous process and learners are allowed to learn at their own pace. A learner should demonstrate his/her progress through integrated tasks and the application of skills to real world problems.

According to the Gauteng Department of Education (1999:5) assessment in OBE can be described as "... *a process of gathering valid and reliable information about the performance of the learner, on an on-going basis, against clearly defined criteria, using a variety of methods, tools, techniques and contexts, recording the findings, reflecting and reporting by giving positive, supportive and motivational feedback to learners, other educators and parents.*".

The Gauteng Department of Education (1999) indicates the characteristics of assessment in OBE with emphasis on the learner, reaching his/her full potential. They refer to Outcomes-based Assessment (OBA) and indicate that more emphasis is placed on the ability of the learner to apply relevant knowledge in real-life situations. OBA should also be participative, democratic, transparent, criterion-referenced and is a definite shift away from memorisation as learning. OBA should be integrated throughout the teaching and learning process in an "... *assessment cycle ...*" (Gauteng Department of Education, 1999:7).

2.3.4 The purpose of Outcomes-based Assessment

The purpose of Outcomes-based Assessment should be to improve the performance of the learner towards the achievement of the specified outcomes. Four main functions of Outcomes-based Assessment can be identified and is presented in Table 2.1.

Table 2.1: The functions of Outcomes-based Assessment (Gauteng Department of Education, 1999:7-9)

Purpose	Description
Formative function	- It monitors and supports the learning process. - It is continuously built into learning activities. - It provides constructive feedback. - It guides the educator to select appropriate follow-up activities.
Base-line function	- It takes place at the beginning of a new set of activities. - The purpose is to determine what the learner knows and can demonstrate.
Diagnostic function	- It is used to establish the nature and cause of learning difficulties. - Based on the nature and cause of the problem it is used to select appropriate remedial actions.
Summative function	- It should present an overview of the performance of the learner. - It takes the form of a series of assessment activities over a period of time. - It may include results from written tests and examinations.

It is important to note that continuous assessment is important in OBE and for that reason the Gauteng Department of Education (1999:9) refers to "*The Cycle of Continuous Assessment*".

Spady (1994:2) indicates that the goal of the learning process is to enable learners to demonstrate that they have mastered the pre-set outcomes, at the end of the learning experience. He also indicates that this does not necessarily mean that the time frame in which to achieve the set outcomes will be the same for all learners in a specific group, but all learners should be motivated to reach the set outcomes.

According to Closson (1993) OBE will change the focus in education from the content to the learner, an important aspect being that all learners can succeed, but not necessarily in the same time frame or in the same way. A learner will have to be able to demonstrate his/her mastering of a specific goal – one way may be by using portfolio assessment (Closson,

1993; Gauteng Department of Education, 1999). Closson (1993) refers to an educational institution in Vermont that uses a combination of traditional tests and portfolio assessment to determine a learner's level of competency.

2.3.5   Portfolios in Outcomes-based Assessment

The Gauteng Department of Education (1999) indicates that different types of progress reports and records of learner achievement should be used. Teacher records and learner profiles are two record keeping facilities mentioned and it is suggested that portfolios can be included as part of the learner profile. Portfolios can be used to be "...*visible proof of the development and improvement of learner achievement.*" (Gauteng Department of Education, 1999:24). The portfolio should comprise of samples of work which demonstrate the integration of "... *knowledge, concepts, attitudes, values and skills.*" (Gauteng Department of Education, 1999:24). The educator is responsible for the assessment of the portfolio, but it is important that the learners will compile their portfolios in cooperation with the educator. Comments from other people e.g. peers, parents and other educators may also be included (Gauteng Department of Education, 1999).

2.3.5.1   Different types of portfolios

Kizlik & Associates (1997-1999) indicate that the content and structure of a portfolio will be greatly influenced by its purpose. Different types of portfolios can be identified, but in most cases it would not be possible to label a portfolio as *only* being a developmental or showcase portfolio. In most cases it would be a combination of different types of portfolios, depending on the purpose and function of that specific portfolio.

The School Page (1996) indicates that portfolios can among other things be used for the following: "... *supervisor assessment, license assessment, employment interviews, promotion assessment, grant application information and pre-service teacher education programs*".

According to Tillema (1998:263) and Tomkinson (1997) learners can use portfolios mainly for two purposes namely to present their development or for assessment purposes, although other types of portfolios are also available. The different types of portfolios being used in educational institutions world wide, are presented in Table 2.2.

Table 2.2:   The different types of portfolios

Type	Description	Reference(s)
Developmental portfolio	**Description** A developmental portfolio presents the reader with a "history" of how the learner developed and mastered new skills and competencies. **Components** A developmental portfolio will contain the following: • a reflective collection of selected samples of work; • work samples in different phases of completion, emphasising the development and improvement of specific skills or competencies; • self-reflection and self-evaluation regarding the different stages of completion of the work samples, to present the learner's own development and meta-cognitive processes; • comments of the educator or evaluator; • records of all accomplishments (academic as well as with regards to sports or hobbies).	Guhlin [s.a.]; Hurst, Wilson & Cramer (1998); Lankers (1998); Mt Edgecumbe High School (1999a); Kalamazoo College (1997a); Ferrier (1998); Collinson (1995).
Professional portfolio	**Description** A professional portfolio will usually be presented to an employer and it demonstrates professional development over a period of time. It can be utilised as a tool for continuing, professional development and evaluation.	Hurst, Wilson & Cramer (1998); Winsor & Ellefson (1995); DeLiberations [s.a]; Baume [s.a.]; Settedacati (1995); Winsor (1998); Van Niekerk (1998).

Table 2.2: The different types of portfolios (continued)

Type	Description	Reference(s)
Professional portfolio (continued)	**Components** A professional portfolio will contain the following: • real life examples of work done demonstrating what one is able to do; • a holistic view of the skills and competencies of the presenter e.g. an educator can use it to provide a collection of evidence of teaching skills and competencies	
Assessment portfolio	**Description** An assessment portfolio is a useful tool for educators to assess according to the principles of OBE. It contains examples to demonstrate the learner's skills and competencies in specific areas. **Components** An assessment portfolio will contain the following: • work samples demonstrating skills and competencies in specific learning areas; • statements regarding self-assessment and self-evaluation by the learner about his/her own skills and competencies; • statements regarding informal peer assessment; • formal assessment as done by the educator using a pre-set assessment instrument. Portfolio assessment is presented in more detail in Paragraph 2.5.6.	Kizlik & Associates (1997-1999); Guhlin [s.a.]; Lankers (1998).

Table 2.2:   The different types of portfolios (continued)

Type	Description	Reference(s)
Showcase portfolio	**Description** A showcase portfolio presents a collection of only the best work samples of the learner. **Components** A showcase portfolio will contain the following: • only the best samples and highest achievements of a learner's work; • a summary of the skills and competencies of the learner.	Lankers (1998); Winsor (1998).

2.3.5.2   Why use portfolios in education?

There are many advantages to using portfolios in education for both learners and educators namely:

- It promotes collaborative learning and assessment between the educator and the learner;
- It helps the educator as well as the learner to keep track of the progress of the learner;
- It encourages the learner to make experience a part of learning;
- It provides learners with the opportunity to reflect on their own learning;
- It encourages learners to take responsibility for their own learning;
- It can be used as a career tool for lifelong learning.

These advantages are described in Table 2.3.

Table 2.3:   Advantages of using portfolios in education

Advantage	Description	Reference(s)
Collaborative learning and assessment	<u>Principle</u> • Learners tend to learn collaboratively with their lecturers and are also active participants in the evaluation process. • There is a tendency to utilise personal access to the lecturers more often, than would be the case if portfolio development was not an integral part of the learning process. • Collaboration in peer groups is also promoted and learners are more willing to compare their portfolios with those of fellow-learners. <u>Advantages</u> Collaborative learning and assessment provide the learner with the opportunity to: • share with the educator, their parents and peers a real display of his/her work without concentrating only on test scores; • discuss assignments with the educator, with the purpose to improve the assignment, even after grading; • be an active participant in the assessment process.	Dietz (1995); Benoit & Yang (1996); Barton & Collins (1997); Hoepfl (1993); Van Niekerk (1998); Winsor (1998); Mt Edgecumbe High School (1999a); Gillespie *et al.* (1996); Courts & McInerney (1993); Colorado School of Mines (1999); Robbins *et al* (1995); Barrett (1998b); Barrett (1998d).

Table 2.3: Advantages of using portfolios in education (continued)

Advantage	Description	Reference(s)
Keep track of progress	**Principle** A portfolio, if kept up-to-date, can keep track of a learner's progress over a long period of time. **Advantages** Keeping track of progress provides the learner with the opportunity to: • keep track of his/her personal growth, academically as well as with regard to non-academic activities; • present others (educators, peers employers) with a complete record of personal and professional growth over a period of time.	Van Niekerk (1998); Kalamazoo College (1997a); Collinson (1995); MacIsaac & Jackson (1994); Dietz (1995); Wiedmer (1998); Winsor (1998); Tillema (1998).
Experience as part of learning	**Principle** Compiling a portfolio encourages the learner to make experience an integral part of his/her learning. **Advantages** Making experience a part of learning provides the learner with the opportunity to: • reflect on prior learning; • identify strengths and weaknesses with regard to specific skills and competencies; • include other evidence of learning, which would not otherwise be assessed by the educator.	Van Niekerk (1998); Dietz (1995); Kalamazoo College (1997a); Kalamazoo College (1997b).

