



UNIVERSITI  
TEKNOLOGI  
MARA

Institute  
Of Continuing  
Education &  
Professional Studies

# *INTERNATIONAL JOURNAL ON* **E-LEARNING** *AND* **HIGHER EDUCATION**



VOLUME 14  
JAN 2021  
ISSN 2229-8223



## **Authentic Assessment in Studio-Based Learning (SBL) e-Portfolio**

**Syamsul Nor Azlan Mohamad, Siti Nur Dini Binti Mahazan, Siti Zuraida  
Maaruf**

*Faculty of Education, Universiti Teknologi MARA,  
Puncak Alam, Selangor, Malaysia,  
syams9211@uitm.edu.my, nurdinimhzn@gmail.com, sitiz610@uitm.edu.my*

*Abstract: This article takes an in-depth look at the rationale behind the integrating e-Portfolio as an authentic assessment in studio-based learning in higher education institutions (HEIs) which could impact the performance of the studio learners in professional development. In the field of studio-based learning (SBL), the studio learning system is comprehensive as it combines theoretical and practical knowledge which covers various disciplines. Learning in the studio field through a complex iterative process involves collecting, processing, analysis, translation, synthesis, design and delivery of a project or an artwork. Therefore, the complexity of assessment in the field of studio-based learning (SBL) such as architecture, art and design require attention and supervision because of its very subjective nature, which is whether to focus on the process, the student or the product. In order to achieve this target, authentic assessment is used as a measurement tool for studio students to identify the level of job evaluation, performance and progress through e-Portfolio. Literature reviews have been conducted in order to carry out the goal of this article. The results of studies mostly shows a positive attitude towards the use of e-Portfolio as an authentic assessment for learning in the studio-based field. Therefore, this study recommends implementation of e-Portfolio as a platform for studio learners so that studio learners can easily view their assessment regarding the evaluation of their work, performance and progress.*

*Keywords: authentic assessment, e-Portfolio, studio-based learning (SBL), studio learners*

## INTRODUCTION

This article takes an in-depth look at the rationale behind the integration of studio-based learning (SBL) e-Portfolio as an instructional teaching and learning tool in higher education institution (HEI). This article outlines the development of e-Portfolio joined with Heutagogy learning which could impact the performance of studio-based learning undergraduates in job interviews as they prepare themselves for the demanding job market. Heutagogy, which is the latest approach in learning theories, is known as self-determined learning as students decides on the learning based on their motivation, which is a key concept in studio-based learning.

Every so often educators in studio-based area find studio assessments a challenge as they will need to clarify what they mean by skills and creativity to students so that they could understand what they are expected to demonstrate (Badiossadat Hassanpour, Nangkula Utaberta, & Azami Zaharim, 2012). This article intents to show that e-Portfolio could be used as a tool to support authentic assessment through the idea of merging Heutagogy in learning as offered in the theory of Connectivism (Siemens, 2004). Strong & Hutchins states that Connectivism is a learning theory for the digital age that explains how Internet technologies have created new opportunities for people to learn and share information across the World Wide Web. As we are now stepping into the world of digitization of manufacturing called Industrial Revolution 4.0, computers play the main role of communicating and storing data as machines are digitally connected with computers and information could easily be shared by anyone. Together with the researcher's interest in the pedagogy of studio-based learning, this article demonstrates that technology and heutagogical support is crucial as teaching and learning tool for both educators and students in studio-based learning.

Therefore, e-Portfolios play a new role as an educational tool that is being implemented in higher learning institutions. Students would determine the degree of an e-Portfolio as an assessment tool used to support and track their learning needs (Rosnadiyah Bahsan, Syamsul Nor Azlan & Siti Nur Dini Mahazan, 2018).

## **ASSESSING AS PART OF TEACHING AND LEARNING IN STUDIO-BASED**

Studio-based learning is a problem-based teaching and learning method that is applied when students work on a project or a task. Studio-based learning has been traditionally used in fields like fine arts and architecture where the learners complete their tasks by creating, visualising and analysing the tasks given. These tasks given to students heavily relies on their original creativity. Hence, this brings forth a key issue faced by many educators in the studio, which is the focus when assessing a creative work. For instance, whether the assessment should focus on the processes, the person or the product. It is important for students to be fully informed about their assessments as students deserve to know which part of their work will be assessed and what are the assessment criterias (Nangkula Utaberta, Badiossadat Hassanpour, Mohd. Arsyad Bahar, 2013).

