IMPLEMENTING AN ELECTRONIC PORTFOLIO ASSESSMENT STRATEGY: MULTIPLE PATHWAYS FOR DIVERSE LEARNERS

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Abstract

The implementation of a portfolio assessment strategy in the education and training environment is a time consuming process that should be performed within a specific framework, structure or model to accommodate diverse learners.

The aim of this paper is to:

- Present an overview of a generic framework for the implementation of an electronic portfolio assessment strategy. This framework comprises of an analysis phase, a design and development phase, a sensitizing phase, a compilation phase and an assessment phase. This is not a static framework, but due to continuous evaluation and assessment of each phase the framework should be flexible and provide the opportunity for successful implementation of electronic portfolios as an assessment strategy for all learners.
- Focus on the implementation of electronic portfolio assessment using this framework, adapting the processes and procedures for diverse learners with different skills levels.
- Focus on the processes and procedures followed during electronic portfolio development and implementation for diverse learners, including learners from the following groups:
  - Learners competent in constructing web based documents.
  - Learners less competent in constructing web based documents, but with adequate computer skills to explore the creation of web based documents with confidence.
  - Learners less competent in constructing web based documents, but with inadequate computer skills to explore the creation of web based documents with confidence.

Examples of electronic portfolios developed by learners from these groups, will be presented.

Key words

Electronic portfolios, Assessment, Evaluation, Internet, Portfolio Assessment

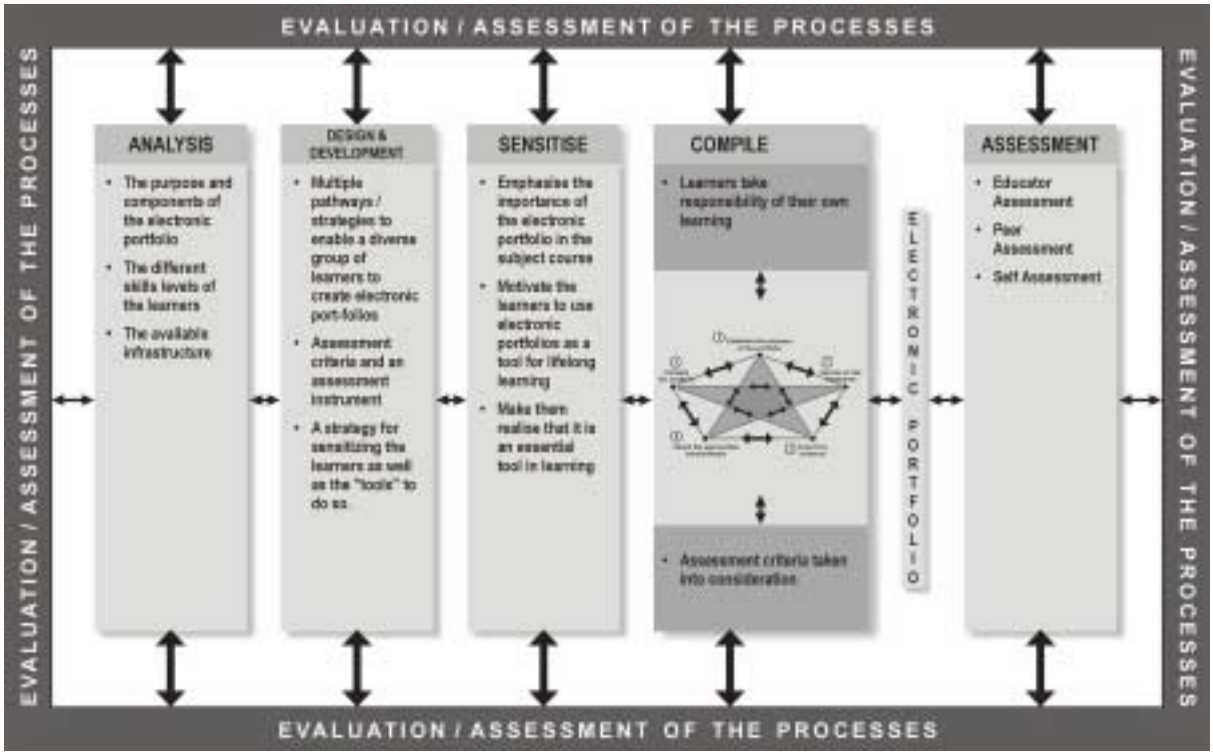
Introduction

The implementation of portfolio assessment strategies in the education and training environment is a time consuming process that should be performed within a specified framework, structure or model. The suggested model (see Figure 1) comprises of the following components:

- The analysis phase;
- The design and development phase;
- The sensitising phase;
- The compilation phase;
- The assessment phase.

Continuous evaluation and assessment of each phase should be performed and this may influence the actions of the educator and the learners during each phase.

Figure 1: A model for the implementation of electronic portfolio assessment in higher education



The analysis phase

During the analysis phase a thorough study of all the relevant factors that may influence the success, or failure of the implementation of electronic portfolio assessment in the learning environment should be initiated. It is the responsibility of the educator to perform this detailed analysis. The results of such an investigation should be assessed seeing that it may influence the course of the implementation process. The factors indicated in Table 1 may determine the success rate of the implementation of electronic portfolios and portfolio assessment.