Table 2.3: Advantages of using portfolios in education (continued)

Advantage	Description	Reference(s)
Self-reflection on learning	**Principle** Learners are expected to reflect on their own work, skills and competencies with regard to progress, development, strengths and weaknesses. **Advantages** Providing learners with the opportunity to reflect on their own learning, they: • are allowed to view their work from another perspective, which increases the level of self-understanding; • value their own learning more; • are able to "rate" the development (or lack of development) of their own skills and competencies; • are encouraged to see revision as an ongoing process; • tend to be much more critical about their own work; • are encouraged to "learn about learning"; • will be able to demonstrate the ability to work meaningfully with the concepts and content of the learning material.	Johnson (1994); Raines (1996); Seely (1994); Winsor (1998); Kalamazoo College (1997a); Kalamazoo College (1997b); Barnett & Lee (1994); Gillespie *et al.* (1996); Van Niekerk (1998); Wiedmer (1998); Tillema (1998); Colorado School of Mines (1999).

Table 2.3: Advantages of using portfolios in education (continued)

Advantage	Description	Reference(s)
Responsibility for learning	**Principle** The process of portfolio development is able to guide the learner towards taking responsibility for his/her own learning – which implicates independent learners. **Advantages** Allowing learners to take responsibility for their own learning provides learners with the opportunity to: • take risks, because there is not only a single measure of achievements; • identify their own shortcomings regarding their résumé; • perform even better, because the increased responsibility can serve as a motivator; • compare their portfolios with that of fellow learners and this serves as a motivator to improve results.	Guillaume & Yopp (1995); Van Niekerk (1998); Kalamazoo (1997b); Iowa State University [s.a.]; Wiedmer (1998); Tillema (1998).
Career tool for lifelong learning	**Principle** One should use the portfolio to keep a record of all learning experiences, through one's whole career.	Mt Edgecumbe High School (1999a); Kalamazoo College (1997a).

Advantage	Description	Reference(s)
Career tool for lifelong learning (continued)	**Advantages** • It is a tool one can use to present information and keep record of all accomplishments – professional as well as non-professional. • Any prospective employer is presented with an overview of a "complete" person.	

2.3.5.3 Portfolio Assessment

Van Niekerk (1998) indicates that educators should view portfolio assessment as a tool that allows them not only to assess specific assignments, but to assess a learner's performance in a holistic context. She sets some guidelines for the assessment of portfolios, based on the demonstration of specific abilities by the learner. These guidelines cover a very wide range of applicable competencies, and are presented in Table 2.4.

Table 2.4: Guidelines for the assessment of portfolios (Adapted from Van Niekerk, 1998:95-99)

Ability	Description

The ability to communicate content effectively	• Structure work logically:
	  – select an appropriate framework for the assignment;
	  – a logical flow of ideas;
	• Use academically acceptable language:
	  – grammar;
	  – avoid slang or informal language;
	  – provide additional supporting details, examples or information if something may be confusing or not clear;
	  – avoid subjective statements.

Table 2.4: Guidelines for the assessment of portfolios (Adapted from Van Niekerk, 1998:95-99) (continued)

Ability	Description

Mechanical ability	▪ Format the content by the correct and consistent use of:
	  – table of contents;
	  – titles/headings;
	  – numbering/bullets;
	  – emphasising text e.g. underlining, italics, bold, colour;
	  – upper and lower case;
	  – navigation.

Creative ability	▪ Come up with new ideas and insights.
The ability to make experience an integral part of learning	▪ Focus on the process of learning as well as the products of learning by including reflective items which indicate awareness of: – the value of the learning process and knowledge gained.
The ability to reflect on prior learning	▪ Make the link between prior knowledge and the newly acquired knowledge: – Including items which indicate a building on existing or prior knowledge.
The ability to reflect on strengths and weaknesses as a learner	▪ Recognise strengths and weaknesses and reflect on these: – Including reflective items to identify strengths and weaknesses regarding learning.
The ability to keep track of learning	▪ Keep track of learning: – Include items of reflection and revision on a continuous basis.
The ability to assume responsibility for learning	▪ Demonstrate a willingness to assume responsibility for learning: – include items which indicate a willingness to do more than expected.

Table 2.4: Guidelines for the assessment of portfolios (Adapted from Van Niekerk, 1998:95-99) (continued)

Ability	Description
The willingness to take risks while developing creative solutions	▪ Take risks in the search for solutions: – include items which indicate a boldness to explore, take chances and to come up with unique solutions to problems.
The ability to work meaningfully with concepts and content	▪ Interpret, analyse apply, compare, distinguish between and critically evaluate concepts and content: – Include items such as summaries and reflection on the meaning of concepts and critical evaluation.
The ability to asses and value own learning	▪ Assess own learning in terms of quality of learning: – complete and include self assessment activities.
The ability to make practical applications of theory	▪ Use the theory in practice: – include items which indicate an ability to apply what was learned in own life world.

Portfolios can be powerful tools for an educator to use in the classroom, but it can also be a powerful tool for learners as well as educators to use in their own lifelong learning process.

2.4 Teacher Education in South Africa

Teacher Education in South Africa is part of the HET band. All education in South Africa is working towards a system that is completely based on Outcomes-based Education (OBE), with emphasis on the application of skills and competencies. The transition from the "old" system to this new paradigm is a time consuming but necessary process. The situation with teacher or educator education is no different, it should be outcomes-based – teachers can no longer be rated only according to the qualifications they obtained and the duration of their studies, but rather on their skills and competencies. They will no longer only be assessed once they graduate, but will be expected to demonstrate their skills and competencies every three years, this will be the case when they apply for registration or re-registration at the South African Council for Educators (SACE) (Department of Education, 1997c).

The Technical Committee on Norms and Standards for Teacher Education proposed that, in order to become a qualified professional educator, a learner in the field of education must fulfil requirements in three categories:

- Academic requirements;
- Professional requirements;
- Occupational requirements (Department of Education, 1997c:27).

Educators should also be lifelong learners and should continuously be improving themselves according to the academic, professional and occupational requirements. Figure 2.3 indicates the three dimensions of an education and training development qualification as presented by the Department of Education (1997c:28).

Figure 2.3: Three dimensions of an education and training development qualification (Department of Education,1997c:28)
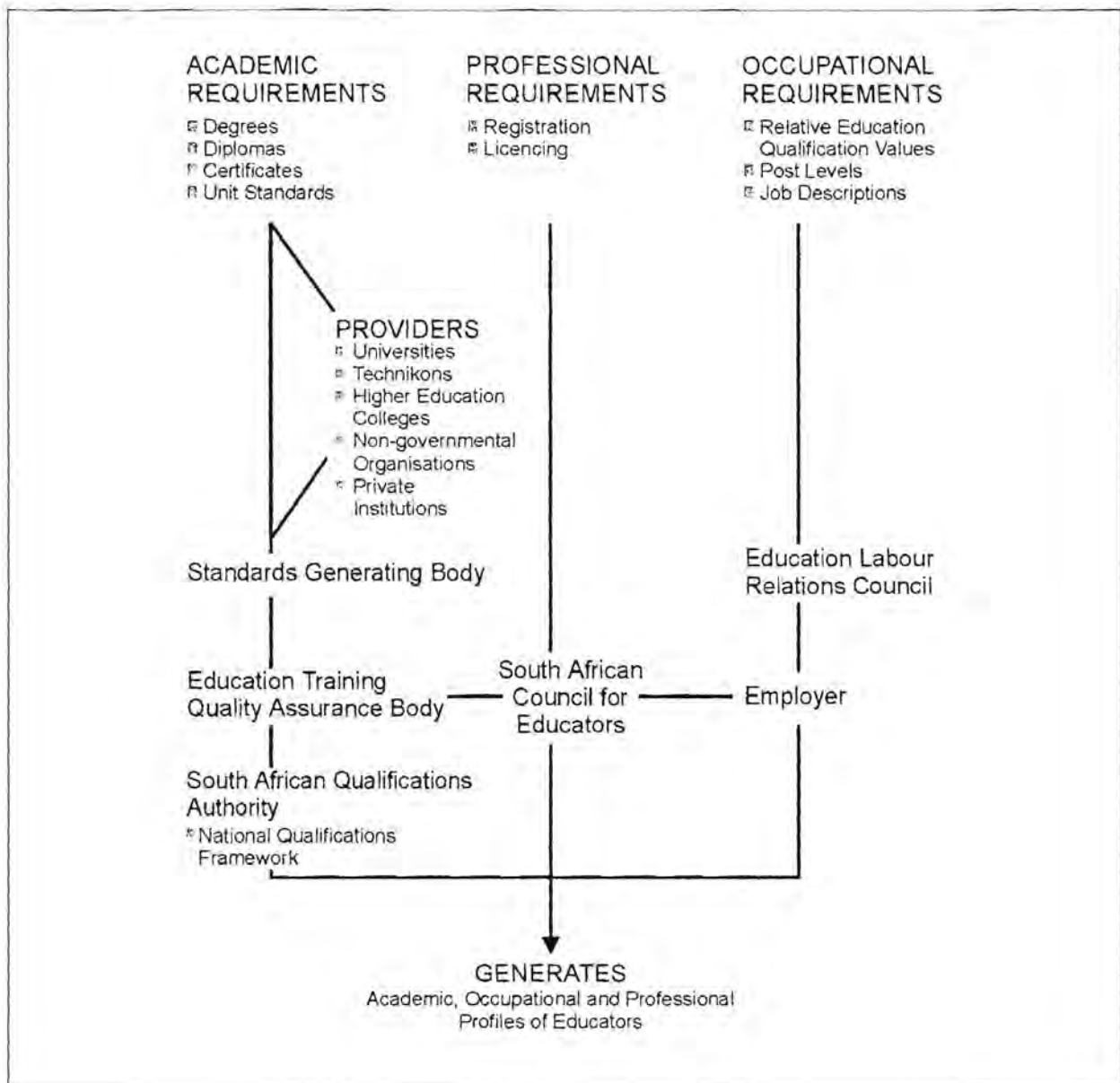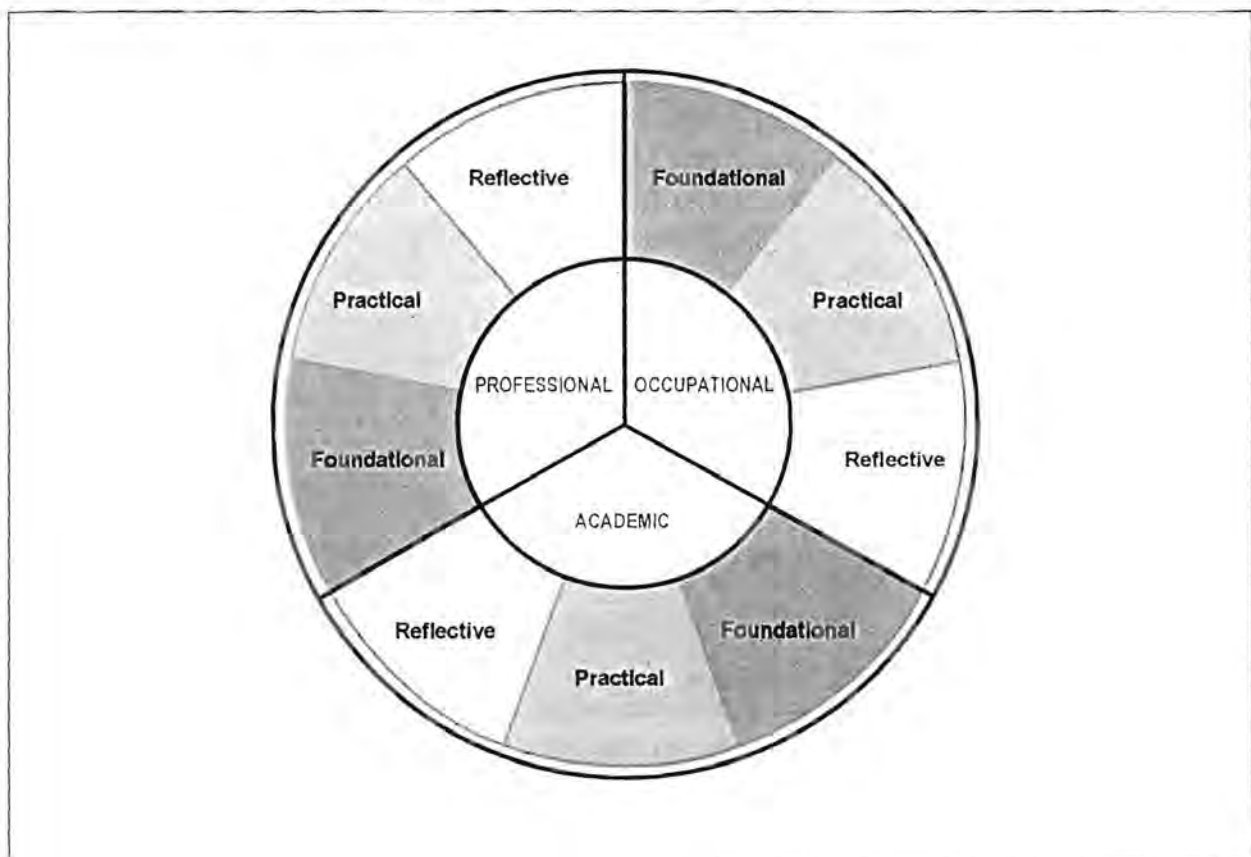
2.4.1   Teacher qualifications

According to NQF and SAQA regulations, a qualification is "... *a recognition of 'applied competence' in a particular academic and/or occupational field.*" (Department of Education, 1997c:57). This "*applied competence*" will be assessed by a variety of assessment techniques – based on Outcomes-based Education. Three types of applied competence are required, namely reflective, practical and foundational competencies. The purpose of the qualification will determine the relationship between the three competencies, but they are all applicable to the three requirements of teacher qualifications namely academic, occupational and professional requirements.

The relationship between teacher competencies and requirements is presented graphically in Figure 2.4 – an adapted presentation of the figure presented by the Department of Education (1997c:60).

Figure 2.4:   **The relationship between the academic, occupational and professional requirements and the reflective, practical and foundational competencies in teacher education (Adapted from the Department of Education, 1997c:60)**

The three types of requirements applicable to teacher qualifications are presented in Table 2.5.

Table 2.5:   **The requirements for teacher qualifications**

Requirement	Description
Academic requirements	**Organisation** The academic requirements for teacher qualifications are set by the Technical Committee on the Revision of Norms and Standards for Educators. **Description** ■ The academic education and training are provided by the traditional training institutions namely universities, technikons and colleges as well as untraditional non governmental organisations (NGOs) and private institutions. ■ The qualifications could be degrees, diplomas, certificates or unit standards (Department of Education,1997c:28).
Professional requirements	**Organisation** The professional requirements for teachers are set by the South African Council for Educators (SACE) who is responsible for registration and licensing of educators. **Description** ■ The emphasis is on the professional status of educators and that they should be in a constant process of developing themselves further – to accept the responsibility for lifelong learning. ■ One way to keep track of educators' development is to require them to renew their licenses with the SACE on a regular basis – possibly every three years (Department of Education,1997c:43).

Table 2.5: The requirements for teacher qualifications (continued)

Requirement	Description
Professional requirements (continued)	▪ Professional requirements set to re-licensing of educators could motivate them to acquire other qualifications thus creating a professional educator core.
Occupational requirements	<u>Organisation</u> The occupational requirements for teachers are set by the Department of Education (DOE). <u>Description</u> ▪ The DOE is the main employer of teachers in South Africa and the conditions of employment are regulated by different laws. ▪ The DOE is also responsible for the relative education qualification value, description of post levels and job descriptions (Department of Education,1997c:43).

Previously the total emphasis on teacher education was on the academic and occupational dimensions of teacher qualifications while at present the professional dimension is also emphasised.

2.4.2   The South African Council for Educators

The South African Council for Educators (SACE) is a body that has been established to "... *act as the guardian of the professionalism of teachers*." (Department of Education, 1997c:42). The SACE was established in 1995 after agreement by the state and the trade unions representing educators, to establish a professional council "... *to register educators and discipline them if they are in breach of a code of conduct*." (Department of Education, 2000:2). One of the main objectives is to ensure that all educators (teachers, lecturers, trainers etc.) adhere to a specified set of criteria and comply with the code of conduct. Educators complying with this code of conduct will always act in a professional manner.

The SACE code of conduct states the following:

- Definitions of applicable terminology used in the code of conduct (educator, learner and parent);
- A preamble indicating the presumed attitude of an educator who are registered with the SACE;
- Conduct: The educator and the learner;
- Conduct: The educator and the parent;
- Conduct: The educator and the community;
- Conduct: The educator and his/her colleagues;
- Conduct: The educator and the profession;
- Conduct: The educator and his/her employer;
- Conduct: The educator and the council.

For the complete Code of conduct, see Appendix A on the CD ROM.

According to the Draft SACE Bill (Department of Education, 2000:8) the SACE will consist of the following members:

- "A chairperson;
- Eighteen educators nominated by the organised profession;
- Five persons nominated by the Department of Education;
- Two persons nominated by the national associations of school governing bodies;
- Two persons nominated by the council on Higher Education; one person nominated by national bodies representing independent or private institutions; and
- The chief executive officer of the council."

All educators, that is "...any person who teaches, educates or trains other persons..." (South African Council for Educators, 1999:1), should register with the SACE. According to the Norms and Standards for Teacher Education (Department of Education, 1997c) educators will have to apply for re-registration at the SACE after a period of three years. Their application for registration will have to be accompanied by proof of qualifications as well as proof of skills and competencies.

When an educator is registered and licensed by the SACE this license is "... a document entitling its holder to practice a trade or profession, and signifying that the license-holder meets competency and other requirements for practice" (Department of Education, 1997c:xii). The process of licensing and re-licensing could prove itself to be a heavy administrative burden on the SACE and therefore solutions and ways to ease this burden will

have to be created. One possible solution as indicated by the Department of Education (1997b) is to link the SACE with the computerised SAQA database that will contain all qualifications obtained by all learners. This system will however only indicate the "official" qualifications and not the skills and competencies which are also important.

A possible way in which educators can present the SACE with proof of professional development, skills and competencies, could be to use portfolios – each educator could keep a complete portfolio of all professional and other activities. Referring to the reasons why any lifelong learner should use a portfolio, as discussed in Table 2.3, an added advantage could be to present the portfolio to the SACE when applying for re-licensing, because it will contain all the necessary information regarding proof of skills and competencies. Portfolios can take many different formats, but the use of *electronic* portfolios may prove to contain even more advantages, as will be discussed in Paragraph 2.5.2.

