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Development and Validation of E-Portfolios: The UAE Pre-service Teachers' Experiences

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Research has indicated the importance of evaluating the experiences related to developing e-portfolios (electronic portfolio) to contribute to the overall excellence in teaching and learning. Researchers (instructors) of the present study used an exit e-portfolios, a questionnaire and follow up interviews to describe development and evaluation of e-portfolios with teacher education graduates in their final capstone experience at a major UAE (United Arab Emirates) national university. There is not any such research study conducted in the UAE and there are few studies conducted, in the topic, internationally. This study described the process of developing an e-portfolio and examined its validity and participants' perceptions to assess teaching performance in the UAE. E-portfolios and surveys of 67 pre-service teachers were included in the analysis and findings. A questionnaire was developed by the authors to examine common perceptions. Analyses of quantitative and qualitative data were presented. A major result indicated that the use of e-portfolio is considered as a pragmatic vehicle to assess pre-service teachers' performance and evaluate teacher education programs.

Keywords: e-portfolios (electronic portfolio), pre-service teachers, reflective narratives, assessment and evaluation, capstone

Introduction and Background

The standard-based, performance-based assessment and curricula have increasingly been emphasized on schools in many parts of the world. The United States have national standards of technology as well as for various teaching subjects that provided accountability measures that impacted teaching and learning. Teacher education programs ought to be responsive to the direction of performance education. Urgently, in the developing countries, such as UAE, there is even greater need to introduce and implement this direction to provide quality education to its children and compete globally. It has been reported that e-portfolios (electronic portfolio), as performance assessment, differ from the traditional assessment in that they are broader in scope and more authentic (Barrett, 2000; Campbell, Melenyzer, Nettles, & Wyman, 2000; Forawi & Liang, 2005; Zawacki-Richter, Hanft, & Bäcker, 2011). In using new technologies, such as the portfolio, the assumption seems to be that we can substitute one medium for another—keeping the benefits of traditional print formats while adding a host of new conveniences. In a previous research study (Forawi & Wonderwell, 2003), it was found that pre-service teachers' learning and teaching skills have been impacted by use of e-portfolios.

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Participants of that study developed understanding of learned materials and technology use through their portfolio's reflective narratives. They were able to show a progress in their learning and readiness to become teachers.

The past experiences with innovative technologies would suggest that one technology cannot be so easily swapped for another. The introduction of a new tool into human activity often changes that activity in ways unanticipated and sometimes profound (Barrett, 2003; Chang & Lee, 2010; Forawi & Wonderwell, 2003; Irving & Bell, 2004; Pan, Lau, & Lai, 2010). Yancey (2009) indicated that the reported benefits of the e-portfolio development process are similar to those that have been recorded for developing the hard-copy portfolio, but the enhanced medium offers additional ways for developers to display unique talents and abilities. The rapid movement towards all forms of Web-based communication makes it likely that, in the future, this particular electronic medium will play an important role in the communication of teacher knowledge. However, we know very little about the implications of using the Web for portfolios.

As suggested by Barrett (2003) that the use of e-portfolios helps incorporate technology into K-12's learning and allow student teachers to share their work with peers. However, she added that a portfolio without standards is just like a multimedia presentation, or a fancy resume or a digital scrapbook. There is a great need to address whether the experience of creating an e-portfolio contributes to the development of reflection and overall teaching excellence, and if so, how this improvement occurs. Research indicated that e-portfolios are robust with many purposes which can be for learning, assessment and employment (Barrett, 2003; Bhattacharya, 2001; Chuang, 2010). The flexibility of the Web, video streams, animations, Flash, Splash and other programs provide the portfolio developer with multiple tools to present her/his artifacts and reflections. There is a lack of research on developing a valid and reliable rubric to measure students' experiences with portfolios. The present study investigated use of portfolios with senior teacher education program with the use of rubric that is designed to assess students' experiences with portfolios and provide evaluative score for their graduation.