At the same time, in the studio-based learning field, students may possess the abilities, skills, or qualities that are graded or recognized in studio classroom settings. However, the evidences of those strengths could disappear into databases and stacks of papers, or accumulated in portfolios that are unwieldy to navigate. Therefore, determining the right approach in assessment will help both students and educators in grading students' work as the right assessment method will enable students to shape their work appropriately during the design process and enable educators to specify the basis of grading to help provide a rationale for grading judgments after the assessment has been made and the results are given back to the students.

## **AUTHENTIC ASSESSMENT AS STUDIO BASED ASSESSMENT TOOL**

Among the existing types of assessments, authentic assessment is one of the most popular alternative. This new approach in assessment associates learning with real and complicated situations and contexts (Olfos & Zulanta, 2007) that is based on student practices in which real world performances are repeated (Svinicki, 2004), such as answering short questions, essays, performance appraisals, oral presentations, exhibitions, and even portfolios (Kinay & Bagceci, 2016). Authentic assessment is seen as an approach

that measures students' performance directly and relevantly to meet the learning objectives of the educationalists. Hence, projects such as reports, journals, speeches, videos, and interviews with the students are carried out to measure students' understanding of the subject material. These tasks are a part of authentic learning where reflection and assessment are considered as important components of the learning environment that provides more realistic experiences for students.

On the other hand, due to the limitation of the studio space, there is no specific space such as discussion spaces or display areas within the studio area where educators could bring students together to share ideas. However, this part of the learning process could help improving knowledge, design creativity and social relationships between learner (Shanthi Muniandy, Tareef Hayat Khan, & Abdullah Sani Ahmad, 2015). Learners are also not exposed to the work of fellow learners from different groups either during presentation (pre-post), critic sessions, or displayed work. Nevertheless, the nature of studio-based learning (SBL) heavily relies on assessments that happens throughout the completion of a project or task, whether it comes from the educators or fellow learners.

Therefore, a platform is needed for studio-based practice learners where they can view previous assessments of themselves and other fellow learners as well as to view the feedback given for their own improvement as part of their learning process. The goal of authentic assessment, in this context, is to adhere to an approach that integrates the marking of both the learning process and the finished products (Herrington & Herrington, 2005). This article gives an overview of authentic assessment measure to address this issue by using the e-Portfolio method.

## **E-PORTFOLIO**

According to Chanpet & Chomsuwan (2013), e-Portfolio is a new concept, with the "e" part of the term refers to an online environment laden electronic tool that can be used to develop and present a portfolio package. In the researcher's opinion, this is the best definition that defines what an e-Portfolio is. In analysing the history of e-Portfolio development (Barrett, 1999, 2000) summarised by (Krause, 2006), this phenomenon is divided in

two distinct strands of definitions: multimedia development which includes the tasks of designing, developing, publishing and evaluating e-Portfolio; while another meaning of a traditional portfolio development is the activities of collection, selection and reflection. Barrett completed that these processes are complementary, and all should be present for a successful e-Portfolio development. Thus, Barrett identified some of the additional processes enabled by e-Portfolio as illustrated in Table 1 below:

**Table 1. The development of e-Portfolio in traditional and technology process**

<b>Traditional portfolio processes</b>	<b>Adding technology allows enhancement</b>
Collecting	Archiving
Selecting	Linking/Thinking
Reflecting	Storytelling
Projecting	Collaborating
Celebrating	Publishing

In brief, there are numerous definitions for the term e-Portfolio. In higher education, students are developing e-Portfolios as an evidence-based and assessment to support their learning needs (Syamsul Nor Azlan Mohamad, Mohamed Amin Embi & Norazah Mohd Nordin, 2015). Hence, based on the researcher's own in-depth reading regarding the subject, the researcher found that these definitions for the term e-Portfolio reflected the purpose of e-Portfolio in this article, which is as an assessment tool. Electronic portfolio, or also known as e-Portfolio, is one of a new range of educational instrument that has been gradually implemented in a few higher education institutions for curriculum, teaching content and assessment.

Although most local universities in Malaysia already have an online system which is e-Learning that functions similarly as an e-Portfolio, it could not be fully used as an e-Portfolio as it was designed mainly for lecture-based teaching method in which educators usually use to upload materials, lectures or topics every week while students download and use the uploaded files given (Amier Musstaqim Sawalludin, Roliana Ibrahim, & Khairul Anwar Mohamed Khaidzir, 2017).

Therefore, through all the literature readings on studio-based learning (SBL), the researcher intends to implement e-Portfolio as a platform for learners to view their assessment and feedback in studio-based learning as a way

to respond to studio learners' concerns regarding the evaluation of their work. The e-Portfolio is perceived as a tool that will make the design studio an fruitful context for learning social innovation. Most resources that are used to create an e-Portfolio are located online and are easily accessible by anyone, thus making it an assessment a direct learning tool for everyone, especially learners.