2.5 Electronic portfolios

Kalamazoo College started the so-called "K" plan in 1963 (Kalamazoo College, 1997a; Kalamazoo College, 1997-98). This plan aimed at increasing experiential learning by incorporating individualised projects into their curriculum. This lead to the incorporation of the Kalamazoo Portfolio as a graduation requirement during the last few years. The Kalamazoo Portfolio was the first of its kind in the United States and rating their successes, many other colleges followed their lead. Originally the concept of an electronic portfolio was born in the Experiential Education Committee, consisting of educators, students and administrators (Kalamazoo College, 1997d). People's perceptions regarding portfolios, and specifically electronic portfolios differ. One tends to associate it with artists, photographers, architects or even fashion and photographic models, who use it to display their accomplishments or favourite works, but one is not so comfortable to associate it with learners, teachers or educators (Van Niekerk, 1998; Kizlik & Associates, 1997-1999; Fisher, 1994; Sweet, 1993a; Winsor & Ellefson, 1995). The use of portfolios has increased during the last few years in many occupations, especially so in the educational environment (Advisory Centre for University Education, 1998; Guillaume & Yopp, 1995; Wolf, Whinery & Hagerty, 1995). Learners as well as educators use electronic portfolios in many different ways for many different purposes.

According to Tillema (1998) portfolios have many uses, one being that it can function as an alternative assessment tool or to inform other people about your skills and competencies,

and also demonstrate these skills and competencies visually. Another advantage is that it *"fosters further learning and growth"* (Tillema, 1998:263).

Wiedmer (1998:586) confirms this perception and indicates that the use of electronic portfolios is gaining popularity in the educational field while it was formerly only accepted as a *"business tool "*. It is fast becoming a very popular educational tool because educators are discovering the benefits of utilising electronic portfolios as tool to validate individual performances. By using electronic portfolios learners are able to demonstrate what they *know* and *can do* (skills and competencies) in ways that were not available before.

Barrett (1998c), who did extensive research on educational electronic portfolios, cautions against the use of electronic portfolios, without pre-set standards when she indicates that *"... a portfolio without standards is just a multimedia presentation or a fancy electronic résumé or a digital scrapbook."* (Barrett, 1998c). The importance of curriculum related content may never be downplayed in favour of the aesthetics and "bells and whistles" included in an electronic portfolio.

2.5.1   Definition(s) of electronic portfolios

Many researchers and educators defined portfolios and more specifically electronic portfolios. The definitions may vary according to the circumstances in which the electronic portfolio is being used. A summary of the views of many researchers is presented in Table 2.6.

Table 2.6:   Electronic portfolios defined

Concept	Description	Reference(s)
A purposeful collection of work	▪ The work represented in an electronic portfolio should be included for a specific purpose e.g. to indicate one's professional development or for assessment purposes.	Wiedmer (1998); Paulson, Paulson & Meyer (1991); Kizlik & Associates (1997-1999); Mt Edgecumbe High School (1999a); The School Page (1996);

Table 2.6:   Electronic portfolios defined (continued)

Concept	Description	Reference(s)
A purposeful collection of work (continued)	▪ An extensive collection of all kinds of evidence to demonstrate growth and competencies acquired over a long period of time can be presented in an electronic portfolio. ▪ Samples of applied skills (using multimedia) could easily be included to demonstrate competencies, skills and knowledge.	Hoepfl (1993); Tillema (1998:263); Horry County Schools (1998); Bergman (1999); Barrett (1998b); Gillespie (*et al*. (1996); Sweet (1993a).
Presented by electronic means	▪ There is a definite movement away from the traditional portfolio in a paper folder. ▪ Portfolios are captured and presented electronically, using different kinds electronic media. ▪ A detailed discussion regarding the different electronic formats in which an electronic portfolio can be created, is presented in Paragraph 2.5.3.	Wiedmer (1998); Barrett (1994); Barrett (1997); Barrett (1998a); Barrett (1999); Bergman (1999); Florida State University (1999); Guhlin [s.a.]; Kalamazoo College (1997a); Milone Jr (1995); Moersch & Fisher III (1995); Mt Edgecumbe High School (1999a); Untch [s.a.].
An individual's efforts, progress, and achievements in one or more areas are presented	▪ Individuals who construct electronic portfolios should utilise it to demonstrate their efforts and achievements regarding the learning activities and professional development.	Wiedmer (1998); Sweet (1993a); Guhlin [s.a.]; Paulson, Paulson & Meyer (1991:60); Kizlik & Associates (1997-1999); Mt Edgecumbe High School (1999a); The School Page (1996);

Table 2.6: Electronic portfolios defined (continued)

Concept	Description	Reference(s)
An individual's efforts, progress, and achievements in one or more areas are presented (continued)	▪ It should be a collection of selected items and can be used to indicate the standard of work done by the presenter of the portfolio. ▪ Different records and examples (using multimedia) of work should be included to indicate personal growth.	Hoepfl (1993); Tillema (1998:263); Horry County Schools (1998); Bergman (1999); Barrett (1998b); Gillespie *et al.* (1996).
Self-reflection on any aspect presented in the portfolio is provided	▪ Self-reflection on learning is discussed in detail as one of the advantages of using electronic portfolios in Paragraph 2.5.2. ▪ It is essential that learners should use the opportunity to reflect on their own work, among others to identify their own strengths and weaknesses.	Guhlin [s.a.]; Paulson, Paulson & Meyer (1991:60); Tillema (1998:263); Kizlik & Associates (1997-1999); Pawluk (1999).
Physical proof of the learner's abilities, skills and competencies is presented	▪ A description of what the presenter of the portfolio is able to do is not sufficient, work samples and documentation or other media should be included to serve as a proof of the abilities of that person. ▪ Some researchers indicate this as being the strongest feature of an electronic portfolio – actual work done is presented. It need not all be completed projects, even work-in-progress can be included.	Guhlin [s.a.]; Wiedmer (1998); Sweet (1993a); Mt Edgecumbe High School (1999a); The School Page (1996); Hoepfl (1993); Tillema (1998); Bergman (1999); Barrett (1998a); Gillespie *et al.* (1996); Kizlik & Associates (1997-1999); Iowa State University [s.a.]; Stiggins (1994).

Table 2.6: Electronic portfolios defined (continued)

Concept	Description	Reference(s)
Physical proof of the learner's abilities, skills and competencies is presented (continued)	• All items included should display the skills, competencies, knowledge and talents of the learner.	

Electronic portfolios can take many different formats and the purpose of the portfolio will greatly determine the materials included, but in essence it will provide an overview of the learner's achievements, progress, knowledge, skills and competencies.

2.5.2   Why electronic portfolios?

Communication has undergone radical changes during the last few decades, mostly due to development regarding technology. This development influences all areas of life, including education. Education can benefit greatly from these developments, if applied properly and correctly. In our daily lives we are exposed to the electronic presentation of information and this feature of technology was recognised by educators as a useful tool in education.

Many different electronic applications can be found in education, one being the use of electronic portfolios. Moersch & Fisher III (1995) indicate that a combination of innovations regarding pedagogy and technology resulted in the use of electronic portfolios. The main reasons for using portfolios in an electronic format, are presented in Table 2.7.

Table 2.7: Why electronic portfolios?

Concept	Description	Reference(s)
Portablility	• A portfolio in an electronic format is more portable than a paper-based portfolio because one does not need to present folders full of documents, as is the case with a paper-based portfolio.	Wiedmer (1998); Milone (1995) and Sheingold (1992) in Barrett (1998a); Lankers (1998).

Table 2.7:   Why electronic portfolios? (continued)

Concept	Description	Reference(s)
Portablility (continued)	▪ This "portability" is possible as a result of the development of CD ROM technology and access to the World Wide Web (WWW). ▪ By using a CD ROM or the World Wide Web to present portfolios, it can be widely distributed with ease.	

Accessibility/Visibility	▪ More and more people are using the Internet to retrieve information.
	▪ Internet/web based portfolios are gaining popularity and more and more learners prefer to develop their portfolios and publish it on the World Wide Web.
	▪ One of the remarkable advantages of a web based portfolio is that it can be available internationally and the learner gets worldwide exposure, potential employers can view and evaluate work samples of candidates as presented in their electronic portfolios.
	▪ Portfolios can be published on the World Wide Web, using:
	  – the services of an Internet Service Provider (IPS);
	  – a dedicated server supplied by an educational institution - which will make it accessible to other educators as well as fellow learners.
		Lankers (1998); Mt Edgecumbe High School (1999a).

Table 2.7:   Why electronic portfolios? (continued)

Concept	Description	Reference(s)
Accessibility/Visibility (continued)	• Accessibility can also be achieved when using CD ROM technology to present an electronic portfolio. • Such a CD ROM can be distributed to many potential employers, without the possibility of the "original" material being damaged.	
The inclusion of multimedia components	• Multimedia provide the opportunity to include *real life* events as proof of skills – this is not possible in a paper-based portfolio. • Multimedia, such as video, audio, graphics, animations as well as text, which were not at all possible in a paper-based portfolio, can be used to provide proof of the learner's skills and competencies.	Wiedmer (1998); The School Page (1996); Kizlik & Associates (1997-1999); Mt. Edgecumbe High School (1999a); The School Page (1996); Hurst, Wilson & Cramer (1998); Kalamazoo College (1997c); Lankers (1998).
Ease of managing and updating data and safe storage mode	• Electronic portfolios can be managed and reviewed with relative ease. • Different programmes are available which allow the learners to manage their portfolios in the sense that they can decide which work samples and projects to either include or exclude, depending on the purpose of the specific portfolio.	Barrett (1998b); Barrett (1994); Niguidula (1996).

Table 2.7:   Why electronic portfolios? (continued)

Concept	Description	Reference(s)
Ease of managing and updating data and safe storage mode (continued)	▪ The learner keeps a master copy of the portfolio, and distributes copies thereof. There is no possibility of the original material being damaged. ▪ CD ROM technology is very popular for storing electronic portfolios because it is safe, data cannot easily be lost and it can save a large amount of data.	

