ePortfolio as an Assessment Tool: The Development of Rubric Criteria

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ABSTRACT

The ePortfolio is a paradigm in constructivist e-learning. Apart from being an assessment tool, the ePortfolio is a platform to highlight the student's competency to the employer or to anybody who has an interest in the student's skills and ability. This virtual assessment tool can save employers time when it comes to shortlisting potential candidates before the face-to-face interview session. This paper discusses the ePortfolio as an assessment tool in higher education to assess students' competency. The methods used were intensive literature review and website survey on universities that have implemented the use of the ePortfolio in their learning programmes. Six American universities were chosen. The information gathered from this survey was then compared with information from the American universities. This research suggests a new basic assessment framework based on the comparison analysis. The framework listed nine abilities that must be acquired by students as the determinant factors in assessing student achievement. The abilities were artefacts, reflection/critique, use of multimedia/technology, organisation/ navigation, layout and readability/contents, quality of writing and proofreading (originality/grammar/vocabulary/citation), written and oral communication, portfolio/ documentation compilation and mechanic/ quantitative method. To produce a complete, systematic and detail assessment framework, further research needs to be conducted.

INTRODUCTION

ePortfolio has been used worldwide as an assessment tool in higher education. The increase in the use of the ePortfolio, supported by the rapid development of Information and Communication Technology (ICT), allows peoples to access information and communicate online. Nowadays, almost all people including old citizens have their own social networking site, for example, Facebook. In addition, many have created their own websites or pages to share their work and promote and sell their products online. Now, ICT has been integrated in education through the implementation of the ePortfolio as an assessment tool in universities. This paper seeks to review the implementation of the ePortfolio as an assessment tool and the importance of the ePortfolio in improving student knowledge and achievement. The literature review in this paper focusses on the theories and previous research on the implementation of the ePortfolio in universities around the world. The website survey of specific universities aimed at determining the assessment method of the ePortfolio. According to Shada et al. (2011), a portfolio contains a selection of a student's work compiled over a period of time and is used for assessing performance or progress. Most traditional portfolios are presented in hard copy as documents. The ePortfolio is a digitised collection of artefacts, including demonstration, resources and accomplishments that represent an individual, group, community, organisation or institution (Lorenzo & Ittelson, 2005). Furthermore, Ramirez (2011) described the ePortfolio as an eclectic, ultra-accessible theatrical area that enables students to create, rehearse and present themselves. In addition, Jarrot and Gambrel (2011) stated that the ePortfolio is a platform to demonstrate students' achievement. Thus, this research concludes that the ePortfolio is a platform which students may create, rehearse and present to demonstrate their achievement through a digital collection of their works. The collection can be uploaded on a website or other electronic medium that comprises text-based, graphic or multimedia elements (Lorenzo & Ittelson, 2005). The aims of this research were to determine the features of the ePortfolio as a virtual marketing tool and to analyse the criteria of the ePortfolio assessment method that is implemented in universities.

METHODOLOGY

The research methodology of this study involved two techniques, namely, the intensive literature review and a websites survey. An intensive literature review aimed to understand the concept of the ePortfolio and to collect all the theories related to the ePortfolio from previous research. The main sources for the literature review were from published journals, especially the International Journal of ePortfolio.

This survey was conducted on various universities' websites and focussed on universities in the United States of America (USA). However, there were limitations as many universities do not reveal information about assessment method on their websites. Only a few universities provided sufficient information on their assessment methods. Six universities were chosen to demonstrate the criteria of the ePortfolio assessment method. The universities were Clemson University, University of Wisconsin-Stout, Boston University-College of General Studies, Loyola University Chicago, San Francisco State University and Draka University. The data from the websites survey were analysed and compared. Then, the rubrics and scoring scale obtained from the survey were integrated to determine and develop the assessment method. A new assessment scale for student achievement was then suggested based on this survey.

DISCUSSION

The ePortfolio as a Virtual Assessment Tool

The ePortfolio needs to be assessed in order to support student learning (Jarrot & Gambrel, 2011). Thus, it is important to know the criteria of assessments to evaluate student ePortfolios. This assessment will encourage students to produce a good ePortfolio that will benefit them in their future working life. The information gathered from each university is explained below.