## **STUDIO-BASED LEARNING IN DESIGN EDUCATION**

Studio-based learning is not an exception in education when it comes to the demands and needs that changes over time. Studios are expected to produce students who are not only skilled in design, but also who are socially and practically a productive person that could contribute to the society. (Boyer & Mitgang, 1996) in (Olweny, 2017) reported that one of the most popular and commonly-used teaching strategies in design education, is design studio. In design studio, students work individually and in teams to design new processes and products that solve real problems.

Studio-based learning centers around students as students work on real-life project that is self-motivated as students are required to solve the project using their skills and creativity. Peer collaboration and mentoring by the educator help students to achieve their learning goals and contribute to the outcome of their projects. Studio-based learning is a promising approach to designing learning environments that can promote both deep disciplinary learning and creativity (Chee-Kit Looi, Joseph Polman, Ulrike Cress, 2016). Recent ethnographies of studio-based learning have found that the studio has a particular set of norms as a community of practice, where students are expected to: (a) Iteratively generate and refine design solutions by incorporating peer and instructor feedback; (b) Frequently communicate design ideas visually and verbally, and (c) Collaborate with peers to give and receive help in achieving learning goals.

Studio-based learning can be defined as a center or a space for teaching and learning where interaction between learners themselves as well as faculty takes place. Learners experience the space as an observer and as participants. In other words, studio is an interactive classroom where students work individually or collaborate in small groups to execute design solutions for

an assigned task. Therefore, studio-based learning (SBL) promotes flexible learning and has greater learning impact on learners.

### 5.1 Assessment Criteria in Studio-Based Learning

Design studio education requires a specific setting that facilitates learning activities (Muniandy et al., 2015) and the studio format usually involves a single design discipline, like architecture. Studio instructors function as guides or facilitators rather than indisputable experts holding the center stage (Burroughs & Franz, 2009). In studio-based learning, studio instructors support activities via assignments that limit the complexity of problems, provide coaching through feedback, and constantly reminding learners of these cultural norms during critiques. In the meantime, studio learners receive ongoing feedbacks through brainstorming sessions as well as informal and formal reviews commonly referred to as planning, crits, and pin-ups. The critique session, or crits, is a format of self- and peer-critique as well as receiving critique from the coaches and external experts. Typically, crits and pin-ups, formal reviews take place in a public forum and serve as midterm and final examinations (Shraiky & Lamb, 2018). During this session, studio learners present their completed designs to a preselected review panel comprised of instructors and community experts. Feedback is typically fast-paced and direct and is intended to identify strengths and areas for improvement. Additionally, crits are integrated with “pin-ups” in which studio learners display their documents and illustrations around the studio. Faculty and studio learners rotate among the pin-ups while each team formally presents the drafts of their design solutions.

From (Badiossadat et al., 2012) research, the design process in architectural studios is based on some small well-defined projects during the semester and one final project at the end which is well-defined and done in a larger scale. Studio learners should finalize their project before the deadline given and present it on the submission day with proper documentation. A research by (Hassanpour et al., 2011) stated that based on the studio educators experience, some studio learners who are concerned about their grades will skip discussions as they feel anxious and they do not want to be disappointed by the



comments about their project. Hence, that is why studio learners often complain about the unfairness and inequitable of grades as they are unaware of how their work is evaluated or graded. For that reason, determining the most appropriate assessment method is important to ensure their work are being graded fairly so that the learners can improve their work for future projects or tasks. Having a good platform to document all of their work and progress would be helpful to the learners as well as their educators in providing assistance for continuous improvements of the learners.

## **LEARNING THEORY ADOPTED IN THE STUDIO-BASED LEARNING E-PORTFOLIO**

In this article, it is important for the researcher to find the most suitable learning theory that supports the use of e-Portfolio as an approach that is in line with the concept of studio-based learning. To find the most suitable learning theory and model, the researcher had to find the instructional root of studio-based which will determine a successful implementation of e-Portfolio in a studio-based learning environment. For Studio-Based Learning and e-Portfolios, terms such as self-regulate and life-long learning are often tied to these pedagogical approach. Therefore, the researcher had shortlist some of the learning theories that might suit the studio-based learning approach as fundamental elements in producing the e-Portfolio design and development process. Through this process, the researcher found that Heutagogy by Hase and Kenyon and Connectivism by Siemens and Downes are the most suitable theories to be used in this article.