Table 1: Factors that may influence the success rate of implementing electronic portfolios and portfolio assessment

Factor	Description
Purpose of electronic portfolio assessment	Electronic portfolios can be used as: • Evidence of the quality of work delivered by learners • An integral part of the assessment model used in education and training • A life long career tool developed by learners
Skills levels of the learners	Skills required to compile an electronic portfolio includes: • computer skills • critical thinking skills • creative ability • communication skills • problem solving skills
Availability and accessibility of an appropriate infrastructure	The existence and accessibility of the following will influence the implementation of electronic portfolios: • Hardware; • Software (programmes); • Internet access

Different research methods can be combined to gather and analyse information pertaining to the factors that may influence the implementation of electronic portfolio assessment.

The design and development phase

On completion of the analysis, the educator should design and develop an implementation strategy, which should include the design and development of:

- Multiple pathways for a diverse group of learners;
- Assessment criteria and an assessment instrument;
- A sensitising strategy to create an awareness amongst learners regarding the importance and value of electronic portfolios, not only as an assessment instrument, but also a career and marketing tool.

Multiple pathways

The educator may have a diverse group of learners and should therefore design and develop multiple pathways to enable each learner within the diverse group to develop an electronic portfolio. Diversity in this paper refers mainly to diversity regarding computer skills, including diverse skills levels regarding critical thinking, creative ability, communication and problem solving skills. By providing the learners with multiple pathways to construct their electronic portfolios, each learner should be able to compile an electronic portfolio by utilising different software, procedures and techniques at their disposal. In the study on which this paper is based (Mostert, 2000), the following diverse groups were identified:

- **Learners competent in constructing web based documents**

These learners are able to Java and html tags to construct unique personlised electronic portfolios. The educator must be able to assist these learners to develop their unique skills to the maximum. Designing electronic portfolios should challenge their creative abilities. Examples of portfolios created by learners from this group will be presented.

- **Learners less competent in constructing web based documents, with adequate computer skills**

Learners from this group are able to use specially designed shells and/or templates to construct their electronic portfolios. These shells/templates should be provided to the learners, and depending on their computer skills and creative ability, the shell/template can be modified and altered to suit their individual needs or preferences. The lecturer should encourage and assist the learners to modify the shells/templates to create a unique personalized electronic portfolio. Examples of the templates developed by the educator as well as portfolios created by learners from this group will be presented.

- **Learners less competent in constructing web based documents, with inadequate computer skills**

If the educator insists that the learners use a specific programme, learners may spend a lot of time mastering a specific computer programme. As a result of this approach, the learner concentrates on mastering the programme and is left with very little time to develop the electronic portfolio and present his/her work to the educator. This may lead to the learner presenting a portfolio that is aesthetically pleasing, but the content and presentation may not be educationally sound or a true reflection of the skills and competencies of that learner. The emphasis when developing an electronic portfolio, should be on the content of the portfolio, the presentation of the content, and the learner's self-reflection.

A user-friendly portfolio template, specifically designed to include all the information needed by the specific group of learners could be particularly useful to learners with basic levels of computer/technology skills. These learners would find it very convenient to be provided with a tool that will enable them to create electronic

portfolios, and by using this tool a feeling of accomplishment and success will be established. This can motivate the learner to attempt to use some of the other (more advanced) tools to improve or reconstruct his/her portfolio.

The ideal tool for learners with a very low level of computer skills would be a user-friendly programme that presents the learner with the option to type all the applicable information at prompts presented by the programme. The programme should, for example prompt the learner to type in his/her name, address and telephone number. Learners should also be able to insert links to specified assignments in the same user-friendly manner. When the learner has provided all the necessary information, the electronic portfolio should be constructed by clicking a button.

Based on the research done by Mostert (2000) and the implementation of electronic portfolio assessment in a master's course, such a programme was developed by Prof Johan Knoetze. He used Microsoft Access to develop this programme. It provides learners with a tool to create their own electronic portfolio by entering their personal data in a database form. The learners are able to add, delete or edit data and they are provided with the assessment criteria that will be applied in assessing their electronic portfolios. Once the learner is satisfied that all the data entered is correct, a web based electronic portfolio, consisting of the different html pages, is constructed automatically. A first (index.html) page with links to all the other applicable pages, is created when the learner click the "*Compile the electronic developmental portfolio*" button.

This is the ideal tool for learners with a low or moderate level of computer skills and it enables them to create their first electronic developmental portfolio with ease and confidence. This should motivate them to expand and edit this portfolio, as they gain more computer skills and competencies. The programme and an example of a portfolio constructed by this programme, will be presented.

Currently professor Knoetze is developing a similar programme that uses a web based database, to allow learners to submit their portfolios via the internet.