Clemson University. The information obtained from the survey of the Clemson University website (http://www.clemson.edu/) was related to the scoring system. A review of the ePortfolio scoring system adopted by Clemson University found that there were five scoring scales between 0 and 4 that indicate the levels of acceptance of the artefacts as evidence of student achievement. Table 1 shows the scoring scales and the rubric.

Table 1
ePortfolio Assessment Rubric of Clemson University

Criteria (Score)	0	1	2	3	4
Level of acceptance of the artefacts	Inappropriate artefact; must be replaced	The artefact doesn't meet the competency, but with some revision it may	The artefact is a good demonstration of the competency	The artefact is a very good demonstration of the competency	The artefact is an excellent demonstration of the competency.
TOTAL RATING					

In Table 1, the artefacts that scored '2' and above are considered acceptable while the artefacts that obtained a score of '0' and '1' must be replaced and revised, respectively. These scoring scales can be the benchmark for student achievement and competencies. However, detailed information on the assessment implemented in Clemson University is limited.

University of Wisconsin-Stout. The survey of the University of Wisconsin-Stout website (www.uwstout.edu) found the assessment rubric for students' ePortfolio. The rubric is based on seven assessment criteria with a certain weightage. The assessment criteria are Selection of Artefacts, Reflection/Critique, Use of Multimedia, Citations, Navigation, Layout and Readability and Quality of Writing and Proofreading. Table 2 shows the simplified ePortfolio assessment rubric adopted by the University of Wisconsin.

Table 2
ePortfolio Assessment Rubric of the University of Wisconsin

Criteria (Weightage)	Unsatisfactory – 0%	Limited – 80%	Proficient – 90%	Exemplary – 100%	Rating
Selection of Artefacts (40%)					
Reflection/Critique (30%)					
Use of Multimedia (10%)					
Citation (5%)					
Navigation (5%)					
Layout and Readability (5%)					
Quality of Writing and Proofreading (5%)					
TOTAL RATING					

This rubric provides weightage according to the importance of the criteria. For example, the most important criterion, 'Selection of Artefacts' is given the highest weightage (40%). Every criterion has its own rating for assessing students' competency level. The rating value for each criterion must be added to get the total rating for students' achievement. For every criterion, there are four levels of achievement such as unsatisfactory, limited, proficient and exemplary. However, there was limited information about how to assess student's achievement according to these levels.

Boston University (College of General Studies). The third survey was conducted on College of General Studies, Boston University. The information gathered from this survey completed the two previous surveys. The rubric had set seven abilities that were to be assessed. The following is a list of abilities set by the College of General Studies, Boston University:

i.   Written and oral communication
ii. Gathering, analysing and documenting information
iii. Awareness of specific historical, literary and cultural contexts

iv. Rhetorical and aesthetic conventions
v.   Critical thinking and perspective-taking
vi. Integrative and applied learning
vii. Quantitative methods

All these abilities are very important for producing quality students able to compete in the workplace. Therefore, these abilities should be evaluated in assessing students' competency and achievement.

Loyola University Chicago. The fourth survey conducted on Loyola University Chicago (www.luc.edu) found the assessment rubric for students' ePortfolio. This rubric is used to ensure that outcomes for engaged learning are being met through the development of work compiled in the student's ePortfolio. The rubric is based on three criteria, namely, synthesis through reflection, relate experience to development and connect engaged learning to Loyola University Chicago's mission. Table 3 shows the simplified ePortfolio assessment rubric adopted by Loyola University Chicago.