In another study, Zawacki-Richter et al. (2011) provided another example of the effective use of programmatic portfolio. It investigated an Internet-based advanced studies course to show how the portfolio method, as a competence-based form of examination, can be integrated in a blended learning design. Within the framework of a qualitative analysis of project portfolios, the study examined which competencies are documented and how students reflected on their competence development process using portfolios. Also, Chuang's (2010) study explored how the use of weblogs within the portfolio framework affected portfolio development of student teachers and how the WBEP (Weblog-based e-portfolio) shaped student teachers' reflective practice during the student teaching practicum in Taiwan. This study further stated the two most prominent features of the WBEP platform on participants' reflective practice, the personal editorship and dialogues with others. Additionally, blog publicity promoted mandated dossier-like portfolios with which to evaluate performance with respect to external evaluation requirements.

The purposes of this study were to: (1) describe the process of developing an e-portfolio for the UAE teacher education programs; (2) find out relationships of the use of portfolio with the other program variables; and (3) examine the UAE (United Arab Emirates) pre-service science teachers' perceptions regarding their performance through the use of e-portfolios. The assumption is that if e-portfolios were to be used by pre-service teachers, they need to be successful in accomplishing their goals, worth the time spent in creating them and advance learning and completion of programs.

Methods

Participants and Survey

Participants were 67 female pre-service teachers at a national UAE University who were enrolled in their last course in the program, Capstone experiences. Among the 67 pre-service, 37 were in the Arabic section, 10 were in the early childhood section, and nine were in the science section and 11 were in the other sections, namely, Islamic education, math and english. A survey was developed by researchers to include aspects related to the e-portfolio development, usefulness and experience gained to adequately provide insight into participating pre-services' perceptions. Twenty items were included, in additional to 11 sub-items that were purposefully presented to reflect good practice and theory in a five-point Likert scale. The three authors used their practical and research experience regarding portfolios to develop a local survey that meant to be appropriate for the purpose of this study and applicable to UAE pre-service teachers.

Capstone Course

This class provides a comprehensive experience that supports students' student teaching experience and ensures success in completing their teacher education programs. The Capstone class is taken at the end of the students' education programs along with the student teaching experience during the last semester of study. Each student is required to complete three main assignments: (1) action research; (2) professional exam; and (3) e-portfolio. The e-portfolio aims to provide students with an authentic experience that compile knowledge, skills and dispositions learned in the program.

In this e-portfolio task, students are expected to create an e-portfolio organized around the UAE University's College of Education conceptual framework elements. The portfolio is submitted to instructors as a Website. The portfolio is a collection of the works already completed in this class and/or other classes taken by the student. The portfolio is the required portfolio that students have to submit to the college at different stages in the program including the Capstone course. Students can use any Web-authoring program to create this portfolio, such as FrontPage and Dreamweaver.

Data Analysis and Results

In this study, data were collected and analyzed to provide insights into three major purposes, stated above, regarding pre-service teachers' perceptions and development of e-portfolios in impacting program completion. Students' e-portfolios, graded results and survey responses were included in the data analysis of the study. Statistical analyses, Pearson correlations and descriptive responses were conducted using SPSS (statistical package for social sciences)-14, which have provided insights into the first two purposes of the study. Five random samples of student e-portfolios were closely reviewed, along with follow-up interviews to some participants, to give insights into the third purpose of the study, by conducting qualitative analyses with the use of reflective narratives and qualitative survey qualitative responses.

Statistical Analyses

Responses of the 67 students were analyzed using Pearson correlation to indicate the following positive correlations, as stated in Table 1. Results indicated moderate positive correlations that pre-service teachers related the following: hours spent in completing the e-portfolio with major, capstone grade, GPA (grade point average), with years using computers and daily hours spent in using computers. Their grades on the e-portfolio assignment was weakly correlated with hours spent in completing portfolio, overall capstone grade and daily

hours spent using computers. These results showed the important factors that influenced participating pre-service students when completing the e-portfolio assignment. Students majoring in science, Arabic, early childhood and lastly others (few Islamic, English and math education majors) positively (Pearson correlations at the significance level of 0.01, (two-tailed) impacted their responses regarding hours spent completing e-portfolio. Equally, higher capstone grade (A, B and C), higher GPA (more than three, two to three and less than two), more years in using computers (more than 10 years, five to nine years and less than five years) and daily hours spent using computers in general (more than four hours, two to four hours and less than two hours) were positively found to impact participants' responses regarding hours spent completing the e-portfolio (Pearson correlations at the significance level of 0.05, (two-tailed). Others factors affected completing the e-portfolio with lesser degree (not statistically significant as shown in Table 1). These responses that were not statistically correlated may suggest lack of influence of the item or need of further investigation.

Table 1

Correlations of Participants' Responses

	Hrs. completed e-portfolio	Tech grade	Major	GPA	Capstone grade	Years using comp	Daily hours comp
Hrs. completed e-portfolio	1	0.072	0.452**	-0.202	0.355**	0.271*	0.366**
Tech grade	0.072	1	-0.147	-0.098	0.022	-0.87	0.120
Major	0.452**	-0.147	1	-0.201	0.225	0.069	0.157
GPA	-0.202	-0.098	-0.201	1	0.048	0.355**	0.179
Capstone grade	0.355**	0.022	0.225	0.048	1	0.010	0.120
Years using computers	0.271*	-0.087	0.069	0.355**	0.010	1	0.793**
Daily use computer	0.366**	0.120	0.157	0.179	0.120	0.793**	1

Notes. ** highly;* moderately correlated.

Descriptive statistics on the survey responses were stated in Table 2 to provide insights into participating pre-service teachers' perceptions on the use of e-portfolio. A major goal of the Capstone course is to assist students to successfully present learning took place in their program, showcase accomplishment, reflect on learning and complete authentic assessment. Generally, most of participants have indicated a high mean of each of the survey item ranging between 3.119 and 4.761 to indicate very positive experience about the e-portfolio. Examples of those positive perceptions noted from participants' responses were: Templates provided by the college; increasing my technology skills; giving me new ways to showcase my work; helping me to be creative; and helping using html development sites.

Qualitative Reflective Narratives

Use of repeated review method as in Barrett (2000) with five randomly selected portfolios has indicated the following major themes that the e-portfolio:

(1) Helped students to be prepared for future teaching role;

(2) Increased participants' knowledge of subject;

(3) Increased participants' technology skills;

(4) Was a tool for learning;

(5) Was use of standards was essential in developing it;

(6) Assisted participants to anticipate the reality of future classrooms-technology;

(7) Was a form of self-evaluation and organization;

(8) Assisted in revising previous work for improvement;

(9) Helped participants to see their progress in the program.

Table 2

Descriptive Statistics of Participants' Perceptions

Item—the e-portfolio	Mean	Standard deviation
1. Helps me to think about previous work	4.567	0.722
2. Has made me more of a reflective student	4.417	0.677
3. Has made me more interested in my work	4.432	0.763
4. Increases my technology skills	4.666	0.616
5. Helps me to recognize the quality work I did in the program	4.283	0.917
6. Helps me organize work in the program	4.582	0.631
7. Helps me to check my progress	4.545	0.660
8. Gives me enough space to store all my work	4.575	0.805
9. Gives new ways to showcase work	4.606	0.801
10. Helps me to better understand my work	4.462	0.765
11. I will use it in future	4.462	0.876
12. Helps me improve my academic level	4.373	0.831
13. Helps me to be creative	4.656	0.538
14. Helps me see where I need to do better	4.238	0.836
15. Is easy to use and navigate through	4.223	0.849
16. Allows me to appreciate technology	4.552	0.784
17. Helps me to seek an employment	3.119	1.174
18. Considers an authentic assessment technique	4.462	0.926
19 Does not take long time to prepare:	3.670	1.104
—Templates provided by college	4.761	0.921
—Training and handouts provided by instructor	4.179	0.886
—Full time use of laptop computer	4.597	0.798
—Class sessions in lab	4.268	0.880
—One-on-one meetings with instructor	4.447	0.744
—Internet-based tutorials	4.044	1.174
—Had help from classmates	3.880	1.080

Moreover, the open-ended survey responses and interviews indicated the following major themes. In relation to the UAE, pre-service teachers' perceptions regarding the benefits of their performance through the use of e-portfolio:

(1) Have helped us in documenting our work in a proper way, so to be able to retrieve and revise previous work easily;

(2) Have improved our creative thinking skills;

(3) Have helped us in saving time, effort and resources, such as papers, inks, etc.;

(4) Have helped us in overcoming our shortcomings;

(5) Have improved our skills in using technology and computer programs;

(6) Have given us more flexibility in completing a major assignment;

(7) Have served as a form of self-evaluation and organization;

(8) Have helped us in assessing our progress in the program;

(9) Have helped us in becoming prepared for the future employment and teaching profession;

(10) Have increased our knowledge of our subject;

(11) Have served as a tool for our learning;

(12) Have increased our knowledge of the standards that were essential for developing an e-portfolio;

(13) Have helped us in anticipating the reality of future classrooms-technology;

In relation to the UAE, pre-service teachers' perceptions regarding the constraints and problems that were encountered in preparing their e-portfolios that:

(1) The e-portfolio was difficult at the beginning due mainly to our unfamiliarity;

(2) Not being told early in the program, so as to keep track of our work in earlier courses that needed to be included in the e-portfolio;

(3) Some students lack the ability of using the front page.

In relation to the UAE, pre-service teachers' recommendations that make the experience of preparing the e-portfolios more fruitful for them:

(1) Make pre-service students aware of the e-portfolio requirements as early as possible in their program of study;

(2) Conduct training workshops in using the front-page and other e-portfolios' software;

(3) Give pre-service students more freedom in designing their e-portfolios;

(4) Create a website in the internet for presenting selected e-portfolios, so as to be a source for helping other students.

Above themes support the assumption that e-portfolios help pre-service teachers to be successful in accomplishing their goals, worth the time spent in creating them and advancing learning and completion of their programs. These themes support the quantitative findings and attest to what the literature review indicates regarding students experiences with e-portfolio.

Discussion and Conclusions

The literature review showed a great need for addressing whether the experience of creating an e-portfolio contributes to the development of reflection and teaching. As it was indicated by Yancey (2009) that creating, evidencing, connecting and reflecting involved in e-portfolios engage students in new and beneficial ways—especially when the portfolio provides a space for student informed participation. This is particularly important in a country, such as the UAE where education has shown major developments and has yet need to show similar advancement in use of technology in education (Forawi & balfakih, 2009). Assessment is particularly an area that seen to have made major contribution. Dubai has entered the global spotlight by participating for the first time, in the country, on the TIMSS (Trends of International Math and Science Study) in 2007 and 2011. Participants of this study developed understanding of learned materials and technology use through creating e-portfolios and providing reflective narratives. They were able to show a progress in their learning and readiness to become teachers. Other students acknowledged the fact that, as a result of developing the e-portfolio, they learned new ways to showcase work, became reflective educators and had a deeper understanding for knowledge and skills presented on the assignments and tasks. In a previous research study, it was found out that the use of e-portfolio and writing of reflections increased teaching and learning of science and positively impacted teacher education programs in the USA (Forawi & Liang, 2005). Moreover, a key aspect in that research was investigating e-portfolio science experiences including development and validation

of its rubric. The analyses of the UAE pre-service teachers' reflective narratives indicated a deeper understanding of students learning as well as the course instruction. Overall, the development and use of the e-portfolio allowed pre-service teachers to better understand the tasks submitted to their programs and increased their technology skills. Also it was evident, from this study, how participant learning has improved due to reflecting on it at the portfolio's stage. This study provided valuable results on this regard. However, more studies investigating different populations and factors relating to use of e-portfolios in the UAE are needed.

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