

# The Effectiveness of e-Portfolios for Enhancing College Freshmen's Reflection and Aesthetic Literacy

Shih-yun Lu<sup>1</sup>, Wei-her Hsieh<sup>2</sup>, Chih Cheng Lo<sup>3</sup>, Yi Zeng Hsieh<sup>4</sup> and Tsai-Cheng Chang<sup>5</sup>

<sup>1</sup>*Department of Digital Content and Technology, National Taichung University of Education, Taichung, Taiwan*

<sup>2</sup>*Department of Fashion Design, Asia University, Taichung, Taiwan*

<sup>3</sup>*Department of Industrial Education and Technology, National Changhua University of Education, Changhua, Taiwan*

<sup>4</sup>*Department of Management and Information Technology, Southern Taiwan University of Science and Technology, Tainan, Taiwan*

<sup>5</sup>*Department of Digital Content and Technology, National Taichung University of Education, Taichung, Taiwan*

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Abstract: This paper aims to explore the theories and interrelationships of the effectiveness of creating e-portfolios for enhancing the reflection and aesthetic literacy of first-year college students. First, the paper re-examined the reflection scale and the aesthetic literacy scale with a questionnaire survey of first-year university students in the central of Taiwan. Moreover, this paper justified the relationships between the reflection and aesthetic literacy scales and their dimensions. Furthermore, the research results show that the reflection is highly correlation to the depth of the digital files and aesthetic literacy is highly correlation to the visual presentation of the digital files. Both variables can suitably reflect the student's characteristics in the e-portfolio., which provides a foundation for future research. Finally, the research attempted to encourage the school educational incorporating the use of e-portfolios in the 12-year compulsory education curricula.

## 1 INTRODUCTION

In terms of e-portfolios is a learning product, created by the learner, a collection of digital artefacts articulating achievements, experiences and learning. Through the process of creating these files, learners demonstrate the knowledge they have acquired. This paper tends to address the correlation between learners' reflection and aesthetic literacy by the experience of e-portfolios. The objective of this research is to employ suitable scales whether a correlation exist between a college freshman's reflection and aesthetic literacy when creating an e-portfolio.

## 2 LITERATURE REVIEW

### 2.1 Reflection and Dewey's Education Theory

Dewey's education theory regarding the concepts of reflection and aesthetic literacy were referred to as

progressivism between the 1920s and 1950s and was considered mainstream in American education. However, since the mid-1950s, progressivism has gradually declined (Ye, 2010). Although a number of scholars have defended Dewey and contended that the decline of progressivism cannot be attributed to Dewey's theory of education (Lin, 2005), others have argued that his theory only emphasizes experiences related to reflection (Wu, 2009). Therefore, scholars have begun reconsidering the empirical theory and education theory on reflection and aesthetic literacy proposed by Dewey (Exploratorium, 2011; Mcdougall et al., 2011).

### 2.2 Reflection and e-Portfolios

Reflection is the heart and soul of a portfolio, and the method to identify personal talent through feedback analysis, which applied to e-portfolios, is the objective of reflection (Barrett, 2010a). Zubizarreta (2004) stated that the goal of a learning portfolio is to enhance the personal development, thus it must provide a framework that allows students to reflect on their learning processes

systematically and continuously. In addition, through critical reflection, students can develop their aptitude, skills, and habits. Therefore, self-awareness was the effectiveness of learning (Barrett, 2005). The process of learning e-Portfolios product is the complex processes of planning, synthesising, sharing, discussing, reflecting, giving, receiving and responding to feedback (Joyes et al., 2010).

### 2.3 Aesthetic Literacy and e-Portfolios

Aesthetic literacy is the meaningful response to reading experiences and explanations, particularly regarding print, images, and sounds (Clinard and Foster 1998). The content of aesthetic literacy is extended through writing, and is a distinctive communicative language that includes verbal expressions, music, kinesthesia, and vision. Moreover, the processes of reading and writing are not limited to the writing of the text but also include the responses and communications of various artistic activities. Thus, Clinard and Foster proposed the Montana Framework for Aesthetic Literacy to understand the content of visual, literary, and performing arts. Furthermore, aesthetic literacy is not used to cultivate professional artists, but is instead meant to free students' imagination and, thus, enable them to possess the ability of narrating and expressing their personal experiences of aesthetic (arts) encounters (Greene, 1995).

