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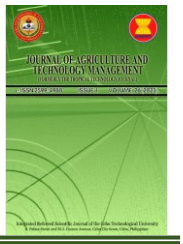

Development and validation of WEPP: UMOST (Web-based Electronic Portfolio Platform: University Marketplace for Skills & Talents)

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ABSTRACT

Portfolios are time-tested and teacher-trusted methods for assessing student learning. It is a tool for the students to keep their hard work. When they graduate they will be able to refer to their web-based portfolios with ease because they have been building them ever since entering college. The availability of graduates' portfolios will become a ready marketplace for employers where they could find candidates who are a good fit for their needs based on validated reviews from faculty members who have witnessed the transformation of students from learners to qualified applicants. Employers and significant stakeholders will be able to provide comments and ratings to portfolios, which would provide valuable feedback to the university to upgrade instruction and other practices relevant to the various programs.

The objective of this study is to develop and test a web-based system that will provide an avenue for students to actively maintain a portfolio where they can have a ready e-portfolio that they can use and update according to their professional journey and thus would aid in the graduate tracer endeavor of the university, serve as an added functionality to the university website, thereby increasing the website traffic, ranking, and visibility, allow employers to find qualified and good fit candidates based on validated reviews from faculty members, and aid instructional improvement based on students' employability and employers' feedback. The software application was developed using the Agile Method. Testing was done using the test cases identified. The needed features were successfully implemented and tested. Based on the survey on measuring the system's usability with the USE Questionnaire, respondents were satisfied with the features and ease of the system of use and they agreed that the system is useful for the university.

KEYWORDS: *e-portfolio, electronic portfolio, online portfolio*

1 INTRODUCTION

The implementation of electronic portfolios is called 'ePortfolios', 'electronic portfolios', or 'digital portfolios' (Hornung-Prähauser et al., 2007) and it represents digital realizations of paper-based portfolios, which are implemented as electronic folders (Bauer & Baumgartner, 2012). An electronic portfolio or e-portfolio has been used, described, and defined in various ways. Moseley and Ramsey (2005) defined an e-portfolio as "a fusion of process and product -- the process of reflection, selection, rationalization, and evaluation, together with the product of the process". Another definition by (Lorenzo & Ittelson, 2005) e-portfolio refers to an "electronic portfolio": a digital collection of evidence and artifacts that represents the knowledge, skills, and accomplishments of an individual or group. Perhaps Hilzensauer and Hornung-Prähauser (2005) described an e-portfolio as a digital collection of 'skillfully produced work of a person purporting to document the product and the process of their competence development within a certain time and for certain purposes and illustrate if the person concerned has made the selection of the artifacts itself and if it is organized in terms of the learning goal itself. Barrett (2000) also defined electronic portfolios to include "the use of electronic technologies that allow the developer to collect and organize artifacts in many formats (audio, video, graphics, and text)" .Barrett emphasized that "an electronic portfolio is not a haphazard collection of artifacts (i.e., a digital scrapbook or multimedia presentation) but rather a reflective tool that demonstrates growth over time". They can continually and conveniently access, review, adjust, modify, and display their portfolios whenever needed no matter where they are in the world without bringing along a heavy folder (Grant, 2010). Candy stated that "active engagement in the e-portfolio approach to learning and teaching may be seen to progress lifelong learning activity through the reflective process" (McAllister et al., 2008).

According to Bolliger and Shepherd (2010), e-portfolios are widely used in higher education in order to help students develop critical thinking and problem-solving skills as well as to prepare them to be lifelong learners. Lifelong learning is an ongoing process of developing knowledge, skills, and strategies, putting capabilities, and self-understanding into action over

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time, and thereby establishing an identity. To support lifelong learning, higher education needs to look beyond the content knowledge, practical techniques, and professional capabilities that have been its primary focus" (Cambridge, 2010). A well-developed and executed e-portfolio program is an incredible tool for higher education, it helps students to think critically, and become active, independent, and self-regulated learners (Abrami, Venkatesh, Varela & Lysenko, undated). Also, portfolios can be considered performance-based because they allow the learner to display a variety of evidence of performance, such as products or exhibitions"(Georgi & Crowe, 1998).

Clark & Eynon, 2009; Kruger, Holtzman, & Dagavarian, 2013; Peet et al., 2011 said that career e-Portfolios are popular in higher education and are used in varied ways to encourage reflection on the meaning of life experiences, to provide a link between academic learning and outside activities, to assess student learning, and to increase students' skills in the use of technology. As the internet and computer have emerged in the e-knowledge era, students need to acquire information and broaden their knowledge, share their knowledge with others, synthesize it, evaluate it and think of ways to make use of it in their future careers. In this era, students need to showcase their accomplishments. It may be shared with a prospective employer or used to document specific learning outcomes in a course and can include description, rationale, and discussion of digitized artifacts, resulting in a powerful tool for representation, reflection, and revision. This, in turn, can provide learners with the motivation needed to keep studying and investing effort (Bolliger & Shepherd, 2010; Welsh, 2012). It also helps them to maintain interest in the use of e-portfolios for professional purposes (Wakimoto & Lewis, 2014). The e-portfolio also helps learners to set personal goals related to their learning and to establish realistic objectives, as well as to identify short and long-term goals which are necessary to achieve their individual goals (Chang, Tseng, Liang & Liao, 2013; Ciesielkiewicz & Coca, 2013). These are key strategies for effective lifelong learning (Laal, 2011).

A portfolio can be described as a teaching and assessment tool that brings students' works together to monitor their development and progress. Ng (2015), when utilized as a tool to assess learners' performance, electronic portfolios allow teachers to monitor students' mastery of a core curriculum area over time and enhance the assessment process by enabling the student to demonstrate academic achievements and research skills through a number of completed digital assignments and tasks that showcase the students' abilities in an eportfolio" (p. 119).

The portfolio concept comes from the Latin word 'portare,' meaning to move, and 'folio,' representing sheets of paper (Sharp, 1997). This concept in the educational literature is called different expressions, such as "student progress file," "product selection file," "individual development file," and "educational development file." If used to their full potential, portfolios have several benefits for students. Portfolios help to focus student thinking (Wade et al., 1996), provide a means to translate theory into practice (Hauge, 2006), and, most importantly, document a learner's progress over time (Mark Nichols et al. 2006). A powerful tool that allows students to see their academic progress. It can enhance students' communication and organizational skills, identify and recognize prior learning, and lead to new learning outcomes. Through portfolio construction, students gain a broader sense of what they are learning (Young, 2002). They can see their learning unfolding (Darling, 2001), acquire an awareness of their accomplishments, and come to understand how their learning takes place. They can analyze their work and consider it to set further objectives. They can glance back at early efforts and compare with later pieces by perceiving how they changed (Abuzaid et al., 2018). Darling (2001) highlights one crucial point: that while students view portfolios as the creation process, evaluators see portfolios as the end product. (Johnson, N. et al 2010) defined electronic portfolio as an online tool for undergraduate students to use for the duration of their coursework and to enhance the learning process while assisting students with the transition from university to graduate employment. Electronic portfolios can be created using tools ranging from off-the-shelf generic software applications to widely available systems (Buzzetto-More, Nicole A., et al., 2010).

E-portfolios can be used as an assessment in courses effectively to improve different learning styles of learners. The use of electronic portfolios for authentic student assessment is growing rapidly (Batson, 2002). It has the potential to improve the assessment process, and to involve students and faculty, more than ever, in the assessment process. It provides authentic assessments of student learning and promotes the deeper understanding. It also provides students and faculty with an opportunity to perceive learning and teaching as a process of discovery. With an e-Portfolio, professors and students can see and can share learning progress over the course of their studies. With some e-Portfolio approaches and tools, students can also integrate their reflections with learning that extends beyond their studies, and thus provide not only proof of lifelong learning but also of their life-wide learning (Chen, 2009).

An electronic portfolio (e-portfolio) is a purposeful collection of sample student work, demonstrations, and artifacts that showcase students' learning progression, achievement, and evidence of what students can do. The collection can include essays and papers (text-based), blog, multimedia (recordings of demonstrations,

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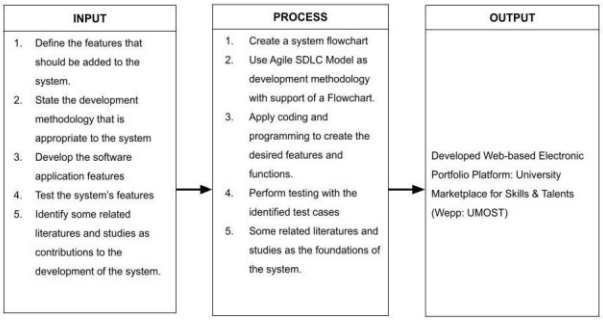
interviews, presentations, etc.), and graphics. E-portfolio documents students' accomplishments and successes during the learning process; students can readily review and reflect on their accomplishments (Pegrum & Oakley, 2017).

2 MATERIALS AND METHODS

Figure 1. System Design



In this research study, researchers developed a software application called UMOST (Web-based Electronic Portfolio Platform: University Marketplace for Skills & Talents). The following methods served as a guide in developing the features and functionalities of the system. The agile model is one of the models of the Software Development Life Cycle (SDLC). The project team used this method because it allowed flexible changes of the system and had latitude of Planning, Analysis, Design, Implementation, Testing, Deployment, and Feedback. The initial step was to make the proposal final which was followed by analyzing the needed requirement for the project. The following steps were the designing and developing of the project functionality and the testing phase.

Test Cases

In order to test the system, the researchers sent an email to the graduating students of CTU Tuburan who had their on-the-job training. The email included a request for them to sign up and create a profile using the platform and then rate their experience using the self-made questionnaire. Out of 820 graduating students, 164 volunteered to create their profiles as well as try to add files to showcase their educational background, work experience, sample projects, and others. Many of the emails sent remained unacknowledged and some of the emails were found to be invalid. The testing ran for three rounds as follows:

Phase 1 - Account Creation functionality

Respondents were able to successfully sign up and create their individual accounts as well as set up account security. No bugs or errors were reported.

Phase 2 - Uploading files

Respondents were able to upload profile images and other image files; however, there were errors reported when uploading other files such as PDF and other document types. Adjustments were made in order to accept file types aside from images.

Phase 3 - Search feature

Respondents were able to successfully search for their profiles using preset keywords. No bugs or errors were reported on this phase.

Measuring Usability with the USE Questionnaire

Adapting the USE Questionnaire by Lund (2001), the system was rated by the respondents as to its Usefulness, Satisfaction, and Ease of use, which spells the acronym, USE, on a scale of 1 to 5 with the following verbal descriptions: 5 - Strongly Agree, 4 - Agree, 3 - Neutral, 2-Disagree and 1 - Strongly Disagree.

Ethical Considerations

Appropriate ethical considerations were maintained throughout all stages of this study by carefully maintaining high regard of the benefits and risks involved for those who volunteered to participate in the study. The findings of this study will be made available for use as future reference for other researchers who intend to study related areas with common shared interests and it can be a good basis for future system development to help improve the research capabilities of students and other researchers in the university. On the other hand, while the respondents were given the option to maintain anonymity, their relevant details were aptly noted for the sake of tracking and recording, making it known that the records would be purely for research and academic purposes and would never be unnecessarily disclosed to any third party. Communication channels would be maintained between the researcher and the respondents to address confusions and concerns related to the conduct of the study.

3 RESULTS AND DISCUSSION

A. Students' Profile

Based on the data presented among the 164 respondents, 111 or 68 percent were taking the course of Bachelor in Industrial Technology, 22 or 13 percent for Bachelor of Science in Agriculture, 20 or 12 percent for Bachelor of Science in Hospitality Management, 6 or 4 percent were taking Bachelor of Elementary Education and lastly, 5 or 3 percent were coming from the Bachelor of Technology and Livelihood Education. It implicated that majority who participated in the study were coming from Bachelor of Industrial Technology because they got the

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highest number.

Table 1. Course Enrolled

COURSE ENROLLED	f	%
Bachelor in Industrial Technology	111	68
Bachelor of Science in Hospitality Management	20	12
Bachelor of Technology and Livelihood Education	5	3
Bachelor in Elementary Education	6	4
Bachelor of Science in Agriculture	22	13
Total	164	100

Table 2. Employment Status

EMPLOYMENT STATUS	f	%
Employed	27	16
Not yet employed	137	84
Total	164	100

As depicted in the table, only 27 or 16 percent of the respondents were employed. It is indicated that most of the respondents did not have any working experience.

The table showed a majority of the students did not practice yet their chosen course in the field of work. Bachelor in Industrial Technology remained to be top when it comes to employability. Furthermore, the result of the study can be interpreted that BIT has wider opportunities when it comes to acquiring jobs in the industry.

Table 3. Civil Status

CIVIL STATUS	f	%
Single	148	90
Married	16	10
Total	164	100

148 or 90 percent of the total respondents were single and the remaining 16 or 10 percent of respondents were married.

Table 4. Age

AGE	f	%
20-25	127	77
26-30	18	11
31-50	19	12
Total	164	100

This shows that most of the respondents belong to the age group of 20-25 which got 77 percent followed by the age group of 31-50 which is 12 percent and lastly, age 26-30 got 11 percent.

Table 5. National Certifications

NATIONAL CERTIFICATION IN THE FIELD OF SPECIALIZATION/MAJOR	f	%
WITH	6	4
WITHOUT	158	96
Total	164	100

The table above shows the number of respondents who acquired National Certification from TESDA for professional growth. The result showed only 6 or 4 percent of the respondent were into taking the TESDA requirement certification that can be useful in acquiring a job because they are competent in their field of specialization.

Specifically, the result of the study can serve as motivation to the respondents to acquire National Certification because this will give them an advantage in earning job opportunities because they can use this certification as a passport in convincing the industry the level of competency acquired in terms of skilled works.

Table 6. Gender

GENDER	f	%
male	57	35
female	107	65
Total	164	100

The table indicated that out of 164 respondents, only 57 or 35 percent were males and 107 or 65 percent were females. This implied that females participated mostly in the conduct of the study.

B. Usability Responses

Table 7. Usefulness

USEFULNESS		5-Strongly Agree	4-Agree	3-Neutral	2-Disagree	1-Strongly Disagree	TWM	WM	VD
	It helps me be more effective.	64	49	12	0	1	553	4.39	Agree
	It helps me be more productive.	58	57	11	0	0	551	4.37	Agree
	It is useful	71	45	10	0	0	565	4.48	Agree
	It gives me more control over the activities in my life.	57	54	15	0	0	546	4.33	Agree
	It makes the things I want to accomplish easier to get done.	63	48	15	0	0	552	4.38	Agree
	It saves me time when I use it.	58	55	13	0	0	549	4.36	Agree
	It meets my needs.	60	49	17	0	0	547	4.34	Agree
	It does everything I would expect it to do.	55	55	14	1	1	540	4.29	Agree
							AVERAGE	4.37	Agree

The respondents gave 'usefulness' an average rating of 4.37 which translates to a verbal description "agree". This means that the usefulness of a web-based electronic portfolio platform adequately performs as to the

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indicated items in the table such as effectiveness, and productivity, among others

Table 8. Satisfaction

SATISFACTION		5-Strongly Agree	4-Agree	3-Neutral	2-Disagree	1-Strongly Disagree	TWM	WM	VD
	I am satisfied with it.	65	52	11	0	0	566	4.42	Agree
	I would recommend it to a friend.	52	60	16	0	0	548	4.28	Agree
	It is fun to use.	50	60	16	2	0	542	4.23	Agree
	It works the way I want it to work.	53	60	14	1	0	549	4.29	Agree
	It is wonderful.	54	61	13	0	0	553	4.32	Agree
	I feel I need to have it.	50	61	15	2	0	543	4.24	Agree
	It is pleasant to use.	57	56	14	0	1	552	4.31	Agree
							AVERAGE	4.30	Agree
EASE OF USE		5-Strongly Agree	4-Agree	3-Neutral	2-Disagree	1-Strongly Disagree	TWM	WM	VD
	It is easy to use.	53	58	15	2	0	546	4.27	Agree
	It is simple to use.	53	58	16	1	0	547	4.27	Agree
	It is user friendly.	50	65	12	1	0	548	4.28	Agree
	It requires the fewest steps possible to accomplish what I want to do with it.	51	64	12	1	0	549	4.29	Agree
	It is flexible.	52	61	14	1	0	548	4.28	Agree
	Using it is effortless.	47	62	18	0	1	538	4.20	Agree
	I can use it without written instructions.	45	68	15	0	0	542	4.23	Agree
	I don't notice any inconsistencies as I use it.	43	68	16	1	0	537	4.20	Agree
	Both occasional and regular users would like it.	45	68	15	0	0	542	4.23	Agree
	I can recover from mistakes quickly and easily.	47	69	12	0	0	547	4.27	Agree
	I can use it successfully every time.	51	61	16	0	0	547	4.27	Agree
							AVERAGE	4.25	Agree

The respondents gave "ease of use" an average rating of 4.25 which indicates that web-based electronic portfolio platform is simple and easy to use.

Table 9. Ease of Learning

EASE OF LEARNING		5-Strongly Agree	4-Agree	3-Neutral	2-Disagree	1-Strongly Disagree	TWM	WM	VD
	I learned to use it quickly.	53	52	22	1	0	541	4.23	Agree
	I easily remember how to use it.	47	61	18	2	0	537	4.20	Agree
	It is easy to learn to use it.	50	54	22	2	0	536	4.19	Agree
	I quickly became skillful with it.	50	54	23	1	0	537	4.20	Agree
							AVERAGE	4.20	Agree

As for ease of learning of the web-based electronic portfolio, the respondents gave an average rating of 4.20 which translates to a verbal description "agree". This means that it is easy to learn how to use the web-based electronic portfolio platform.

Figure 2. Home Page

Home Page- it is where a user may login or create an

account to access the system.

Figure 3. Create Account Page

Create Account- a user must create an account to access the e-Portfolio.

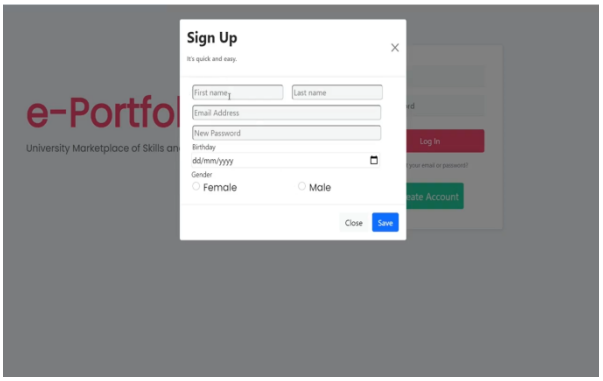


Figure 4. Login Page

Login Page- after creating an account, the user may now log in.

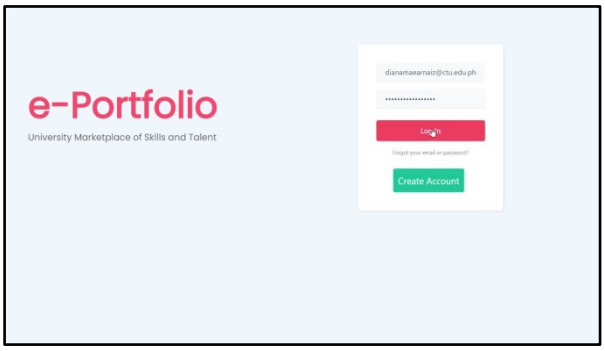


Figure 5. Student Page

Student Page- it is where a student may see the latest news, friends, groups, and company.

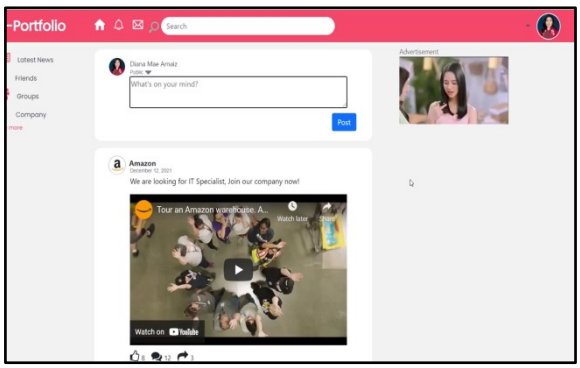


Figure 6. Search Field

Search Field- using a "keyword" an authorized user may view the search result

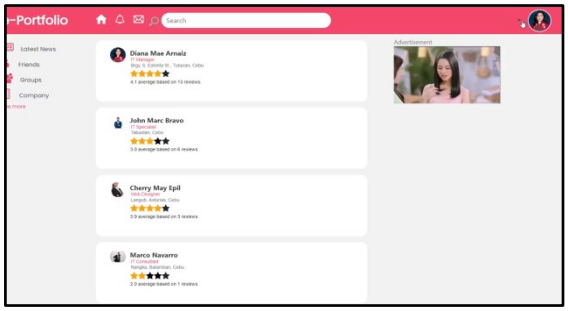
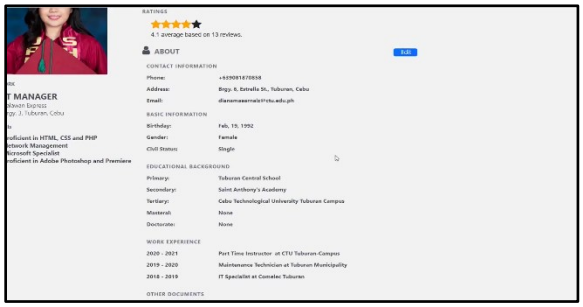


Figure 7. Student Profile Page

Student Profile- student may edit/update his/her portfolio information.



4 CONCLUSION

The software application was developed using the Agile Method wherein the system development was done in stages responsive to the results and feedback of preceding stages and modules were created and improved in accordance to the test users' feedback. Testing was done using the test cases identified and the needed features were successfully implemented and tested. Users must create an account to be able to log in to the system. Students may edit/update their profile information. In the search field, a user may use a keyword to display relevant search results. Based on the survey on measuring the system's usability with the USE Questionnaire, respondents are satisfied with the features and ease of the system of use. Also, they have agreed that the system is useful for the university specially in encouraging the students as well as alumni to showcase their skills and talents in a single web-based platform for employment and other references. For future studies, the application can be expanded to include a tool for hiring managers to search, sort, and rate profiles as well as to initiate the hiring process through the platform.

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