Heutagogy, which is developed by (Hase and Kenyon, 2000), defined learning as self-driven and self-determined, has become more popular in learning and teaching framework over the last decade (Blaschke, 2012). The basis of Heutagogy is about how one learns best and using strategies such as active and reflective learning. The learning approach proposed in this research contains the aspect of Heutagogy that connects to the attributes of Connectivism ( Betsy Duke, Ginger Harper, & Mark Johnston, 2013) that also contribute to the e-Portfolio learning experience. The Heutagogy and Connectivism theory provide a guideline to outline the features that need to be put into practice in order to provide an occupied e-Portfolio application

in studio-based learning.

Through the use e-Portfolio, these two theories are brought together as the guideline to design, implement and evaluate the use of e-Portfolio as a learning and teaching tool in higher education institutions. The influences of these two theories will be explained in the following contents.

### 6.1 Influences of Heutagogy Approach in Studio-Based Learning e-Portfolio

Heutagogy is a form of self-determined learning that consists of practices and principles rooted in learning approach that received limited attention even after a decade of its establishment. In a heutagogical approach, learners are highly self-directed and self-determined and the emphasis is placed on the development of one's capacity and capability with the goal of producing learners who are well-prepared for the complexities of today's workplace (Radhika Kapur, 2018). In the Heutagogy approach, the learner will set the learning course, design and develop the map of learning, from curriculum to assessment (Hase, 2009).

Heutagogy is an approach founded in Andragogy and can be considered as an expansion of the existing concept. Therefore, the e-Portfolio design and framework supports a Heutagogical approach by allowing learners to direct and determine their learning path and by enabling them to take an active role rather than a passive role in their learning experiences. Thus, this approach has been proposed as a theory to emerge with the application of e-Portfolio in studio-based learning.

### 6.2 Influences of Connectivism Theory in Studio-Based Learning e-Portfolio

George Siemens, the founder of Connectivism theory said that Connectivism pave the way for a new model of learning, adequate to knowledge society, in which "learning is a process of connecting specialized nodes or information sources, Siemens, 2004, Principles of Connectivism in (Bell, 2011). Connectivism is a theoretical framework of learning in the digital age where it uses internet technologies

such as web browsers, search engines, wikis, online discussion forums, and social networks contributed to new ways of learning. A connectivist understanding of the educational system in the future is explored and shown by Siemens, Downes and Cormier when they constructed the first massive open online course (MOOC), partly to explain and model a Connectivist approach to learning (Herlo, 2018) which is something that is quite similar to e-Portfolio. Downes has studied connective knowledge that he characterizes it as an interactive knowledge of a connection within a network (Downes, 2005). From this, Constructivists believe that knowledge occurs as a fusion of internal mental models and observation and reflection on external experiences, thus merging the tenets of Behaviorist and Cognitivist perspectives (Christian Hartmann, Jennifer Charlotte Angersbach & Nikol Rumme, 2015)

In this article, the current and future directions of the education and training environment and the theories of distributed knowledge and Connectivism were well matched to provide a platform for adapting teaching/training and learning to meet the needs and demands of the 21st-century world of growing information complexity. Therefore, Constructivism suits the use of e-Portfolio in studio-based learning as a viable theory for 21st-century learning, while exploring its main critiques and criticisms. E-Portfolio reflects and represents many Connectivist principles from the learning design, deployment, and delivery.

## **CONCLUSION**

This article intends to improve the assessment criteria for studio design project by developing e-Portfolios as an assessment tool in studios. The current teaching method that is being used in the studio will be enhanced through a new guideline to support students' learning in studio-based practice and to facilitate the continuous assessment format. The studio-based learners might not fully understand the significance of e-Portfolios in the beginning of the journey of their higher education learning, but they will surely learn the importance of it as they build their work collection via e-Portfolios throughout their learning process. For educators, the e-Portfolios promises

a new environment with tools to demonstrate and assess students learning. Thus, it helps to map teaching and learning outcomes that are in line with the principles of learning established by each institution. It also facilitates educators to help graduates produce work are in line with the assessment criteria in order to produce better outcomes of their work.

Chanpet & Chomsuwan (2012) defined that a portfolio is a storage mechanism for a student's work with clear criterias for performance which are evidences of students' effort, progress or achievement. Authentic assessment does not only provide true and rich information for reflecting and assessing the true performance and achievement of learners, but it also helps engage students in meaningful learning. Through the application of the Heutagogy and Connectivism approach in designing and developing e-Portfolios, both learners and educators would learn to take advantage of the digital society to produce better work outcomes. This article aims to implement e-Portfolio in studio-based learning through appropriate process of assessments for students' learning as it helps record, display, search and analyse the process of students' learning.

