A Practice in Using E-Portfolio in a Higher Education Course Taught at Distance

B. Karaoğlan[1], L. Ertaul[2]

[1]*Ege University, International Computer Institute*
Bornova, Izmir, phone:+90 232 3883232, e-mail:bahar.karaoglan@ege.edu.tr
[2]*California State University Eastbay, Department of Math and Computer Science*
Hayward, CA 94542-3001, phone:510 885-3356, e-mail:levent.ertaul@csueastbay.edu

Introduction

The main motivation behind an information society is to fully utilize the opportunities inherent in Information and Communication Technologies (ICT) to foster the quality of knowledge and learning which ensures to bring quality in life and power in competitiveness in versatile and sustainable ways.

Due to globalization of the markets for skills and competencies, increasing number of knowledge workers are assigned to short term tasks. Therefore, the educational institutions need to identify changes and challenges in the research and innovation environment and develop strategies on how to best respond to these changes. Innovation is needed to improve practice, to improve quality, to respond to changing needs of users, to respond to new opportunities and to respond to changing external environment.

In this era there is no doubt that the degree of strength lies on the competitive power of an individual which can only be achieved through "high quality" education that enhances new skills in learning. Actually, the use of the technology and the available tools is limited with the creativity of a person. The ultimate goal in exploiting the available innovative technology in education is to facilitate the acquisition of the ability to self-regulate and monitor one's own learning, thereby developing meta-cognitive awareness and abilities and aptitudes for lifelong learning and learning how to learn [1]. Student-centered instructional strategies (intentional learning, active learning, authentic learning, open learning, cooperative learning, self-direction, learner-autonomy, collaboration, creation of community, self-reflection, meta-cognitive strategies, problem-based approaches, and authentic assessments) commonly discussed in the literature are also discussed within the scope of developmental process of E-Portfolios (EPs). Besides, EPs enable the creation of e-reserves and performance assessment in teaching.

Although creating and using EPs is a built in function in most of educational software, evidence on the impacts of EPs on learning and achievement and other outcomes is sparse. Herman & Winters and Lyons ([2], [3]) concluded that there is not yet systematic data documenting the use of EPs or their long-term consequences. Similarly, Zeichner & Wray [4] noted: "Despite the current popularity of teaching portfolios, there have been very few systematic studies of the nature and consequences of their use for either assessment or development purposes" (p. 615). And finally, Carney [5] concluded, "Electronic portfolios show promise for enhancing learning, but if we fail to critically evaluate our uses of the device, we may find that they will go the way of Papert's Logo turtles and become yet another educational fad—an innovation poorly understood and often implemented in ways contrary to its theoretical underpinnings" (p.4).

The Electronic Portfolio Action Committee (EPAC) has been investigating uses of EP tools for years. MIT's and Stanford University's Open Knowledge Initiative (OKI) and The Carnegie Foundation have been active within EPAC, as have a number of universities. BlackBoard, WebCT, SCT, Nuventive, Concord, and McGraw-Hill are some of the companies that are already on the way of developing electronic portfolio tools to hold up a good place in the market.

The aim of this study is to explore recent research and developments on the use of EPs as an e-learning tool in innovative learning and instruction and to transfer an experience in using EP in a higher education engineering course tought at distance. In the following sections a brief overview on EPs, outline of the practice in using EP, results and conclusions are given.

E-portfolios

Portfolios consist of student work that display mastery of skill of the task and expression [6]. Educators in the Northwest, through the Northwest Evaluation Association (1990) defined portfolios as " a purposeful collection of student work that exhibits the student's efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for judging merit, and evidence of student self reflection" (in [7]). EDUCAUSE NLII (National Learning Infrastructure Initiative) defines portfolio as "a collection of authentic and diverse evidence, drawn from a larger archive, that represents what a person or organization has learned over time, on which the person

or organization has reflected, designed for presentation to one or more audiences for a particular rhetorical purpose." [8].

Traditional portfolios has the disadvantage of organizing and retrieving of the learning material. EPs overcome this disadvantage by digitazation where learning material can be accessed through network, managed by database methods and materials in various formats (video, audio, image, animation, slides, etc.) can easily be integrated [9]. In addition, internet facilitates the communication of the material which provides an opportunity to observe, interact with and learn from each other.

From the definitions above we see that the learning development of an individual and assessment of learning can be achieved by creating and examining portfolios where related "*authentic and diverse elements*" are collected and organized purposefully. Creating an EP facilitates learning by providing an environment of communicating, demonstrating and organizing. Meanwhile it is a holistic assessment tool because its content reflects the overall understanding about the subject. Authenticity is the nature of the task and context in which the assessment occurs is relevant and represents "real world" problems or issues" [10]. Winking [11] also points out the role of authenticity and states "meaningful engaged learning" supports alternative assessments which require higher order thinking skills so that students can solve real-life related problems. Danielson and Aburtyn [12] states 5 steps in the development of portfolios as 1) collection: collecting artifacts depending on purpose, audience, and the future use; 2) selection: selecting artifacts that reflect the learning objectives; 3) reflection: stating the impact on one's learning; 4) projection: based on learning setting goals for the future and 5) presentation: structuring and publishing the selected artifacts to communicate with others (Fig. 1).

As the practice of using portfolios in education increased, the focus of research turned from the final product, portfolio itself, to the value of the development process on the change of behaviors of learners [13]. Deciding what is to be included in the portfolio, why, how it should be displayed to reflect the best understanding simulates awareness of one's learning. Schipper and Rossi [13] lists the major impacts of using EP on student behavior as follows: students

- take more responsibility for their learning,
- actively engage in the learning process,
- develop and express a new self-awareness and think about their own thinking,
- grow in confidence and self esteem and
- set goals for future learning.

Creating portfolios provide means of enhancing the students' reflections and evaluation of their own learning and teaching ([7], [14]) and engage students in the process of knowledge translation. In an online course given at continuous medical education students responded to using EPs as "A powerfull feature has been our ability to identify additional educational needs, and quickly add corresponding content online." [15].
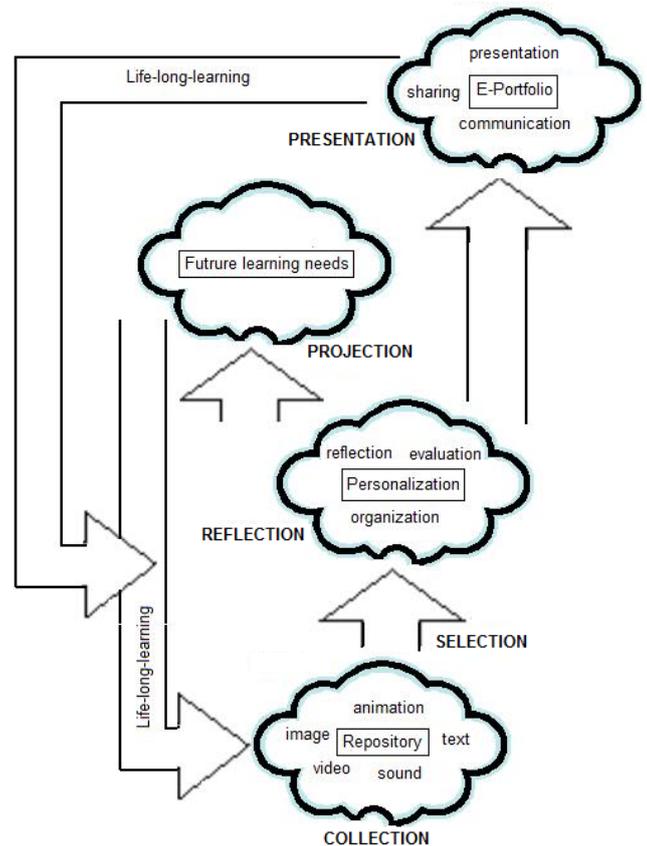

Fig. 1. Five steps in the development process of an EP

In the "Learning Futures" blog (http://www.learningfutures.eu/2009/01/about-eportfolio-definitions.html) the EP is defined as "not the mere repository of good students work and reflection, but the repository of knowledge used by others. The EP is not just a demonstration of one's learning but the resource used by others to learn, the use by others being the evidence of learning. The 'learning to learn' mantra should probably be replaced by 'learning to share' or 'learning to teach'." Hence, EP is a personal and community knowledge management tool, as well as digital identity construction tool.

EP is a valuable tool for assessment as well. Assessment, learning and teaching are delicately interwowen in it. In order to increase the effectiveness of performance (EP) assessment, instructors need to pay attention to the following points [10]:

- Selecting assessment tasks that are clearly aligned or connected to what has been taught.
- Sharing the scoring criteria for the assessment task with students prior to working on the task. It is helpful to use rubrics to assess the quality of the work.
- Providing students with clear statements of standards and/or several models of acceptable performances before they attempt a task.
- Encouraging students to complete self-assessments of their performances.
- Interpreting students' performances by comparing them to standards that are developmentally

appropriate, as well as to other students' performances.

Design of the course and Results

"Network Security" course in the "Department of Math and Computer Science" of California State University Eastbay is deliverd online over the Blackboard arhitecture which is adapted as the learning and teaching infrasturcture througout the university. The course material consists of video lectures, transcripts of the videos, assignments and the syllabus. Interaction among the students and the lecturer are by email, discussion forums, WIKI and EP comments. Within the scope of this study the use of EPs in an online course is evaluated qualitatively from achievement assessment and learning support perspectives.

22 students, 6 of which are undergraduate and 15 of which are graduate are enrolled in the course. The students are provided with a brief introduction on "What is an EP and what are the benefits of creating EPs". They are clearly informed about the rubrics for assessment. The students are asked to include a cover letter, table of contents, statement of the criterion for chosing each artifact and what they have learnt from it. As the last item they are asked to write a brief evaluation of their own learning in the course and the impact of using an EP in this course. Answers to the questions related to the attitudes of students in using EPs, the impression of the instructor and the value of EP as a learning and assessment tool are given in the following paragraphs.

2 of the students didn't participate at all. Rest of the students (20) provided table of contents in their eportfolios. 18 of the students wrote a cover sheet. In their cover pages they explained what they included and how they organized this material. Some quotations from the cover pages are as follows:

G13 (grad #13): *"Since the topic of network security is very vast, I have organized the contents of this portfolio roughly by chapters of our text book that we used for the course. For each chapter I have summarized the main idea and included some interesting links for additional information on that topic. While I was putting together this portfolio I came across many interesting websites and links, articles online. These helped me gather more information on specific topics and creating web page content for them made me sort the information logically."*

U5(undergrad #5) *".... Initially I wanted to create a Portfolio where I can display the chapter topics and discuss the related contents (My Chapter 2 link is an example). On the way, I considered this as an opportunity to try to create a portfolio which can be resourceful for starting student interested in security. So, I have tried my best to display the contents and links that piqued interest and also aid the course content while being resourceful for any new student on security.*

You are most welcome to suggest any modifications, comment on errors, ask questions(if I do not know the answer right ahead, I will do some research/enquiry and try to let you know ASAP), and of course you are more than welcome to appreciate if you find something good and interesting! Thank you for visiting and hope you find my contents useful.
Every Minute Wasted was an Opportunity we let go of learning something new, thinking something new and creating something new." - My own Philosophy. :)"

None of the students stated the criterion for chosing an artifact they have included in their EP and what they have learnt from it. Some excerpts for the evaluation of the students of their own learning in the course and the impact of using an EP in this course.

G5: *"It help me to explore the subject beyond the syllabus for the exams only, I spent lot of time reading articles and searching other new things on web, which ultimately help me to get a broader understanding of the course. ... working on e-portfolio helps me to figure out the area in which I want to work ahead Cryptography. It also helps to improve the writing skills as you are presenting yourself through your portfolio.*

G7: *"As I said, creating the portfolio has been the most time consuming work but yet greatest piece of work i have ever made. In creating the Hyper-text Markup Language (HTML) version of this portfolio, I stretched myself from a technological standpoint as well. Prior to creating the portfolio, I had limited experience with HTML design. During the process, I became intimately familiar with structuring an HTML document, incorporating images and other files, and including artifacts in the document.*
All in all, I am very satisfied with the information and skills I have learned in this course"

As far as Instructor impression is concerned, Instructor found some difficulties devoting his time to assess EPs since EPs require more instructor time. The other point is that during this course students definitely required clearer guidance and more time about the content and the design of EPs. In this class, for almost the first 4 weeks (after the 2 chapters covered) only 4 of the 22 students prepared their EPs for the related chapters. There is a tendency among students to prepare EPs as if it's a term project that they think they should complete close to the end of the term. To avoid this, Instructor has to evaluate EPs frequently and offer feedback to students.

During this course, Instructor expected students' comments for other students' EPs. But unfortunately only 1 student out of 22 wrote a comment. It seems that instructor has to find a way to encourage students to check other students' EPs. One way to do this is to make students grade each others EPs.

Conclusions

This study aimed at gaining experience and understanding the practical issues in applying EPs in an online course and consequently develop strategies that will enable the anticipated outcomes in practice.

As can be understood from the excerps in the above section, most of the students mentioned that they put special effort in chosing and presenting the material in their EP to make it understandable and resourceful to others. They welcomed any comments and questions. Some students said that they gained a broader understanding of the subject and figured out the area in which they want to work in the future while they searched the internet. Some students also pointed out that while working on their EP they enhanced their writing skills and technical skills on creating web pages. So, besides the educational purposes the skills acquired during the creaion of EPs can be considered within the scope of much needed social skills, like decision-making, conflict management, and communication skills of the information society.