The electronic portfolio is the perfect tool to also present a *demonstration* (in contrast to a *description*) of skills, competencies and capabilities. Learners who were forced to present an electronic portfolio as a prerequisite to graduation indicated that they found it extremely useful because they "… *learn how best to present yourself…*" (Kalamazoo College, 1997b).

Wiedmer (1998:587) summarises the power of the electronic portfolio when he indicates that "*The electronic format permits one to summarize primary beliefs and attitudes by condensing lifelong experiences into a compact and portable product.*"

2.5.3   Tools used to compile electronic portfolios

Different tools to develop and present portfolios in an electronic format exist, ranging from "off the shelf " software to Internet applications. Wiedmer (1998:586) indicates that electronic portfolio software (off the shelf software) can be used with ease to create a multimedia collection of student work and to connect that work to performance standards. Using this type of software is sometimes easier to use because the learner can concentrate on the development of the contents of the portfolio without having to design a "look and feel" and other technical issues.

Some of the possible tools that can be used to compile electronic portfolios, is presented in Table 2.8.

Table 2.8: Tools to create electronic portfolios

Type	Description	Reference(s)
Off-the shelf software	**Description** Off-the-shelf software is single purpose programmes developed with the sole purpose to compile electronic portfolios. **Advantages** The use of such off-the-shelf programmes is gaining popularity because the user can concentrate on the content of the portfolio, and needn't pay much attention to the format. **Examples** Commercial programmes that are available for this purpose include the Grady profile, Learner profile, Chalkboard, Scholastic's portfolio product, KidPix and Digital Portfolio.	Barrett (1994); Niguidula (1996); Wiedmer (1998); Barrett (1998a).
Multimedia Authoring software	**Description** These are programmes that can be used by educators and instructional designers to develop educational software. **Advantages** It can be used to develop electronic portfolios with great success because of its ability to incorporate multimedia components with ease.	Barrett (1994); Barrett (1998a).

Table 2.8:   Tools to create electronic portfolios (continued)

Type	Description	Reference(s)
Multimedia Authoring software (continued)	**Examples** Commercial programmes that are available for this purpose, include Quest and Macromedia Authorware.	
Electronic presentation software	**Description** This is software that can be used to develop electronic slide shows or presentations. **Advantages** These programmes are developed to present information, and are usually very user friendly and can include multimedia components with ease. **Examples** Commercial programmes that are available for this purpose include Microsoft Powerpoint and Presentations.	Barrett (1994); Barrett (1998a).
Internet applications	**Description** This is software that is developed to create documents that can be published on the Internet, usually using hypertext markup language (html). **Advantages** One need not have knowledge about html and it can be used to create an electronic portfolio that can be viewed with an Internet browser and published on the World Wide Web.	Barrett (1994); Wiedmer (1998); Lankers (1998); Mt Edgecumbe High School (1999a); Barrett (1998a).

Table 2.8:   Tools to create electronic portfolios (continued)

Type	Description	Reference(s)
Internet applications **(continued)**	**Examples** Html editors that are available for this purpose include Microsoft Front Page and Netscape Composer.	

Very often the learner's level of computer skills will determine which tool will be used to compile an electronic portfolio (Barrett, 1998a).

2.5.4   Components of electronic portfolios

According to Kizlik & Associates (1997-1999) portfolios used in the classroom and for assessment purposes will consist of the content of the curriculum followed in a specific course or qualification. This may be true, but there are much more to an electronic portfolio than it being just a collection of assignments for a specific course. Hurst, Wilson & Cramer (1998:579), Winsor (1998) and the University of Oregon (1998) confirms this view and indicates that the purpose of the electronic portfolio will also determine to a large extent the components to be included in that portfolio. Professional developmental electronic portfolios can be used to the benefit of learner educators because it is a means of presenting proof of professional development to examiners and future employers. Therefore the focus of this study will be on this type of electronic portfolio.

It is important to keep in mind that the portfolio should present a reflective collection of skills and competencies, it is not just a "scrap book". It can be enriched with a personal touch, but the presentation needs to remain professional, and the principle of "*less is more*" might be applicable because it should be easy to access and "*should not become to cumbersome for someone to read.*" (Hurst, Wilson & Cramer,1998:579). It is also important to not only include written components (Collinson, 1995).

An extensive literature study identified different components that should be present in the professional developmental electronic portfolio:
- A user-friendly interface;
- Different multimedia components;
- A table of contents;
- Personal data;

- An academic record;
- A description of skills;
- A description of projects;
- A summary of work experience;
- Letters of reference;
- Goals/career planning;
- Achievements/awards;
- Self-reflection/evaluation;
- Community activities;
- Leisure activities.

These components are discussed in Paragraphs 2.5.4.1– 2.5.4.14.

2.5.4.1   Interface

The saying "first impressions last" is applicable when developing an electronic portfolio. The interface used when developing an electronic portfolio should be so simple that anyone could be able to access it without specific instructions and skills (Mt. Edgecumbe High School, 1999a; Bergman, 1999). A suitable "look and feel" should be selected which will be used throughout the portfolio and it should be aesthetically acceptable (Milone, 1995). Navigation tools should be used consistently and on each page a custom header should be inserted to ensure that readers know at all times what the page they are viewing is all about and information should be presented logically.

As with all electronic applications it is of extreme importance that it runs mechanically and technically error-free and that all links to applicable sources should function properly (Kalamazoo College, 1997a).

2.5.4.2   Multimedia components

One of the main differences between paper-based portfolios and electronic portfolios is that the latter has the ability to include multimedia components. Multimedia refer to all types of media, not only written text, but a combination of text, sound, graphics, animations and even video. Many researchers such as Collinson (1995); Moersch & Fisher III (1995) and Mt Edgecumbe High School (1999a) indicate that the portfolio should be able to include any type of media, not only specific formats. One should also be able to link to other programmes e.g. databases or electronic presentations.

The different media that can be included in an electronic portfolio, are presented in Table 2.9.

Table 2.9: Different media that can be included in an electronic portfolio

Medium	Description
Descriptive text	Text should be used to describe the purpose of the portfolio, what the portfolio consists of and some of the skills (e.g. writing skills) and projects will also be presented in text (Wiedmer, 1998; Barrett, 1997; Barrett, 1998a). Other text components should include essays, reports, tests, self-reflective items as well as peer and educator evaluations or comments on projects (Milone, 1995; Seldin, 1997; Mt Edgecumbe High School, 1999a; GIHE, Griffith University, 1996).
Copies of applicable documents	Scanned copies of applicable documents should be included e.g. certificates and/or diplomas obtained including a description of when and where it was obtained (Mt Edgecumbe High School, 1999a; Milone, 1995; The School Page, 1996; Winsor, 1998). According to Hurst, Wilson & Cramer (1998:580) scanned copies of official documents can be used to provide needed certification information about the educator.
Graphics	Graphic images e.g. clipart can be used for esthetical purposes to compliment the "look and feel" of the portfolio. Other applicable graphics or scanned photographs should also be included e.g. a photograph of the person whose portfolio it is, photographs taken in the work place or graduation photographs (Kizlik & Associates, 1997-1999; Mt. Edgecumbe High School, 1999a; Wolf, Whinery & Hagerty, 1995; Milone, 1995; The School Page, 1996; Hurst, Wilson & Cramer, 1998; Moersch & Fisher III, 1995; Barrett, 1997; Barrett, 1998a). Hurst, Wilson & Cramer (1998) indicate that it is important to provide explanatory captions for the photographs used to explain their significance.
Videos	One of the main advantages of using an electronic portfolio, is that many multimedia components which would not be possible in a paper-based portfolio, can now be included. Digitised videos is one such a component which can be used to demonstrate certain skills and competencies which is not really possible on paper or any other medium (Kizlik & Associates, 1997-1999; Mt. Edgecumbe High School, 1999a; Wiedmer, 1998; Milone, 1995; Barrett, 1997; The School Page, 1996; Wolf, Whinery & Hagerty, 1995; Seldin, 1997; Moersch & Fisher III, 1995; Barrett, 1998a).

Table 2.9: Different media that can be included in an electronic portfolio (continued)

Medium	Description
Videos (continued)	An educator can use a video to demonstrate how a specific situation is handled in class, testimonials from other persons can also be included in this format (Wiedmer, 1998; GIHE, Griffith University, 1996). Barrett (1998a) indicates that this is the best medium to display non-verbal skills and communication.
Sound	Digitised sound can also be included in the electronic portfolio (Mt. Edgecumbe High School, 1999a; Wiedmer, 1998; Milone, 1995; Barrett, 1997). It can be samples of speaking to demonstrate communication skills or interviews with peers or educators (Barrett, 1998a).
Animations	Animation is another typical multimedia feature and it could be used to demonstrate specific processes or procedures (Wiedmer, 1998).

2.5.4.3   Table of contents

Each electronic portfolio should include a table of contents to inform the reader of all the different components of a particular portfolio (St. Norbert College, 1998). Tomkinson (1997) confirms the necessity of form and structure in a portfolio. Hurst, Wilson & Cramer (1998:580) indicate that the inclusion of a table of contents helps the developer to structure the material included and helps the reader to get a better understanding of the focus and content of a particular portfolio. Each work sample that is included should also be provided with an introductory page containing a short explanation or description of the sample and the reason for including it in the portfolio (Mt. Edgecumbe High School, 1999a; Hurst, Wilson & Cramer, 1998; St. Norbert College, 1996; Seldin, 1997; Tillema, 1998).