## **REFERENCES**

- Bahsan, R., Nor Azlan Mohamad, S., & Nur Dini Mahazan, S. (2018). Comparative Analysis of Engineering and Art Learner's Readiness towards the use of E-Portfolio. *International Journal of Engineering & Technology*, 7(4.36), 394. <https://doi.org/10.14419/ijet.v7i4.36.28149>
- Bell, F. (2011). Connectivism: Its place in Theory-informed research and innovation in technology-enabled learning. *International Review of Research in Open and Distance Learning*, 12(3), 98–118. <https://doi.org/10.19173/irrodl.v12i3.902>
- Blaschke, L. M. (2012). Heutagogy and Lifelong Learning : A Review of Heutagogical Practice and Self-Determined Learning. VOL 13.
- Chanpet, P., & Chomsuwan, K. (2012). Architecture design E-Portfolio : Assessment System on Project-Based Learning in Science- Based Technology School. 37, 279–284.

- Chanpet, P., & Chomsuwan, K. (2013). Development and Design : E-Portfolio on Project-based Learning with Assessment System. 168–172. <https://doi.org/10.7763/IPEDR>.
- Chee-Kit Looi, Joseph Polman, Ulrike Cress, and P. R. (2016). Scaling Studio-Based Learning Through Social Innovation Networks Introduction. 35–42.
- Duke, B., Harper, G., & Johnston, M. (2013). Connectivism as a Digital Age Learning Theory. 1966, 4–13.
- Hartmann, C., Angersbach, J. C., & Rummel, N. (2015). Social interaction, constructivism and their application within (CS)CL theories. Computer-Supported Collaborative Learning Conference, CSCL, 2, 553–556.
- Hassanpour, B., Utaberta, N., & Zaharim, A. (2012). Critical Analysis of Criteria-Based Assessment and Grading in Architecture Education ( Universiti Kebangsaan Malaysia as Case Study ) Critical Analysis of Criteria-Based Assessment and Grading in Architecture Education ( Universiti Kebangsaan Malaysia as . October 2016.
- Hassanpour, B., Utaberta, N., Zaharim, A., & Abdullah, N. G. (2011). Students' perception of the evaluation system in architecture studios. World Academy of Science, Engineering and Technology, 77(5), 383–389. <https://doi.org/10.5281/zenodo.1075032>
- Herlo, D. (2018). Connectivism , A New Learning Theory ? Social & Behavioural Sciences Edu World 2016 7th International Conference CONNECTIVISM , A NEW LEARNING THEORY ? November. <https://doi.org/10.15405/epsbs.2017.05.02.41>
- Kinay, I., & Bagececi, B. (2016). The Investigation of the Effects of Authentic Assessment Approach on Prospective Teachers' Problem-Solving Skills. International Education Studies, 9(8), 51. <https://doi.org/10.5539/ies.v9n8p51>

- Krause, K.-L. (2006). Krause 2006. EPortfolios for Graduate Students: A Discussion Paper Kerri-Lee Krause Centre for the Study of Higher Education University of Melbourne April 2006 Contextual, 1–22.
- Mohamad, S. N. A., Embi, M. A., & Nordin, N. M. (2015). Designing Project-Based Learning (PjBL) activities for art and design e-portfolio using fuzzy delphi method as a decision making. *Asian Social Science*, 11(28), 45–50. <https://doi.org/10.5539/ass.v11n28p45>
- Muniandy, S., Khan, T. H., & Sani, A. (2015). Evaluating the Physical Environment of Design Studios : A Case study in Malaysian Private Architecture Schools. 2(3), 141–149.
- Olweny, M. R. O. (2017). Students ' motivation for architecture education in Uganda. *Frontiers of Architectural Research*. <https://doi.org/10.1016/j.foar.2017.06.002>
- Sawalludin, A. M., Ibrahim, R., Anwar, K., & Khaidzir, M. (2017). E-Portfolio for Studio Based Design Learning of Architecture Students. 2–6.
- Shraiky, J. R., & Lamb, G. (2018). Studio-based learning in interprofessional education Studio-based learning in interprofessional education. June. <https://doi.org/10.3109/13561820.2013.816273>
- Utaberta, N., Hassanpour, B., & Bahar, M. A. (2013). An evaluation of criteria-based assessment and grading in architecture design. *Research Journal of Applied Sciences, Engineering and Technology*, 5(2), 346–352.