Table 3
ePortfolio Assessment Rubric of Loyola University Chicago

Criteria (Weightage)	Unsatisfactory – 0%	Limited – 80%	Proficient – 90%	Exemplary – 100%	Rating
Selection of Artefacts (40%)					
Reflection/Critique (30%)					
Use of Multimedia (10%)					
Citation (5%)					
Navigation (5%)					
Layout and Readability (5%)					
Quality of Writing and Proofreading (5%)					
TOTAL RATING					

This rubric provides the three important criteria for evaluating students' ePortfolio. Every criterion has its own rating for assessing students' competency level. The rating value for each criterion must be added to get the total rating for students' achievement. For every criterion, there are three levels of achievement such as 'does not meet/partially meets expectation', 'meets expectations' and 'exceeds expectations'. However, there is still limited information about how to assess student's achievement according to these levels.

San Francisco State University. The fifth survey, conducted on San Francisco State University (www.sfsu.edu), also found the assessment rubric for students' ePortfolio.

The rubric developed by this university is for assessing the use of the ePortfolio for assessing programme outcomes. There are two versions of the rubric used to evaluate students' ePortfolio in this university. The first version has five criteria, namely, portfolio requirement, creative use of technology, artefacts, organisation and writing and reflection. For every criterion, there are four levels of achievement: poor, fair, good and exceptional. Table 4 shows the first version of the ePortfolio assessment rubric adopted by San Francisco State University.

Table 4
ePortfolio Assessment Rubric of San Francisco State University (First Version)

Criteria	Poor	Fair	Good	Exceptional
Portfolio requirement				
Creative use of technology				
Artefacts				
Organisation and Writing				
Reflection				

The second version of the ePortfolio rubric assessment highlighted five criteria with points to evaluate students' ePortfolio. The criteria are in terms of technology use, personal reflection, portfolio construction and management, student product content choice and organisation or mechanics. Each criterion has four levels of achievement: beginning, acceptable, effective and exceptional. Table 5 shows the second version of the ePortfolio assessment rubric adopted by San Francisco State University.

Table 5
ePortfolio Assessment Rubric of San Francisco State University (Second Version)

Criteria	Beginning	Acceptable	Effective	Exceptional
Technology use (20 points)				
Personal reflection (20 points)				
Portfolio construction and management				
Student product content choice (20 points)				
Organisation or mechanics (20 points)				

The second version of the rubric provides the same weightage of points, that is, 20 points for each criterion. This means that all the criteria are equally important in assessing students' ePortfolio. However, there is still limited information in both versions of the rubric on how to assess students' achievement according to the stated levels.

Draka University. The sixth survey was conducted on Draka University. The information gathered from this survey completed the previous surveys. The rubric has five abilities for assessment. The abilities are content and vocabulary, grammatical accuracy, organisation, originality and mechanics. Table 6 shows the simplified ePortfolio assessment rubric adopted by Draka University.

Table 6
ePortfolio Assessment Rubric of Draka University

Criteria/Grade	A	B	C	D	Comment
Content and vocabulary (45 marks)					
Grammatical accuracy (20 marks)					
Organisation (15 marks)					
Originality (15 marks)					
Mechanics (5 marks)					
Total Marks					

This rubric provides weightage according to the importance of the criteria. For example, the most important criterion, 'content and vocabulary', is given the highest weightage (45 marks). Every criterion has its own rating by assessing students' competency level. The rating value for each criterion must be added to get the total rating of students' achievement. For every criterion, there are four levels of achievement such as Grade A, Grade B, Grade C and Grade D. However, there is still limited information on how to assess students' achievement according to these levels.

Integration of the Rubrics and Scoring Scales (Proposed Framework)

Based on the rubrics and scoring scales used by the six universities, this paper analyses the important criteria (based on comparison analysis) that need to be included in ePortfolio rubric criteria and the method of rubric assessment (refer to Table 7).