Assessment criteria and an assessment instrument

The educator who decides to implement electronic portfolio assessment in teaching and training, should identify assessment criteria and use it to design and develop an assessment instrument. The learners should be briefed about the criteria and presented with the assessment instrument even before they start to develop their individual portfolios. This is essential to ensure that learners know exactly how their electronic portfolios will be assessed.

The assessment criteria for the electronic portfolio (but not for the assignments included in the portfolio) can be categorized into the following main areas:

- Communication ability;
- Creative ability;
- Critical thinking ability;
- Reflective ability.

Strategy for sensitising

The sensitising phase should be used "to make the learners sensitive about" the use and importance of electronic portfolios in education, and specifically in module that a learner is engaged in. A sensitising strategy, as well as tools that the educator can use to sensitise the learners, should be designed and developed.

The aims of sensitising the learners are to:

- Promote a sense of responsibility for one's own learning;
- Demonstrate to the learners that portfolio assessment provide them (and the educator) with evidence of his/her abilities;
- Create a need for lifelong learning;
- Motivate them to play a leading role in implementing electronic portfolio assessment.

Different tools can be designed and developed to reach these aims, including:

- An electronic slideshow explaining the theory and uses of electronic portfolios and portfolio assessment;
- Examples of completed electronic portfolios of learners from a previous group of learners in the same subject area;
- Examples of electronic portfolios used as marketing tools;
- A step-by-step demonstration of the process of compiling an electronic portfolio, using different software e.g. templates or electronic presentation software;
- Applicable references and literature regarding the uses, advantages and development of electronic portfolios and portfolio assessment;
- Computer-based tutorials, explaining the theory, advantages and uses of electronic portfolios and electronic portfolio assessment.

It is important that the sensitising phase should be well planned to ensure that the learners will have a positive attitude towards developing electronic portfolios and electronic portfolio assessment.

The sensitising phase

The sensitising phase entails the implementation of a sensitising strategy that was developed during the design and development phase. The learners should be motivated to such an extent that they are enthusiastic and *want to* develop the electronic portfolio. If the sensitising is done effectively, learners will experience electronic portfolio development and assessment as a positive strategy in their learning process.

The compilation phase

The learner should compile an electronic portfolio in collaboration with the educator. The compilation phase consists of the steps explained in Table 2.

Table 2: The steps followed in the compilation phase

Step	Explanation
Establishing the purpose of the portfolio	When an educator decides to implement electronic portfolio assessment in the teaching and training environment, the purpose of the electronic portfolio has already been established - it will mainly be used for assessment purposes. The added value of the possibility to use this electronic portfolio as a marketing tool, should also be kept in consideration.
Selecting a framework for presentation	A framework (chronological, thematic or problem-oriented) will determine the composition of the portfolio. The educator and the learner should decide on the framework which best suits the circumstances and the content.
Selecting evidence to include in the portfolio	Pre-set skills and competencies should be demonstrated by the contents of the electronic portfolio. Selecting the evidence to demonstrate the specified skills, should be done by the learner, in close collaboration with the educator.
Selecting the appropriate and available hardware and software	The selection of hardware and software may be prescribed by the educator, based on the availability and accessibility of the necessary infrastructure to the learners. The learners' level of computer skills may influence the selection of the software.
Compiling the electronic portfolio	This is a continuous process of presenting evidence and constantly revising it.

Due to the interdependency of the various steps, decisions made regarding one of the steps, will impact on all the others. The compiling of an electronic portfolio is therefore not a linear process, but it is a flowing process, each step influencing the others.

The assessment phase

Three types of assessment can be identified in electronic portfolio assessment (See Table 3).

Table 3: The types of portfolios assessment

Type	Description
Educator assessment	This is the formal assessment of the electronic portfolio and will be done according to the assessment criteria which was incorporated in the assessment instrument by the educator. The educator should provide the learner with feedback, regarding the weaknesses of the portfolio, and allow the learner to improve it.
Peer assessment	Learners may share their views and display their portfolios to a group of peers, before presenting it for formal evaluation, to get their opinion regarding certain aspects of the electronic portfolio.
Self-assessment	Self-assessment is one of the most important features of

	portfolio assessment and it provides the learners with the opportunity to reflect on their work and determine personal growth over a period of time.

Much emphasis is placed on the formal educator assessment, but it is important that educators should encourage informal assessment by peers and the learners themselves.

The evaluation and assessment of the implementation processes

The development of an electronic portfolio can never be a linear process. It is a dynamic, interactive process and each phase will influence the next. Each phase should constantly be evaluated and the processes should be assessed – this may result in the changing of some of the processes and procedures in order to comply with the conditions of a specific situation. The educator and the learners should be involved in this process and should act on the continuous evaluation, i.e. change or adapt when necessary – this way electronic portfolio development will remain an interactive, dynamic process.

Summary

The implementation of electronic portfolio assessment in the teaching and training environment can only be successful if it is based on a specific model/framework. However, it can never be a static process and continuous evaluation is necessary. The educator and learner are equal partners in this process and success will be achieved if a high level of collaboration and co-operation exists between them.

It is very important to keep in mind that portfolio assessment is only one part of the entire assessment strategy – it should not necessarily be the only means of assessment.

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