Because of their cumulative nature, portfolios require a lot of input and responsibility from the student. Although most of the students wanted their friends to comment on their EP they did not comment on others'. As the instructor noted, the students created their EPs towards the end of the semester. Since it is the natural habit of students not to spend time and effort on assignments unless they are forced to; some ways of urging and guidance must be provided. In the coming practice the instructor is planning to grade the EPs and participations (comments, discussions, etc.) every two weeks and organize a contest to chose the best EP at the end of the semester.

The instructor also noted that the assessment of EPs demand a great deal of time commitment, which yields a practicality problem [16]. But, there is a hope that it pays back as a good investment in facilitating a continuous learning from the perspective of a learner and as giving the general picture of performance from the teacher perspective. During the process of creating EPs regulating and monitoring of learning: description of the learning path, increase in awareness of strengths and weaknesses, taking responsibility, increase in autonomy and like yields development of meta-cognitive awareness and abilities and aptitudes for lifelong learning and learning how to learn [1].

References

1. **Abrami, P.C..& Barrett, H.** Directions for research and development on electronic portfolios. *Canadian Journal of Learning and Technology*, 2005, *31 (3)*
2. **Herman, J.L., & Winters, L.** Portfolio research: A slim collection. *Educational Leadership,1994, 52*, 48–55.
3. **Lyons, N**. *With portfolio in hand: Validating the new teacher professionalism.* New York: Teachers College Press, 1998
4. **Zeichner, K. & Wray, S.** The teaching portfolio in US teacher education programs: what we know and what we need to know. *Teaching and Teacher Education, 17*, 2001, 613–621.
5. **Carney, J.** *What kind of electronic portfolio research do we need?* Paper presented at the annual meeting of the Society for Information Technology and Teacher Education, 2005
6. **Kulieke, M., Bakker, J., Collins, C., Fennimore, T., Fine, C.,Herman, J., Jones, B.F., Raack, L, & Tinzmann, M.B.** "Why Should Assessment be Based on a Vision of Learning?" Copyright, © North Central Regional Educational Laboratory, 1990.
7. **Barrett, H. C.** Electronic Portfolios – A chapter in *Educational Technology: An Encyclopedia* to be published by ABC-CLIO, 2001. Retrieved november 26, 2009, from http://www.helenbarrett.com/portfolios/encyclopediaentry.htm
8. **IMS** *Best Practice and Implementation Guide.* IMS Global Learning Consortium, Inc. 2005, http://www.insglobal.org/ep/epv1p0/imsep_bestv1p0.html
9. **Zhi-Feng Liu, E**. "Developing a personal and group-based learning portfolio system",*British Journal of Educational Technology, 2007, 38, 6,* 1117-1121.
10. **Elliott, S.N.** Creating Meaningful Performance Assessments. *ERIC Digest E531, 1995*
11. **Winking, D.** Critical issue: Ensuring equity with alternative assessments [online document]. NCREL (North Central Regional Educational Laboratory), Oak Brook: IL 1995 http://www.ncrel.org/sdrs/areas/issues/methods/assment/as800.htm
12. **Danielson, C. L. Abrutyn.** *An Introduction to Using Portfolios in the Classroom.* Alexandria: Association for Supervision and Curriculum Development. (quoted in Barrett, Helen C (2000); Barrett, Helen C (2001))
13. **Schipper, B.,Rossi, J.** Portfolios in the Classroom: Tools for Learning and Instruction, Stenhouse Publishers, 1997.
14. **Beck, R. J., Livne, N. L., & Bear, S. L.** Teachers' self-assessment of the effects of formative and summative electronic portfolios on professional development. *European Journal of Teacher Education,2005, 28*(3), 221**.**
15. **Wiecha, J., Barrie, N**., Collaborative Online Learning: A New Approach to Distance CME, *Academic Medicine: September 2002 - Volume 77 - Issue 9 - p 928-929*
16. **Baily, K. M**. *Learning about Language Assessment: Dilemmas, Decisions, and Directions*. Boston: Heinle & Heinle Publishers, 1998.

April 25th 2010

The aim of this study is to explore recent research and developments on using e-portfolios (EP) in innovative learning and instruction and to transfer an experience in using EP in a higher education course tought at distance. Computer Network Security course will be deliverd online over the Blackboard arhitecture. The course material consists of video lectures, transcripts of the videos, assignments and the syllabus. Interactions among the students and the lecturer are via email, discussion forums and EP comments. EPs will be evaluated from achievement assessment and learning support perspectives. Although creating and using EPs is a built in function in most of educational software, literature related to practices using e-portolios in e-learning in higher education is sparse. Ill. X, bibl. X, tabl. X (in English; abstracts in English, Russian and Lithuanian).