Table 7
Comparison Analysis of the Important Criteria in ePortfolio Rubric Assessment

No.	Selection of Criteria	Clemson University	University of Wisconsin-Stout	Boston University	Loyola University Chicago	San Francisco State University (1st ver.)	San Francisco State University (2nd ver.)	Draka University	TOTAL
1	Artefacts	/	/			/	/		4
2	Reflection/Critique		/		/	/	/		4
3	Use of Multimedia/Technology		/			/	/		3
4	Organisation/Navigation		/			/	/	/	4
5	Layout and readability (Content)		/				/	/	3
6	Quality of writing and proofreading (originality/grammar/vocabulary/citation)		/					/	2
7	Written and oral communication			/		/			2
8	Portfolio/Documentation compilation			/		/	/		3
9	Awareness of historical/literacy/cultural context			/					1
10	Rhetorical and aesthetic			/					1
11	Critical thinking			/					1
12	Integration and application			/					1
13	Mechanic/Quantitative method			/			/	/	3
14	Experience				/				1

The comparison analysis seen in Table 7 shows that there are nine important criteria that need to be included in ePortfolio assessment, namely:

a) Selection of artefacts
b) Reflection/Critique
c) Use of multimedia/technology
d) Organisation/Navigation
e) Layout and readability/Content
f) Quality of writing and proofreading (originality/grammar/vocabulary/citation)
g) Written and oral communication
h) Portfolio/documentation compilation
i) Mechanic/Quantitative method

The other criteria such as awareness of historical/literacy/cultural context, rhetorical and aesthetic, critical thinking,

integration and application and experience are not important in ePortfolio assessment. Based on the analysis, these items only appear once. It can be concluded that the frequency of importance is low. There were four methods of rubric assessment that were identified from the surveys of the six universities. This is shown in Table 8.

Table 8
Integration of Rubric Assessment from the Six American Universities

No.	Method of Rubric Assessment	Rubric Value/Descriptions									
1	Percentage (%)	0 - 9	10 - 19	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 - 100
2	Scoring Scale	0	1		2			3		4	
3	Grade	D						C	B	A	
4	Achievement	Beginning		Acceptable		Effective			Exceptional		
		Poor		Fair		Good			Exceptional		
		Does Not Meet Expectation		Meets Expectation		Exceeds Expectations					
		Does Not Meet Competency		Good		Excellent Demonstration			Very Good Demonstration		

This research concluded that the integration of both rubrics and scoring scale is able to assess students' competency holistically. The rubric from University of Wisconsin, San Francisco University (version 2) and Draka University are very useful for determining students' competency as it has weightage to determine the most important criterion in the ePortfolio. At the same time, the nine abilities that were identified above should be determined, especially 'Selection of Artefacts', 'Reflection/Critique' and 'Organisation/Navigation'. The scoring scale would then classify students' achievement based on the rating obtained using the rubric (see Table 9).

Table 9
Scoring Scale Based on Rubric Rating (Suggestion)

	Total Rating (%) – From Rubric				
	0-50	51-70	71-80	81-90	91-100
Scoring Scale	0	1	2	3	4
Achievement	No mastery	Developing	Competent	Proficient	Excellent

Based on Table 9, an artefact is considered acceptable only when it obtains at least 71% of the rating (Scale=2). This meets the requirement set by Clemson University. This score indicates that students must really master what they have learnt and how to use what they have learnt. This compels students to improve their soft skills to obtain a particular rubric rating. This encourages student involvement in activities and enables them to improve in both academic and co-curricular activities. However, this is only a suggestion needs further research before it can be verified.

CONCLUSION

The implementation of the ePortfolio is very useful for improving the process of learning at the higher educational level. It is supported by the educational goal of producing 'balanced' students. The ePortfolio not only facilitates assessment of students holistically, it also encourages students to learn new skills that are not available in the classroom, especially those related to using Web 2.0 tools. These are skills that are usually acquired only through experience, that is, from engaging in activities that require the skills. To create a good ePortfolio and get a good grade, students must acquire all these skills. Therefore, the implementation of ePortfolio will produce proactive students that participate in various activities in their learning processes. From a survey of several websites, we found that the assessment of students' ePortfolio is a holistic approach for evaluating students' knowledge and skills. Thus, a systematic assessment method/framework must be developed. Findings from this survey revealed seven abilities that should be assessed and the assessment rubric and scoring scale for determining students' achievement. The integration of the assessment rubric and scoring scale with the abilities to derive the determinant factors for assessment of student achievement is our suggestion of a new assessment system.

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