## 3 RESEARCH METHODOLOGY

This paper adopted the existing reflection scale (Kember et al., 1999; 2000) and aesthetic literacy scale (Zhang, 2011; Cheng et al., 2011) in order to explore the impact of e-portfolio on relationship between reflection and aesthetic literacy. In terms of the aesthetic literacy scale was only recently developed and has not yet been applied by scholar. The participants of this research were 1,277 first year university students in Taiwan. This paper employed a reflection scale, aesthetic literacy scale, and group questions regarding the three topics of 29 questions were developed through a questionnaire survey of the variables of participation in e-portfolio competitions, gender, and years of e-portfolio use. There were 1,189 valid sample, and the Cronbach's  $\alpha$  for the reliability of the total scale was 0.839. Excluding the three basic group questions, the Cronbach's  $\alpha$  for the reliability of the 26 questions in the two scales was 0.852. This indicates that the stability of the scales was acceptable.

### 3.1 Reliability and Validity of the Reflection Scale

Table1 shows that the results of this research are nearly identical to those of the Kember scale regarding the reliability of the scale dimension. Excluding the reflection dimension, the Cronbach's  $\alpha$  of this research exceeded that of the original scale by 0.104. The values of the other dimensions were 0.004 to 0.015 lower. Additionally, the total  $\alpha$  coefficient of the reflection scale used for this research was 0.795. Thus, the stability of the reflection scale was acceptable.

Table 1: The Cronbach's  $\alpha$  value for dimensions of the scale.

Scale dimension	*Cronbach's $\alpha$ of the original scale	Cronbach's $\alpha$ of the reflection scale in this research
Habitual & action	0.621	0.617
Understanding	0.757	0.744
Reflection	0.631	0.735
Critical	0.675	0.660
Reflective thinking	0.850	0.820
Total		0.795

\*Based on Kember et al., ( 2000) and Zhang, 2011; Cheng et al., 2011

The validity of the reflection scale used in this research was based on the content validity, confirmatory factor analysis, and construct validity of the original scale (Kember et al., 2000, Wu, 1985).

The reliability results of this research were nearly identical to those of the total scale developed by Cheng et al. The Cronbach's  $\alpha$  value of this research was 0.820, slightly lower than that of the original scale (0.030). However, the reliability of the two versions of the scale reached an equal standard. Therefore, the stability of the aesthetic literacy scale used in this research was acceptable (Table2).

The validity of the aesthetic literacy scale used in this research was based on the content validity, confirmatory factor analysis, and construct validity of the original scale (Wu, 1985; Zhang, 2011; Cheng et al., 2011) Therefore, the research inferred that the reliability and validity of the reflection and aesthetic literacy scales used in this research exceeded the standard, and the acquired data were worth considering.

Regarding the reliability of the college freshmen reflection and aesthetic literacy scales, this paper combined the reflection and aesthetic literacy scales into a questionnaire comprising 26 questions. The Cronbach's  $\alpha$  value of the questionnaire was 0.844. Therefore, the stability of the reflection and aesthetic literacy questionnaire used in this research was acceptable.

## 4 RESEARCH METHODOLOGY EMPIRICAL RESULT

### 4.1 Correlation between College Freshmen's Reflection and Aesthetic Literacy

According to the results shown in the table 2, no correlation exists between habitual action and reflection in the dimensions of the reflection scale because the lowest level of significance ( $p < .05$ ) was not achieved. Habitual action and understanding are negatively correlated, despite the correlation coefficient being quite low (-0.073\*). The correlation coefficient of habitual action and critical reflection was 0.151\*\*\*, which indicates a low correlation. The results imply that the habitual action dimension basically comprises actions that do not be considered, which differs fundamentally from the dimensions of reflection, understanding, and critical reflection.

By comparison, the correlation coefficients of the dimensions of understanding, reflection, and critical reflection indicate a moderate correlation (0.498\*\*\*, 0.544\*\*\*, and 0.583\*\*\*) with  $p < .001$ . The data indicates that the three dimensions overlap in certain areas. Although the confirmatory discriminant validity of the original scale was acceptable, the dimensions of the reflection scale would be more complete if the correlation between each dimension was further decreased.

The significance level of the correlation coefficients for the three dimensions of the aesthetic literacy scale was  $p < .001$ , which indicates a moderate correlation (0.439\*\*\*, 0.554\*\*\*, and 0.579\*\*\*). Due to the confirmatory discriminant validity was superior when closer to 0, the data indicate that the dimensions of the original scale have room for improvement (Wu, 1985).

