

# INFORMATION COMMUNICATION AND TECHNOLOGY UNDERGRADUATES' PERCEPTIONS ON E-PORTFOLIO AS A TOOL IN A TECHNICAL COMMUNICATION COURSE

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## ABSTRACT

*The demands for soft skills have arisen tremendously over recent years as universities incorporate these skills into their curriculum. Graduates need the technical knowledge as well as the soft skills in order to perform effectively in the workplace. This paper investigates the impact of an e-Portfolio in a technical communication course to enhance the information technology students' soft skills in communication, critical thinking and problem solving and teamwork. The objective of the research is to find out the undergraduates' perceptions on e-Portfolio as a tool in a technical communication course. An open-ended questionnaire was distributed to 65 students to elicit information at the end of the semester. The findings showed that most of the students' found that e-Portfolio had helped them to improve their learning. This indicates that e-Portfolio has the potential as a tool to enhance students' soft skills in their learning.*

**KEYWORDS:** *E-Portfolio, Communication Skills, Critical Thinking and Problem Solving Skills and Teamwork Skills, Information Communication and technology*

## 1.0 INTRODUCTION

An innovative teaching and learning approach is crucial in the era of globalization and advancement of online technology that allows students to have an active participation in the learning process. This is also stressed by the Malaysia Education Blueprint (2013 – 2025) which highlights that innovative teaching approach is essential for the growth of high-quality human capital in the globalized 21<sup>st</sup> century. The use of innovative tool of Information and

Communication Technology (ICT) is pertinent as a potential tool to help enhance higher-order thinking skills and improve the process of education. In the same vein, an e-Portfolio has also been regarded as a potential learning tool to enhance learning process (Khoo, 2012). In this paper, an e-Portfolio is defined as “The learning portfolio provides a vehicle for bringing together judiciously selected samples of students’ work and achievements inside and outside the classroom for authentic assessment over time...The learning portfolio, then, becomes more than a product, a simple repository of artefacts; it becomes a process of reflection, of organizing, prioritizing, analysing, and communicating one’s work and its value, which may prompt insights and goals” (Zubizarreta, 2012, p.65).The research on the impact of e-Portfolio practice on student learning have been carried out (Baird et al., 2016; Buente et al., 2015; Khalid Saifullah Mazlan et al., (2015), Khoo, 2012; Morreale et al., 2017). The study focused on finding out the perceptions among the Information Communication and Technology undergraduates about the e-Portfolio in a Technical Communication course. The limitation of this study is that only 65 respondents were chosen to complete the questionnaires in the study.

## **2.0 LITERATURE REVIEW**

The issue of undergraduates who lack soft skills has affected Malaysia where employers have complained that these graduates lack the necessary soft skills vital for work such as communication, problem solving, and team work skills (New Straits Times, 2004). The local newspapers (Ahmad, 2005; Overseas Graduates, 2007) reported that in recent years, there has been an increased focus by all universities on soft skills. Graduates lacked the soft skills demanded by the society and job market (Asma & Lim, 2000; Kanapathy, 2001; Lee, 2000; Quek, 2000). This is confirmed by Deputy Human Resources Minister Datuk Abdul Rahman Bakar who claimed the lack of soft skills is a major problem faced by some 90,000 graduates who seek employment in Malaysia (Overseas Graduates, 2007). A current study conducted by the firm IDC in collaboration with INTI International University and College discovered skills such as essential skills, soft skills and critical thinking, were ranked among the highest for the future workforce (Chalil, 2019). In the report titled *Graduate Readiness vs Industry’s Advancement Towards IR4.0: Can Graduates Hack it in Tomorrow’s Digital Future?*, it was claimed that educators should include soft skills and technology to help graduates to get employed. This is

because soft skills together with digital technology skills are in demand in the job market and also heavily sought in the future. Thus, graduates should be equipped with this knowledge to prepare them for the workforce. The QS Global Skills Gap in the 21st Century report claimed that employers in Malaysia felt that there was a gap in soft skills and that universities did not prepare the undergraduates to enhance the abilities for the workforce. These included the low proficiency in the English language, the lack of soft skills such as creativity, communication and critical thinking which also contributed to the issue of graduate's unemployment. The report claimed three most wanted employability skills that the employer sought for the undergraduates were problem-solving, teamwork and communication skills (Aziz, 2018).

