e-Portfolios in e-Learning

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1   Introduction

E-portfolios offer significant benefits to learners, educators and administrators of education organizations. The multiple educational and administrative roles offered by the multiple components of e-portfolio systems combine with the advantages of online and digital environments to offer a powerful e-learning environment.

This chapter builds on and extends research by the authors that identified a significant divide on how benefits are offered by e-portfolio systems. Some e-portfolio systems gain benefits for stakeholders over and above what is possible with other learning approaches. A large number of e-portfolio assessment systems, however, appear to offer stakeholders less than they would have using other educational approaches. This chapter describes the key factors and issues to be taken into account by educators and administrators to maximize the educational and administrative benefits to all stakeholders.

The chapter focuses on three key dimensions of e-portfolios.

- Pedagogic and administrative possibilities of e-portfolios
- The ways in which the choice about best technology use in e-portfolios is dependent on pedagogic goals, organizational computing systems and other contextual factors

Future trends in e-portfolios and the opportunities presented by changes towards learning object systems using Semantic Web technologies such as RDF and OWL, and away from pure database systems.

Each of these three is addressed in straightforward terms aimed at offering direct benefit to educators and administrators exploring implementation of e-portfolio systems. The authors will argue that maximum benefits accrue when the pedagogic integrity of educational systems is matched with the educational opportunities unique to the online environments and when system design that uses the online environment to streamline administrative tasks.

1.1   Key terms

The introduction will clarify key terms, including discussion of different ways in which the term 'portfolio' has been used and the different forms of e-portfolio.

Authentic learning

Competency-based education

Constituency

e-Portfolio

Graduate Attributes/ Graduate generic skills

Independent learning

Life-long learning

Online environment

Portfolio

Web-based portfolio

Online portfolio

Profiles

Self-directed learning

1.2 Structure of chapter

The chapter has five parts. The next part outlines and discusses key pedagogic and administrative possibilities of e-portfolios. The third part outlines how the design of e-portfolio assessment systems must be considered in the context of other organizational features. It discusses examples of different purposes for e-portfolios in secondary and tertiary education that demonstrate how organizational factors shape different context-specific design solutions. Part four discusses how changes to technology offer new challenges and opportunities for the development of e-portfolio systems. The conclusion summarizes the chapter and provides the reader with a checklist of points to be considered in implementing e-portfolios.

2 Pedagogic and administrative possibilities of e-portfolios

2.1 Critical review of e-portfolios

The second section first presents the findings of a critical review of e-portfolios reported in Love and Cooper (2004) with a discussion of changes since then. The review found widespread neglect of factors necessary to ensure pedagogic integrity and maximal value for all stakeholders. Most of the e-portfolio implementations that were reviewed appeared to fall short of their potential, and, in many cases, appeared inferior to conventional paper-based portfolio assessment. Typically, design processes were marked by an over-emphasis on technical issues aimed at facilitating implementation to the neglect of pedagogic goals and processes. We identified that improved stakeholder value could be created through a different approach to design composition and suggested pedagogic and administrative concerns represent 'the central functional issues' in the design of online portfolio assessment systems. We suggested that addressing technical issues should be regarded as secondary to the achievement of pedagogic and administrative goals. We found that many administrative benefits such as automation of administrative functions, improved assignment security, and easier detection of fraud and plagiarism were possible with e-portfolios, yet were rarely realised at that time. The section will conclude with an examination of how things have changed since the previous research was completed.

2.2 Educational Concerns

This second part of the second section of the chapter will discuss:

- The pedagogical benefits of portfolios in secondary and tertiary education
- The relationship between portfolios and constructivism approaches to learning and will include discussion of the links to authentic learning and lifelong learning
- Equity issues, and the implications of these issues for e-portfolio assessment

2.3 Systems perspective and stakeholders

This third part of the second section of the chapter will discuss:

- The benefits of a stakeholder systems approach to design of e-portfolio based assessment
- Key stakeholders' goals including teachers goals, learners goals, course administrators' goals and institutional goals.

There are multiple stakeholders and constituencies that shape, are benefited by, and impacted upon by e-portfolio systems Four key constituency perspectives are explored:

- Teachers' perspectives
- Learners' perspectives
- Course adminstrators' perspectives
- Institutions' perspectives

From a teachers' perspective, pedagogic integrity is essential to the design of e-portfolios assessment systems. From the perspective of the learner, e-portfolios offer possibilities across several dimensions of their educational trajectory including facilitating study across educational institutions, bridging between the worlds of study and work by providing an integrated basis for joining formal study and continuing professional development, and providing an integrating basis for a learner's lifelong education. From a course administration perspective, the chapter discusses how the breadth of automation possibilities available via the digital environment offer radical opportunities to significantly reduce the time and resources spent on administrative tasks for all stakeholders. Taking an institutional perspective, the chapter describes how institutionally, new directions in e-portfolios help institutions fulfil their educational purpose, mission and vision.

2.4 Administrative and technical factors

Part four of the second section of the chapter focuses specifically on administration and technical issues. It reviews the potential for e-portfolios to simplify certain administrative processes including:

- Automation of administrative functions such as recording of student progress
- Plagiarism
- Security, fraud and tampering with records
- Quality Assurance reporting

This part will also briefly examine factors that have implications for technical decision-making, such as:

- Discipline related factors and technology choice
- Information storage
- Interface issues

2.5 Quality and equity issues

Part five of the second section of the chapter discusses the implications for the design of e-portfolio assessment systems of quality assurance and equity issues. These have become prominent across both secondary and tertiary education systems in many countries.

3 E-portfolio applications in secondary and tertiary education

The third section of the chapter extends the discussion of the relationship between e-portfolios, pedagogy and administrative requirements in terms of secondary and tertiary contexts. The relationship between course administration and curriculum innovations such as graduate attributes and assessment of professional practice skills and their implications for design of e-portfolios systems will be discussed in detail. Examples will demonstrate how pedagogic goals; administrative requirements and contextual factors inform decision-making about technology. In this section the authors will discuss the potential for symbiotic and beneficial interaction between e- portfolio systems and organisational data systems.

In general, these discussions are undertaken in respect to three different types of e-portfolio arrangement:

- Web-assisted e-portfolio
- Hybrid e-portfolio
- Full online portfolio

3.1 e-Portfolios and the organization: environmental factors

This part of the third section of the chapter examines how environmental factors within secondary and tertiary education organizations effect decisions about the design of e-portfolio assessment systems. Topics to be discussed include:

- How features in the organizational environment effects decision-making about the timing of e-portfolio innovation
- The relationship between e-portfolios and other organizational computer systems
- The pros and cons of 'incremental development' of e-portfolio assessment systems
- How existing organizational training systems, teamwork and peer support can influence decision-making about the design of e-portfolio assessment systems

3.2 e-Portfolios and Professional Skills

This part of the third section of the chapter describes examples of how e-portfolios can be used in different ways to document learners' acquisition of professional skills. In particular, we classify the current e-portfolio approaches into three streams and look at their advantages and disadvantages:

- Web-assisted professional skills portfolios: what this involves, contextual considerations, advantages and disadvantages
- Hybrid professional skills portfolios/ e-portfolios: what this involves, contextual considerations, advantages and disadvantages
- Online professional skills portfolios: what this involves, contextual considerations, advantages and disadvantages

3.3 e-Portfolios and Graduate attributes

In the third part of this section of the chapter we provide examples of how e-portfolios can be used in different ways to document acquisition of graduate attributes (Dearing report - 'skills and attribiutes agenda' is the dominant approach. The Dearing Report emphasised 'key skills'; other terms used include 'graduate attributes', 'transferable skills', 'employability skills', 'enterprise skills', 'capabilities', 'personal competences'.). In particular it will look at the advantages and disadvantages of different types of use of the online environment:

- Web-assisted graduate attributes portfolio: what this involves, contextual considerations, advantages and disadvantages
- Hybrid graduate attributes portfolio: what this involves, contextual considerations, advantages and disadvantages
- Online graduate attributes portfolio: what this involves, contextual considerations, advantages and disadvantages

3.4 e-portfolios and summative secondary education assessment

This part of the chapter describes examples of how e-portfolios can be used in different ways to document summative achievements at the end of secondary education. In particular we will look at the advantages and disadvantages of three different types of online environment:

- Web-assisted summative secondary assessment portfolio: what this involves, contextual considerations, advantages and disadvantages
- Hybrid summative secondary assessment portfolio: what this involves, contextual considerations, advantages and disadvantages
- Online summative secondary assessment portfolio: what this involves, contextual considerations, advantages and disadvantages

4 Future directions and future challenges

In this section of the chapter we describe some future trends in e-portfolios. Many opportunities and challenges are emerging with the convergence and increasing sophistication of online technology and organizational computing systems in secondary and tertiary education. Many of these new opportunities and challenges are due to the emergence of computer-based and network-based technologies that supplant, improve on or address weaknesses of processes such as XML that are currently considered de-facto best practice in e-portfolio and e-learning systems. Key disruptive technological changes in this area include:

- New forms of learning object systems
- RDF, OWL, DAML and other Semantic Web developments
- Increased automation in learning-related software such as:
  - automated essay marking
  - new standards in automating plagiarism identification
- new security systems that facilitate, for example, secure submission and remote assessment processes.

Other significant changes are emerging as a result of organisational, societal and other contextual changes that provide for the application of e-portfolio systems in an increasing broad field of opportunities as education broadens its organisational base.

5 Conclusions

5.1 Main findings

5.2 Opportunities

5.3 Challenges

5.4 Future directions of e-portfolios in secondary and tertiary education.

5.5 Checklist

Points to be considered in implementing e-portfolios.

6   *References*

Love, T., & Cooper, T. (2004). Designing Online Information Systems for Portfolio-Based Assessment: Design Criteria and Heuristics. *Journal of Information Technology Education, 3*, 65-81.