2.5.4.4   Personal data

It is necessary to include a personal cover page, including the name of the person whose portfolio it is, residential, work and e-mail addresses and telephone numbers (Mt. Edgecumbe High School, 1999a; Mt. Edgecumbe High School, 1999b; St. Norbert College, 1996; Hurst, Wilson & Cramer, 1998; Wolf, Whinery & Hagerty, 1995; The School Page, 1996). It is a good idea to include a personal photograph on this page because this is the stage where the reader "meets" the person whose portfolio is reviewed – it creates an idea of

the *person* behind the portfolio. A short family history and personal demographics can be included in a brief biographical sketch, including information regarding friends and family, can also be included (Mt. Edgecumbe High School, 1999a; Lankers, 1998; The School Page, 1996; Kalamazoo College, 1997b; Hurst, Wilson & Cramer, 1998; Untch, [s.a.]). A short account of the cultural and community background can also be included (Mt. Edgecumbe High School, 1999a; Seldin, 1997; Lankers, 1998).

It is important to keep this information short and to the point, one should remember that this page should not become the main focus of the portfolio – it only serves as an introduction to the reader.

2.5.4.5   Academic record

The aim of presenting this information is to provide the reader with an overview of the academic qualifications obtained by the educator. Academic records e.g. all the subjects passed per year, the marks obtained, as well as information regarding certificates, diplomas and degrees obtained should be included (Mt. Edgecumbe High School, 1999a; Lankers, 1998; Garnhart, 1996; Mt. Edgecumbe High School, 1999b; Seldin, 1997; Untch, [s.a.]). Information regarding the institutions where the qualifications were obtained can also be given and if it is an Internet-based portfolio an active link to that institution's home page can also be included (Mt. Edgecumbe High School, 1999b).

If applicable some of the course materials of some or all of the courses taken can be included – mainly to provide the reader with evidence of specific skills mastered (Iowa State University, [s.a.]; Illinois State University, 1998b). Garnhart (1996) included in her portfolio information indicating to the reader what subjects she liked best/least and why. This information can however also be included on the pages where the different skills and competencies are presented.

2.5.4.6   Skills

One of the main features of an electronic portfolio is to provide the reader with evidence of specific skills and competencies mastered. It should serve as a showcase of what the compiler of the portfolio can do. Illinois State University (1998b) suggests that a description of the competency should be provided, with hyperlinks to specific assignments, essays, videos or other pieces of work addressing that specific skill or competency (Kalamazoo College, 1997a, Mt. Edgecumbe High School, 1999a; Lankers, 1998). Different types of

learning activities as well as materials showing the extent of learning by the learner should be included (Iowa State University, [s.a.]; Hurst, Wilson & Cramer, 1998). Kalamazoo College (1997b); Illinois State University (1998b); Garnhart (1996) as well as Pawluk (1999) indicate that it is important to provide the reader with a complete description of the particular skill and its demonstration by providing an example of work where this skill is applied. GIHE, Griffith University (1996) emphasises the presentation of examples and evidence of competencies.

2.5.4.7   Projects

On the project page information regarding any projects in which the compiler was involved, can be presented. This page can take many forms, including projects like research, team work, assignments or essays (Pawluk, 1999; Hurst, Wilson & Cramer, 1998; Barrett, 1998a; Mt. Edgecumbe High School, 1999a; Wolf, Whinery & Hagerty, 1995; Lankers, 1998). It should include a description of the nature and complexity of the projects and a hyperlink to the completed project (Kalamzoo College, 1997b; Mt. Edgecumbe High School, 1999a; Lankers, 1998). Pawluk (1999) indicates that "*models of excellent work*" should be included here and it should be used as standards by which other projects and work in progress can be judged. Other contributions to the work environment or academic institution (Iowa State University, [s.a.]) or even uncompleted projects can be included with indications on how and when the projects will be finished. Many researchers (Iowa State University, [s.a.]; Hurst, Wilson & Cramer, 1998) indicate that supervisor/educator evaluations should be included with the projects together with suggestions how it can be improved.

According to Iowa State University [s.a.] any "*...materials showing the extent of student learning...*" should be presented, including test scores, learners' workbooks, papers, essays or other creative assignments as well as graded work including written feedback from the supervisor or lecturer.

2.5.4.8   Work experience

An up-to-date résumé or record of employment and work experience is viewed as an essential part of any portfolio by many researchers (Mt. Edgecumbe High School, 1999a; Illinois State University, 1998b; Garnhart, 1996; Kalamazoo College, 1997b; Hurst, Wilson & Cramer, 1998; Untch, [s.a.]; Kalamazoo College, 1997a; The School Page, 1996; Advisory Centre for University Education, 1998; Kalamazoo College, 1997-98). It should contain the work history of the educator as well as the employer's details and period of employment (Mt.

Edgecumbe High School, 1999a; Lankers, 1998). This will provide the reader with and overview of the educators' exposure and experience in their field of expertise.

Iowa State University [s.a.] indicates that an educator should present "... *representative course materials* " including syllabi, course descriptions with details of content, objectives, methods and procedures for evaluating learning, reading lists, assignments, exams, handouts, descriptions and examples of visual materials used, descriptions of uses of computers and other technology in teaching. Evaluation of teaching in the working environment as presented by learner evaluations, written comments from learners on class evaluations, comments from peers, evaluations done by the head of the department or supervisor or other statements from the employer(s). Information regarding other contributions in the work place e.g. serving on committees, development of programmes, assistance to colleagues on teaching matters, reviews of textbooks and participation in training programmes should be included. Other activities to improve instruction or work methods e.g. participation in seminars or professional meetings on teaching, design of new courses, use of new methods of teaching and assessing of learner outcomes should also be included.

This is a very important part of the portfolio because it will provide the reader with an overview of the experience of the educator.

2.5.4.9 Letters of reference

When a portfolio is used to apply for a position it is good practice to include some letters of reference and recommendation from educators or former employers (Mt. Edgecumbe High School, 1999a; The School Page, 1996; Wolf, Whinery & Hagerty, 1995; Seldin, 1997; Hurst, Wilson & Cramer, 1998). Peer evaluations can also be included (The School Page, 1996).

2.5.4.10 Goals/Career planning

To include information regarding career planning and aspirations will provide the reader with an overview of the educator in training's objectives and goals for the future (Mt. Edgecumbe High School, 1999b; Iowa State University, [s.a.]; Barrett, 1998a; Lankers, 1998; Illinois State University, 1998b; Garnhart, 1996; Untch, [s.a.]; Kalamazoo College, 1997b; Kalamazoo College, 1997a). An indication of a commitment to lifelong learning should also be included (Untch, [s.a.]).

If the electronic portfolio is used to apply for a position, it is a good idea to include answers to commonly asked interview questions (Illinois State University, 1998b; Garnhart, 1996). Garnhart (1996) suggested that answers to the following questions should be included in a portfolio:

- *"What do you see yourself doing in five years from now?*
- *Do you have plans to continue study?*
- *What are the most important rewards you expect in your career?*
- *Why did you choose the career for which you are preparing/applying?*
- *What criteria do you use to evaluate the company for which you hope to work?"*

The School Page (1996); Hurst, Wilson & Cramer (1998) and Iowa State University [s.a.] suggest that a statement of the educator's teaching philosophy or a description of teaching roles: responsibilities, goals and approaches should also be included.

2.5.4.11   Achievements/Awards

Although the emphasis in the electronic portfolio is on academic and professional achievements and objectives it is acceptable to include details of academic as well as non-academic achievements in one's portfolio (Mt. Edgecumbe High School, 1999a; Kalamazoo College, 1997b; Kalamazoo College, 1997a). Non-academic achievements may include personal achievements on the sports field, regarding hobbies or in community activities (Mt. Edgecumbe High School, 1999a; Lankers, 1998). Academic and professional achievements may include appointment in leadership roles (Mt. Edgecumbe High School, 1999a; Lankers, 1998; Seldin, 1997; Untch, [s.a.]), honors presented by educational and other institutions for good work (Mt. Edgecumbe High School, 1999a; Lankers,1998; Mt. Edgecumbe High School, 1999b; Iowa State University, [s.a.]), teaching awards from the educator's profession (Iowa State University, [s.a.]), grants and fellowships (GIHE, Griffith University, 1996), invitations based on teaching reputation to consult, give workshops, write articles and requests for advice on teaching by committees or other organized groups (Hurst, Wilson & Cramer, 1998).

2.5.4.12   Self-reflection and self-evaluation

Hurst, Wilson & Cramer (1998:581) indicates that "… *reflections are an important addition to a portfolio, in that they demonstrate reflective decision making … how they have grown.".* An important feature of an electronic portfolio is the ability to demonstrate work done by the educator but also the inclusion of self-reflection or meta-cognition regarding that work.