Stefani et al., (2007) suggested that the potential for e-Portfolios to support learning is linked to a student's ability to play an important role in its development. In the UK, a survey carried out in 2014 found out that 78% of universities used e-portfolio tool in the classroom (UCISA, 2014). There were 57% of colleges using e-Portfolios in American higher education (Eynon & Gambino, 2017). E-portfolio is based on the constructivism paradigm where students create knowledge through the activities when developing their e-Portfolios (Klenowski, Askew, & Carnell, 2006; Meeus, Questier, & Derks, 2006). It fosters authentic learning when students are placed in the centre of the learning process and actively engage in constructing e-Portfolios and gain the experience of the learning by planning, selecting, reflecting, and sharing the artifacts.

Traditionally, the teacher assumed the role of the source of knowledge or the only content expert in the class and taught using the directed instruction method. In this teacher-centred approach, the teacher is in control of the information and is solely responsible for how much information is to be delivered to the students, creating a one-way interaction in the teaching and learning environment. The traditional 'chalk-and-talk' approach to teaching is practiced by many higher institutions of learning; however, recently, there has been a change towards creating a constructivist learning environment in the institutions (Oliver, 2000). Some students encountered difficulty when they learned how to use the technology to learn effectively online. Thus, guidance should be given to facilitate their learning by the instructor.

Here, the lecturer acts as a facilitator with the aim of helping students achieve their learning objectives rather than the director of instruction. From a constructivist perspective, students must be provided with a rich learning

environment. The computer, with its capability of processing and integrating the various media elements such as text, graphics, sound, animation, and video, is ideally suited to present such an environment. The success in its creation is dependent on three factors: the role that the teacher plays; the role the student plays; and the use of technology in cultivating this learning environment. Thus instruction focuses on assisting learners to develop learning and thinking strategies in the subject domain, that is, learning 'how to learn' rather than how much is learned (Mayer, 1998). In this process, the student takes the role of the active learner rather than of the passive learner (Vonderwell & Turner, 2005). In this student-centred learning approach, the students must play an active part in their learning and construct their own knowledge or meaning of what they learn, and their learning also builds on what they have already constructed in other contexts. The students determine how to reach the desired learning outcomes themselves. In other words, students are involved in learning as a process of knowledge *creation* and not knowledge *absorption*. This learning process occurs when students use their current knowledge to construct new knowledge (Orlich et al., 1998). Technology can be used by the lecturers to represent and support their educational materials. In this study, the students are free to choose the artifacts and information to be included in their e-Portfolio. Therefore, e-Portfolio has the potential to offer new insights into the students' learning process that enable the construction of new information and knowledge.

### **3.0 METHODOLOGY**

This paper investigates the impact of an e-Portfolio in a technical communication course to enhance information technology students' soft skills in communication, critical thinking and problem solving and teamwork skills. The objective of the research is to find out the undergraduates' perceptions on e-Portfolio as a tool in a technical communication course. Work-Integrated Learning claimed that certain skills that can be included into curriculum to foster graduate's soft skills (Jackson, 2015).

In this study, the researcher revised the existing technical communication syllabus by incorporating the e-Portfolio learning process into the weekly plan. The syllabus comprised a 14 week plan of lectures. Lorenzo and Ittleson (2005, p.1) claimed that e-Portfolios are used as support credential documentation. Students were free to include the artifacts through the web

for information, pictures and video to be hyperlinked and saved in their e-Portfolio s. This was done to allow the students to have a sense of ownership over their e-Portfolio s and take responsibility for their own learning. Students collect, organise, and reflect on the artifacts completed in response to the student's interests, requirements, and understanding in one semester. The process of learning should be collaborative and communicative throughout the semester. It was found that student-centred learning activities support the development of higher-order skills such as critical thinking and problem solving (Savery & Duffy, 1995). The constructivist epistemology of learning has been greatly promoted in response to the need for more student-centred learning activities (Duffy & Jonassen, 1991; Jonassen, 1991). The students had the authority to engage in a more active role in their learning by transferring the responsibilities of organizing, analysing, synthesizing, and evaluating artifacts from the lecturer to the students (Means, 1994).