However, most of the correlation coefficients between the seven dimensions shows a low correlation when the two scales were combined for the test. Excluding the moderate correlation

Table 2: Correlation coefficient analysis of the dimensions of the reflection and aesthetic literacy scales for college freshmen.

	1	2	3	4	5
1.Habitual Action	1				
2.Understanding	-.125	1			
3.Reflection	-.013	.531**	1		
4.Critical Reflection	.116**	.419**	.485**	1	
5.Reflective thinking	.421**	.653**	.731**	.741**	1

(0.434\*\*\* and 0.400\*\*\*) between reflective thinking and critical reflection and exploration and performance, the other correlation coefficients were acceptable. Therefore, the confirmatory discriminant validity between the dimensions of the scales used in this research was acceptable.

Table 3: Post Hoc Turkey HSD for difference among different experienced groups on E-portfolio.

Dimensions	(I)E-Portfolio experience	(J) E-Portfolio experience	MD (I-J)	Std. Error	P-value
Habitual action	3 years' experience	2	-.40616*	.14629	.015
		1	.16224	.08112	.113
	2 years' experience	3	.40616*	.14629	.015
		1	.56840*	.12528	.000
	1 years' Experience	3	-.16224	.08112	.113
		2	-.56840*	.12528	.000
Understanding	3 years' experience	2	-.18821	.12862	.309
		1	-.43318*	.07132	.000
	2 years' experience	3	.18821	.12862	.309
		1	-.24497	.11015	.068
	1 years' Experience	3	.43318*	.07132	.000
		2	.24497	.11015	.068

Table 3: Post Hoc Turkey HSD for difference among different experienced groups on E-portfolio (cont.).

Reflection	3 years' experience	2	-.08745	.12681	.770
		1	-.17407*	.07032	.036
	2 years' experience	3	.08745	.12681	.770
		1	-.08661	.10860	.705
	1 years' Experience	3	.17407*	.07032	.036
		2	.08661	.10860	.705
Critical	3 years' experience	2	-.15574	.12242	.411
		1	-.19511*	.06788	.011
	2 years' experience	3	.15574	.12242	.411
		1	-.03938	.10484	.925
	1 years' Experience	3	.19511*	.06788	.011
		2	.03938	.10484	.925
Aesthetic literacy	3 years' experience	2	-2.94554	1.29242	.059
		1	-1.22449	.71666	.202
	2 years' experience	3	2.94554	1.29242	.059
		1	1.72105	1.10682	.266
	1 years' Experience	3	1.22449	.71666	.202
		2	-1.72105	1.10682	.266
Reflective thinking	3 years' experience	2	-.33502	.14130	.047
		1	-.25605	.07835	.003
	2 years' experience	3	.33502	.14130	.047
		1	.07898	.12101	.791
	1 years' Experience	3	.25605	.07835	.003
		2	-.07898	.12101	.791

Notes: \*p<0.05, \*\*p<0.01, \*\*\*p<0.001

An independent-samples t-test was conducted to compare Aesthetic literacy and reflection by the experience of e-portfolio competition and results are displayed in table 4. According to the results there was a significance difference in Aesthetic literacy of Habitual action by students without experience of e-portfolio (M=2.89, SD=.687) and those with experience (M=3.24, SD=.74);  $t=-2.656$ ,  $p=0.000$ . There was a significance difference in total aesthetic literacy by students without experience of e-

portfolio (M=33.46; SD=6.01) and those with experience of e-portfolio (M=37.05,SD=6.51);  $t=-4.303$ ,  $p=0.000$ . There was not a significance difference in understanding, reflection, critical and total reflective thinking.

Table 4: An independent-samples t-test for aesthetic literacy and reflective thinking by the experience of e-portfolio competition.