Pawluk (1999:http://homepages.wwc.edu/staff/PAWLST/portfol.htm) indicates that self-evaluation and reflection regarding the strengths and weaknesses of each work sample are essential because it "... *will show their progress as well as the student's ability to evaluate his/her own learning.*" . Kalamazoo College (1997-98) confirms the importance of self-assessment and reflection on items included in the portfolio. Vizyak (1995) managed to teach grade 1 learners to reflect on their own learning while using portfolios. Tillema (1998:268) also emphasises the importance of the ability to recognise one's own strengths and weaknesses regarding a specific work sample or assignment as an essential part of self-evaluation. Hurst, Wilson & Cramer (1998:579) concludes that "... *this process allows teachers to reflect on their own growth as teachers and learners... can better understand their own development...*". Pawluk (1999); Wolf, Whinery & Hagerty (1995); Tillema (1998); Seldin (1997); Van Niekerk (1998); Baume [s.a.] and Kizlik & Associates (1997-1999) all emphasise the importance of self-evaluation of strengths and weaknesses, but reflections regarding the learning experience are equally important (Tillema, 1998; Hurst, Wilson & Cramer, 1998; Barrett, 1998a; Van Niekerk, 1998, Kizlik & Associates, 1997-1999; Mt Edgecumbe High School, 1999a; Advisory Centre for University Education, 1998; Fisher, 1994; Horry County Schools, 1998). Seldin ([s.a.]:a) asks the question whether one should include "bad" parts of your teaching experience in a portfolio. He indicates that it should be included in terms of self-reflection to indicate to the person reading the portfolio that the constructors recognize their weaknesses and can work on overcoming it.

According to Van Niekerk (1998:90) self-reflection indicates that learners returning to their work, "... *taking the stance of an informed critic ...*". Learner should question themselves about the specific piece of work and the answers should provide the following information:

- "*What is important and why;*
- *What is characteristic about their learning;*
- *What has changed with time;*
- *What still remains to be done;*
- *How different kinds of experiences have contributed to their growth and learning;*
- *What personal insights they have gained form the experience;*
- *What arguments held up in the light of their own evolving standards;*
- *How their opinions and ideas have changed, refined or not changed as they progress through the course.*" (Van Niekerk, 1998:90).

In a sense self-reflection is a demonstration of the ability to assume responsibility for your own learning and become a life long learner. It should become an automatic activity in the

learning process (Van Niekerk, 1998). Self-assessment should also form part of the self-reflection activities and is a complicated skill that is developed over a period of time.

2.5.4.13   Community activities

Evidence of involvement in community service projects and volunteer organisations presents the reader with some non-academic or professional information regarding the person behind the portfolio (Mt. Edgecumbe High School, 1999a; Lankers, 1998). It is essential for an educator to be involved in the community and accept social responsibilities within the community (Untch, [s.a.]; Kalamazoo College, 1997a).

2.5.4.14   Leisure activities

As indicated above, it is important that the reader not only meet the "academic" behind the portfolio, but also the person. For this reason information regarding hobbies (Mt. Edgecumbe High School, 1999a; Lankers, 1998), sports (Mt. Edgecumbe High School, 1999a; Lankers, 1998; Kalamazoo College, 1997a), membership to clubs and other social organizations (Mt. Edgecumbe High School, 1999b; Illinois State University, 1998b; Garnhart, 1996; Untch, [s.a.]; Kalamazoo College, 1997a) and other topics/activities of interest (Mt. Edgecumbe High School, 1999a; Lankers, 1998; Mt. Edgecumbe High School, 1999b; Milone, 1995; Untch, [s.a].; Kalamazoo College, 1997a) should be included in the portfolio.

2.5.5 Processes and procedures used in creating electronic portfolios

According to Sweet (1993b) and Kizlik & Associates (1997-1999) "... *there is no single way to do it but in all of them (portfolios) students are expected to collect, select and reflect ...*". When creating a portfolio, it is important that learners should receive specific and clear guidelines about the minimum requirements that their portfolios should adhere to and what processes and procedures need to be followed to be able to deliver an acceptable end product. The main purpose of the electronic portfolio may determine the processes and procedures to a great extent (Barrett, [s.a.]).

According to the Colorado School of Mines (1999) a classroom incorporating the portfolio method should not necessarily differ much from a traditional classroom setting. Assignments

should be given regularly with due dates for drafts. It is important that learners be given the opportunity to revise their assignments before being assessed on the final product, although all the drafts could be reflected in the portfolio. Van Niekerk (1998) indicates that the process(es) followed when constructing a portfolio is equally important as the completed product.

It is very important to note that "*Everyone's portfolio is a unique picture of that person's learning, reflection and development in a course, so no two portfolios will be exactly alike.*" (Van Niekerk, 1998:87).

The proposed processes and procedures that a learner has to follow, are graphically presented in Figure 2.5.

Figure 2.5: Processes and procedures
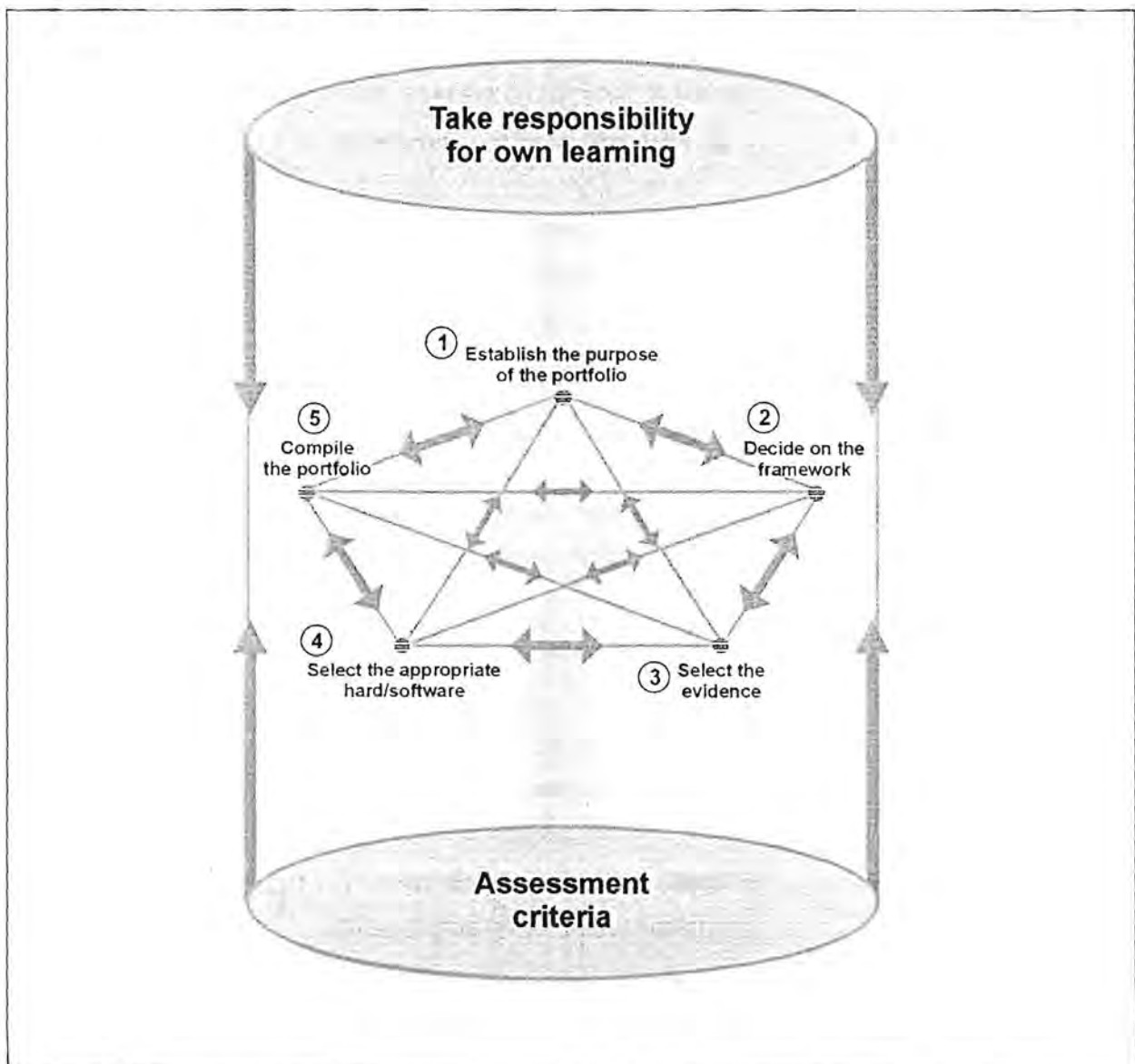
A pre-requisite for developing an electronic portfolio, is that learners should take responsibility for their own learning. It is also important that the learners should be aware of the assessment criteria that will be used for that specific portfolio and take that into consideration when compiling the portfolio. The pre-requisites for portfolio development are presented in Table 2.10.

Table 2.10: Pre-requisites for portfolio development

Concept	Description	Reference(s)
Take responsibility for own learning	▪ Portfolio construction promotes the mindset that learners are responsible for their own learning. ▪ Constructing an electronic portfolio already provides guidance and feedback about the process of learning, thus enabling a closer match between diagnosis of learning needs and progress made during training. ▪ The electronic portfolio should be learner-centered and the framework used should enable learners to access a common electronic platform to create and continuously improve their personal portfolios.	Tillema (1998:264); Mt Edgecumbe High School (1999a).
Be aware of the assessment criteria	▪ If the portfolio is for assessment purposes, it is necessary that the learners will be informed beforehand regarding the assessment criteria that will be used. ▪ The purpose of the electronic portfolio will determine the assessment criteria. ▪ The learners can also be involved in the composition of the assessment criteria.	Barton & Collins (1997:3)

Once the learners display their willingness to accept the responsibility for their own learning and are fully aware of the assessment criteria, certain procedures should be followed in order to compile and present an electronic portfolio. These processes and procedures are presented in Table 2.11.