The students were required to do assignments and assessment that encouraged them to reflect on their learning when writing the reflection entries in their e-Portfolio s. These assignments were a cover letter, a resume, and a recommendation report, and assessments were a mock interview, a mock meeting and an oral presentation of a recommendation report. Schon's 'reflection on action' is a process of rethinking of one's prior thoughts and actions in context, where he states that "we reflect on action, thinking back on what we have done in order to discover how our knowing-in-action may have contributed to an unexpected outcome" (Schon, 1983, p. 26). The process of reflection helped students to construct meaning from the work they had selected and the e-Portfolio facilitates the process of making meaning of the artifacts. A learning e-Portfolio is where reflection and documentation (or the artifacts) combine with collaboration or conversations about learning. Therefore, students will understand better what they have learned and take charge of their own learning process within the university and throughout their lives.

The students were asked to create and develop their e-Portfolio and reflect on their learning. The lecturer facilitated the process of the development of the e-Portfolio activities and students would gradually take responsibility for their own learning (Glasgow, 1997). This was supported by Hillyer & Lye (1996) who found that when students use the e-Portfolio s, they were more responsible for their learning, knew their strengths and limitations and learnt to set goals. Educators believe that e-Portfolio s allow students to think critically, and become active, independent and self-regulated learners (Mills-Courts & Amiran, 1991; Perry, 1998).

The objective of the research is to find out the undergraduates' perceptions on e-Portfolio as a tool in a technical communication course particularly communication skills, teamwork skills and critical thinking and problem solving skills have been enhanced when they used the e-Portfolio as a learning tool in a technical communication course. These are three of the soft skills required by the Malaysian government of university graduates. The questionnaires were distributed after their e-Portfolio experience. Surveys were administered in the last week of the semester, after students had completed all the assignments required for assessment. The questionnaires took about 20 minutes to complete. The questions were constructed to investigate students' perceptions of how they use e-Portfolio collaboratively in facilitating and generating learning and the usefulness of the tool. There were 65 students who participated in this study. They were second year Information Communication and Technology (ICT) students who took a technical communication course as a requirement of their programme.

#### **4.0 FINDINGS AND DISCUSSION**

The summary of the positive and negative feedbacks from the 65 students were tabulated in Table 1. The analysis showed that a majority of the students have a positive feeling towards the e-Portfolio embedded into the course. The students felt that the e-Portfolio had helped them to enhance their learning. They enjoyed using the e-Portfolio in the class as they can upload the artifacts and improve their oral communication skills. They also felt that e-Portfolio was suitable to be used in other courses and would recommend to their friends. However, the students had also provided negative feedback such as they encountered no internet connection and this disabled them to get access to their e-Portfolio. They also commented that they encountered difficulty in the earlier stage when they were asked to create the e-Portfolio as they had zero knowledge on e-Portfolio. Later they gained knowledge on e-Portfolio as the instructor had guided them well in creating the e-Portfolio. They also stated that the blogger had limited designs and thus, limited their creativity to include artifacts in their e-Portfolio.

Table 1: Summary of questionnaire data

Statement of Comment
<p><b>Positive feedbacks</b></p> <ul style="list-style-type: none"><li>• Students liked to use e-Portfolio in general.</li><li>• Students talked about the benefits of using e-Portfolio.</li><li>• Students explained how they get to learn how to create their own e-Portfolio in the class.</li><li>• Students said that the e-Portfolio is very useful.</li><li>• