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Technology Learning Impact on Pre-service Teacher Education Candidates After Implementation of a Web-Based E-portfolio

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- *This study examined the role of student competence, attitude, and training on the production of student e-portfolios. Neither student background nor experience had a significant impact on their attitude toward developing an e-portfolio.*

Background
As the demand for technologically competent teachers increases, educator preparation programs are finding it necessary to expand their technology requirements. Some teacher preparation programs are attempting to address this concern by requiring students to develop electronic portfolios (e-portfolios) rather than the hard copy or binder portfolios that have been a mainstay of education majors for well over a decade.

E-portfolios differ from traditional portfolios in that information is collected, saved, and stored in an electronic format (Barrett, 1998). The College of Education at Eastern Kentucky University has been using education portfolios since 1992. Originally, the portfolio was a hard-copy, standards based portfolio, designed around the Kentucky New Teacher Standards. In the summer of 2000, the college embarked on a challenge to move from the paper portfolio to an electronic portfolio (Hyndman & Hyndman, 2005). Today, we have more than 2,000 eportfolios online with more being added every term.

While the implementation process of an e-portfolio at Eastern Kentucky University has required a considerable investment of time and effort on the part of instructors and students in the College of Education, increased technology content knowledge and a positive attitude toward technology use were expected at the start of the program. Issues dealing with production, assistance, and evaluation have arisen over the course of the implementation of this format, and have led to the development of this study.

Statement of Problem
With the requirement for web based e-portfolios, comes the need for basic technology skills in order to build confidence early in the students' programs. If students do not establish a technology base, they tend to struggle with technology throughout their college careers.

This study attempted to answer the following questions: What is the impact of student computer experience and background on student attitudes toward the e-portfolio? Does the category of student (traditional or non-traditional) affect student attitudes toward the e-portfolio? Does the experience gained in initiating an e-portfolio change student attitudes toward developing and using the e-portfolio?

Research Design & Methodology
Sample
The sample for this study consisted of 120 students and three faculty members from EDF203 (Schooling & Society) classes taught during the spring term of 2004. All professional education students in the College of Education at Eastern Kentucky University are required to develop an e-portfolio during their second course (EDF203). Early in the term, the professor conducts one class period in the computer lab to provide students with their initial orientation and training.

Procedures
Nine EDF 203 Schooling & Society classes were selected to participate in this study. The classes were taught by three different professors and each class consisted of between 8 and 25 students. At the beginning of the term, following initial e-portfolio training, all students in the sample were asked to complete the e-portfolio self-assessment survey (Appendix A). During the last week of class all students from the sample group were again asked to complete the e-portfolio self-assessment.

Data Presentation and Discussion
The outcomes of the survey were analyzed and a paired-samples t-test ($p.<.05$) was calculated across

the outcomes of the pre- and post self-assessment surveys.

As Table 1 shows, no significant differences were found between the pre- and post-survey for the first three questions. This was not unexpected, as the course is not a technology course. The primary reason for asking these questions was to assess students' perception of their current technology abilities.

The mean rating for question 2, which asks students about their usage frequency of web-based search engines, was 1.48 on both the pre- and post-survey. The mean rating for question 3 for the pre-survey was 1.70 and the post-survey was 1.76; this question asks students about their use of the internet to do homework.

Question 4 asks students whether they have access to the internet at home; 91% of students indicated that they had access. Question 5 asks students whether they had ever created a web page prior to this class. Thirty-four percent of students answered "yes" to this question.

Question 6 dealt with the students' perceived comfort level with the idea of creating an e-portfolio. Question 6 was scored on a 5 point Likert scale with 1 being Very Comfortable and 5 being Very Uncomfortable. We did expect to see a mean increase from the pre-survey to the post-survey, based on the assumption that the students' experience during this class would help them develop confidence and skills with the required technology and increase their comfort level in producing the e-portfolio. However, the mean pre-survey rating was 2.86, and the mean post-survey rating was 2.84. This difference was not significant at the $p.<.05$ level as reflected in Table 1.

Upon further examination of the data however, a trend was seen within individual classes that seemed to indicate there were some pockets of improvement, which appeared to be associated with the individual instructor's attitudes toward the e-portfolio requirement. This is an area for further study to determine how much impact the instructors' attitude influences the students' perception and value of the e-portfolio.

Question 7 asked students for their preference for producing a portfolio, giving them a choice between an e-portfolio and a hard-copy portfolio. The percentage of students preferring the e-portfolio over the hard copy changed from 55% pre-survey to 51% post-survey. Students seemed to be split evenly between the hard-copy portfolio and the e-portfolio. At the end of the course, there was a slight decrease in the number of students preferring the e-portfolio.

Since all students are creating e-portfolios the issue does not seem to be related with student ability, but rather with their perceived value of the e-portfolio. This would seem to suggest that we are not, at least during this course, persuading students of the e-portfolio's value. This is an area for further study to determine why nearly 50% of students who prefer the hard-copy portfolio at the beginning of the course still prefer the hard-copy after being introduced to the e-portfolio.

Question 8 was used to determine the computer instruction background of the students. Our interest in asking this question was to attempt to identify the students' average level of computer training. Seventy-three percent of the students indicated that they had taken a computer science course. Of those students, the average number of computer science courses for each student was less than two. Most students have at least some course work in computer technology. The question remains as to the relevance of that course work to educational technology and the preparation of an e-portfolio.

Question 9 asked the students for the value they placed on the e-portfolio as it pertains to their program of study. The mean of the post-survey was 2.31, while the mean result of the pre-survey was 2.15. This did show a slight increase in perceived value, but was not significant at the .05 level.

Trends in the comments provided on both the pre- and post-survey responses to questions 10 and 11 seem to focus on fears and specific limitations related to the e-portfolio rather than concerns about students' ability, skills and/or willingness to produce the e-portfolio. For example, some of the common concerns focused on areas such as time, available help, fear of losing work due to computer failure, computer limitations, accessibility to editing the e-portfolio from home, and the like. There were very few concerns expressed that focused on the student's lack of technical ability, value for the e-portfolio, or willingness to create an e-portfolio. Therefore, what is suggested is that students' responses to earlier questions regarding "value" of the e-portfolio may, in fact, have more to do with logistical concerns and specific limitations (such as inability to work from home) than with the value or willingness of students to create an e-portfolio.

Question 12 separates students based on their high school or GED graduation date. Forty-nine percent of the students graduated within the last two years; 40 percent graduated within 2-10 years; and 11 percent graduated more than ten years ago. The responses collected for questions 6 and 9 were separated based on these graduation periods. The t-test run on pre- and post-survey results for these categories of students showed no significant difference at the $p<.05$ level. This indicates there was no difference between the traditional and nontraditional students' perceptions of the e-portfolio.

Conclusion

In a study conducted by Bartlett (2002) at the University of Hawaii, a group of 26 pre-service teachers were used as a test group for the use of electronic portfolios. This study found that the e-portfolio was viewed positively by the students (7.51 on a 10.0 scale). Students also stated that the e-portfolio gave them the opportunity to learn about educational technology and new ways to organize and present data. Unfortunately, we did not see similar positive results in our study.

Our study has shown that introduction of an e-portfolio to professional education students in a single course could be effective. However, the gain in skills and attitude during only one course is minimal. What is concluded from this research is that much support outside of class time is essential and that it appears that to achieve the goal of improved technology skills for professional education students the issue must be addressed across numerous courses of a student's program.

References

Barrett, H. (1998). Strategic questions: what to consider when planning for electronic portfolios. *Learning and Leading with Technology*, 26(2), 6.

Bartlett, A. (2002). Preparing preservice teachers to implement performance assessment and technology through electronic portfolios. *Action in Teacher Education*, 24(1), 90.

Hyndman, S. & Hyndman, J. (2005). Creating an Eportfolio with MS FrontPage: It Doesn't Get Any Easier! *Essays in Education*, Vol. 14, Summer 2005.

Table 1
Dependent Samples t-test on Selected Survey Questions

	Mean*		p
	Pretest	**Posttest**	
Q1. How would you rate your ability to work with computers?	2.25	2.19	p. >.05
Q2. How often do you use a Web-based search engine such as Google, Yahoo, MSN, etc.?	1.48	1.48	p. >.05
Q3. How often do you use the internet as a tool to do homework?	1.70	1.76	p. >.05
Q6. How comfortable are you with the idea of creating an e-portfolio?	2.86	2.84	p. >.05
Q9 What value do you place on the e-portfolio as it pertains to your program?	2.15	2.31	p. >.05
*Mean scores based on a 5 point Likert scale with 1 being high and 5 being low in each category.			

Appendix A
College of Education E-portfolio Student Self-Assessment Survey

1. How would you rate your ability to work with computers? Scale: From 1 (Excellent) to 5 (Poor)						
2. How often do you use a Web-based search engine such as Google, Yahoo, MSN, etc.? Scale: See Q.1.						
3. How often do you use the internet as a tool to do homework? Scale: See Q. 1.						
4. Do you have access to an internet connected computer at home?	Yes	No				
5. Prior to this class, have you ever created a webpage?	Yes	No				
6. How comfortable are you with the idea of creating an e-portfolio? Scale: From 1 (Very Comfortable) to 5 (Very Uncomfortable)						
7. Given the choice, which kind of portfolio would you prefer to produce? E-portfolio? Hard copy (binder) portfolio?						
8. Have you ever taken a computer science course?	Yes	No				
8a. If Yes to 8 above, how many courses?	1	2	3	4	>4	
9. What value do you place on the e-portfolio as it pertains to your program? Scale: From 1 (Very Valuable) to 5 (No Value)						
10. What MOST concerns you about producing an e-portfolio? (Use back of survey if more room is needed)						
11. What LEAST concerns you about producing an e-portfolio? (Use back of survey if more room is needed)						
12. Which of the following categories describes your educational experience? a. High School graduate or GED within last 2 years. b. High School graduate or GED between 2 and 10 years. c. High School graduate or GED more than 10 years ago.						
13. Please provide any additional comments you may have concerning the e-portfolio (use back or additional pages if more space is needed)						