Table 2.11: Processes and Procedures

Concept	Description	Reference(s)
Establish the purpose of the portfolio	- The educator and/or the learner can determine the purpose of the portfolio. - The purpose of the portfolio will, to a large extent, determine the processes procedures followed to compile it.	Barton & Collins (1997:3).
Decide on the framework	- The educator and/or the learner can determine the framework before the portfolio is compiled. - This framework could determine the composition of the portfolio and can include one or a combination of frameworks, namely chronological, thematic and problem-oriented. - Each learner may decide on his/her own framework that best suits his/her circumstances.	Van Niekerk (1998).
Select evidence	- The purpose and the framework of the portfolio will determine the contents presented in the portfolio. - The learner will select appropriate evidence to demonstrate all the applicable skills and competencies that are specified in the outcomes of the module. - The way in which learners demonstrate their vision is limited only by their own creativity.	Barton & Collins (1997:3); Illinois State University (1998a).

Table 2.11: Processes and Procedures (continued)

Concept	Description	Reference(s)

Select appropriate hardware and software	▪ The selection of hardware and/or software may be prescribed by the educator, depending on what is available.
	
	▪ The selection of hardware may be influenced by:
	  – the availability and accessibility thereof to the learner;
	  – the level of skills regarding specific hardware components, e.g. not every learner may know how to use a scanner.
	
	▪ The choice of software may be influenced by:
	  – The availability and accessibility thereof to the learner;
	  – the learner's level of computer skills;
	  – the most applicable software to manage his/her files for present as well as future use;
	  – the "delivery platform" of the portfolio and the computer skills needed to view the portfolio.
		Barrett [s.a.]; Wiedmer (1998); Barrett (1999); Barrett (1994).

Compile the portfolio	▪ The learner should select an appropriate tool to compile the portfolio. ▪ The content as selected (based on the purpose of the portfolio) should be included. ▪ The development of the electronic portfolio is the responsibility of the learner, but should be done in collaboration with the educator.	Van Niekerk (1998); Seldin [s.a.] b; Wiedmer (1998).

Table 2.11: Processes and Procedures (continued)

Concept	Description	Reference(s)
Compile the portfolio (continued)	• Personal growth and a consciousness of one's own development plays an important role in the construction process. • Self-reflection regarding skills, competencies, strengths and weaknesses should be a prominent part of the electronic portfolio.	

It really doesn't matter what tools learners use to compile electronic portfolios, as long as the end-product presents an overview of their skills and capabilities. In order to achieve this, the above-mentioned procedures could be followed. Many educators agree with Barrett (1994) when she indicates that "*Some day, students will graduate from each level (elementary, middle and high school) with a compact disc that contains an entire portfolio.*" (Barrett,1994:12).

Kizlik & Associates (1997-1999) indicate that a possible drawback regarding the use of electronic portfolios could be the amount of time and effort needed from both the teacher and the learner to construct such an electronic portfolio. Educational institutions, lecturers and students are often not well prepared and are not aware of the additional demands portfolio development will place on them as well as on the available resources (Sweet, 1993a). Gillespie *et al* (1996) confirms this statement, indicating that less instruction time can be counter productive to the learning process. When deciding to implement portfolio development, learners as well as lecturers should keep in mind that it takes a great deal of effort and it places additional demands on resources. Portfolio construction may also present a feeling of never being finished. As long as one is in a career or in a learning environment, a portfolio will never be complete, which indicates that everybody should aspire towards becoming lifelong learners.

2.5.6 Electronic portfolio assessment

Gillespie, *et al*, (1996:480) indicates that the purpose of assessment, is to instruct (the learner) while providing the learner, parents and administrators with precise and meaningful information regarding the progress of the learner. Seely (1994) indicates that portfolios are

more than just a collection of the learner's assignments, it is an instrument to provide information and feedback regarding the growth and development of a learner over a period of time. According to Gomez, Graue & Bloch (1991:620) portfolio assessment was initiated as a result of the growing need for additional and/or alternative assessment methods to the conventional testing methods that was commonly used in education.

Van Niekerk (1998: 82) indicates that although portfolio assessment in South Africa is not yet used extensively, it is not a new concept and especially in the United States of America and Britain research has been done in the field (Benoit & Yang, 1996; Fourali, 1997; Hoepfl, 1993). In these countries portfolio assessment is used widely in schools (primary as well as secondary schools) as well as colleges and specifically for educators (Richlin & Manning, 1996; Setteducati, 1995; Hurst, Wilson & Cramer, 1998; Iowa State University, [s.a.]; The School Page, 1996; Winsor & Ellefson, 1995.). She mentions that portfolio assessment is capable of testing the learner's "... *ability to apply what they have learned in realistic settings.*" (Van Niekerk, 1998:82).

Three dimensions of portfolio assessment can be identified, as is graphically presented in Figure 2.6.

Figure 2.6: Three dimensions of portfolio assessment

The lecturer/educator is the primary assessor of the learners' electronic portfolios. The assessment criteria should be set even before the learner develops the electronic portfolio. The educator is also responsible for the composition of the assessment instrument. Learners as well as colleagues can contribute to the assessment criteria and instrument. The responsibilities of the educator, namely to develop the assessment criteria and the assessment instrument, are presented in Table 2.12.

Table 2.12: Responsibilities of the educator regarding portfolio assessment

Concept	Description	Reference(s)
Setting assessment criteria	▪ A list of standards, competencies and proficiencies against which all portfolios will be judged should be established, i.e. the assessment criteria. ▪ Pre-determining the assessment criteria is a necessity to ensure that every learner's assessment is based on the same criteria. ▪ The assessment criteria should clearly indicate *what* will be assessed. ▪ All criteria should be defined clearly to provide the learner with an indication of weak or adequate and strong performances for each component that will be assessed. ▪ Learners can be involved in the development of assessment criteria.	Wiedmer (1998:589); Gibbs [s.a.]b; Courts & McInerney (1993:69); Kizlik & Associates (1997-1999); Mt Edgecumbe High School (1999a); Barrett (1998d).
Creating an assessment instrument	▪ An assessment instrument, containing all the elements described in the assessment criteria, should be developed. ▪ Such an instrument can take many different formats. ▪ The "matrix format" can be used effectively and in different formats:	Wiedmer (1998); Courts & McInerney (1993:69); Barrett (1998d).

Table 2.12: Responsibilities of the educator regarding portfolio assessment (continued)

Concept	Description	Reference(s)
Creating an assessment instrument (continued)	– an analytic matrix can be used, breaking the portfolio into parts and rating each part on a scale; – a holistic matrix is used to consider the whole portfolio and rate overriding skills without doing a small scale analysis; – the primary trait matrix is used to assess the demonstrated performance in one or more major areas of emphasis. ▪ Using an assessment instrument ensures that all the learners are assessed equally.	

Learners and their peers can be identified as the secondary assessors of the electronic portfolio. Self-assessment is rated as a very valuable characteristic of portfolio development. Peer assessment is equally important – especially since it promotes discussions about learning. Self-assessment and peer assessment is described in Table 2.13.

Table 2.13: Self-assessment and peer assessment of electronic portfolios

Concept	Description	Reference(s)
Self-assessment	▪ Electronic portfolios will guide the learners to keep track of their own development and provide continuous cognitive feedback, thereby promoting reflection on practice.	MacIsaac & Jackson (1994); Van Niekerk (1998); Kizlik & Associates (1997-1999); Tillema (1998:263); Lamme & Smith (1991); Colorado School of Mines (1999).

Concept	Description	Reference(s)
Self-assessment (continued)	▪ Assessing one's own electronic portfolio can enhance the awareness of the necessary strategies for thinking about and creating assignments. ▪ Portfolio assessment shifts a part of the responsibility of assessment away from the educator to the learner. ▪ The learner is responsible for continuous self-assessment and self-reflection. ▪ Self-assessment provides learners with the opportunity to reflect on their own work and determine the growth that took place over a period of time. ▪ The learners are active participants in the assessment process – they should supply evidence of their ability to solve problems, retrieve information, find new solutions to problems, be creative and analyse and solve problems. ▪ The learners are made aware of the possible discrepancy between self-perceptions and external judgements about their work, and this can act as an incentive to motivate them to improve their assignments.	

Table 2.13: **Self-assessment and peer assessment of electronic portfolios (continued)**

Concept	Description	Reference(s)
Self-assessment (continued)	▪ Being responsible for the presentation of their own work, they will be encouraged to revise it often. ▪ Learners will have a sense of control over the assessment of their work. ▪ Learners will be more critical about their own work.	
Peer assessment	▪ Peer assessment forms part of the electronic portfolio assessment strategy. ▪ Peer assessment is valued by the learners because the learners may feel that they have a better understanding of the value and content of the competencies demonstrated in the portfolio. ▪ It promotes discussion about learning, the learning material and the compilation of the electronic portfolio.	Tillema (1998:263); Gibbs [s.a.]a.

Electronic portfolio assessment encompasses much more than the assessment of basic knowledge and recall. The learner's ability to make decisions, evaluate and solve problems form the essence of what is assessed.

2.6   Summary

Educators' only involvement with OBE is not just in the classroom where they are the facilitators of outcomes-based learning, but also in their own education and lifelong learning process. The Department of Education (1997c:51) states that no requirements will be stated

in terms of time or content input, but "... *the emphasis will be on the acquisition of applied competencies which will be described using outcomes*". Teacher education is also supposed to be based on OBE and they should also be able to demonstrate their outcomes and skills at the end of any learning experience.

OBE has played a role in many professions for a long time already, although the term was never used e.g. pilots in obtaining a flying license. Now it is applicable to everybody and every field of study. It also applies to teachers – regarding their licensing by SACE. Wiedmer (1998:589) describes the use of technology, and specifically the use of electronic portfolios, as an alternative method to demonstrate skills and competencies as a challenge to all learners and educators.