Dimensions	With e-portfolio competition	N	Mean	S.D.	t	Sig. (2-tailed)
Habitual action	No	1134	2.8924	.68781	-3.656	.000
	Yes	55	3.2409	.74374		
Understanding	No	1134	3.9791	.61025	.610	.542
	Yes	55	3.9273	.69999		
Reflection	No	1134	3.8541	.59248	-.336	.737
	Yes	55	3.8818	.69531		
Critical	No	1134	3.5370	.57026	-1.304	.192
	Yes	55	3.6409	.70179		
Total Aesthetic literacy	No	1134	33.4656	6.01705	-4.303	.000
	Yes	55	37.0545	6.51897		
Reflective thinking	No	1134	5.7050	.65509	-1.863	.063

Notes: \*p<0.05, \*\*p<0.01, \*\*\*p<0.001

## 5 CONCLUSIONS

Through a literature review and quantitative statistical analysis, analysis of the results revealed that there are tangible benefits related to the utilization of e-portfolios. This research finds that college freshmen's reflection and aesthetic literacy showed a moderate and positive correlation with the construction of e-portfolios as learning process files. Additionally, the level of correlation was higher if the students had participated in e-portfolio competitions. The results also indicated that external encouragement was required to motivate students to use e-portfolios to create learning process files due to e-portfolios have still not yet been incorporated into higher education curricula in Taiwan, which means the use of e-portfolios is only promoted in higher education, which is insufficient. This research suggests that it required extra activities to guide students to use E-Portfolio to set up their own learning portfolio. Undertake the effective practices within E-Portfolio, which will have efficiency gains of enhance aesthetic literacy and student's learning

reflection were revealed. The findings of this research presented the use of e-portfolios are able to increase the correlation between reflection and aesthetic literacy. Concisely, this paper attempted to encourage the school educational utilizing e-portfolios as an evaluation tool to achieve the educational objectives of the 12-year compulsory education curricula In Taiwan.

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## REFERENCES

- Barrett, H. C. (2010a). Balancing the Two Faces of E-Portfolios Retrieved April 12, 2015, from <http://electronicportfolios.org/balance/balancingarticle2.pdf>.
- Barrett, H. C. (2005). White Paper: Researching Electronic Portfolios and Learner Engagement Retrieved April 12, 2015, from <http://electronicportfolios.com/reflect/whitepaper.pdf>.
- Clinard, J., & Foster, L. (1998). Putting Art Standards into Practice with Aesthetic Literacy. *NASSP Bulletin*, 82(597), 18-24.
- Cheng Shufen (2011). Ability Scale aesthetic taste of the preparation - A Case Study of College Students. *Unpublished master's thesis, the UIS education quiz Taichung University of Education, Taichung*.
- Exploratorium. (2011). Art as a way of knowing: Readings Retrieved May 15, 2015, from <http://www.exploratorium.edu/knowning/readings.html>.
- Greene, M. (1995). Active learning and aesthetic encounters: talks at the Lincoln Center Institute, 1994. New York: NCREST.
- Jimmy Lin (2005). Social Theories about educational philosophy of John Dewey. *South Sinica*, 39 (1), 41-62.
- Joyes, G., Gray, L. and Hartnell-Young, E. (2010) Effective practice with e-portfolios: How can the UK experience inform practice?, *Australasian Journal of Educational Technology*, 2010, 26(1), 15-27.
- Knight, G. R. (1998). Issues and Alternatives in Educational Philosophy (3 edition ed.). *Michigan: Andrews University Press*.
- Kember, D., Leung, D. Y. P., Jones, A., Loke, A. Y., McKay, J., Sinclair, K., Yeung, E. (2000). Development of a Questionnaire to Measure the Level of Reflective Thinking. *Assessment & Evaluation in Higher Education*, 25(4), 381-395.
- Kember, D., Jones, A., Loke, A., McKay, J., Sinclair, K., Tse, H., Yeung, E. (1999). Determining the level of reflective thinking from students' written journals using a coding scheme based on the work of Mezirow. *International Journal of Lifelong Education*, 18(1), 18-30.
- Mcdougall, M., Bevan, B., & Semper, R. (2011). Art as a way of knowing Conference Report. Paper presented at the Art as a way of knowing conference, San Francisco, CA. <http://www.exploratorium.edu/knowning/pdfs/ConferenceReport.pdf>.
- Ye Kun Ling (2010). American progressive education movement (1919-1955) on the secondary education reform. *Bulletin of educational materials*, 46,138-162.
- Tuon Hung Wu (1985). Reliability and validity can degrees and Behavior: Theory, Applications, introspection (network updated version). *Opinion academic monograph*, 29-53.
- Wu Kun Wood (2009). Enlightenment of Dewey experience of curriculum and teaching philosophy. Taipei Municipal University of Education, 40 (1), 35-54.
- Zhang Yingyao, Shi Qinglin, Xiebai Qi (2011). Sun Yat-sen basic literacy and core competencies assessment scale of the planned construction of nuclear final report. *Kaohsiung: Sun Yat-sen*.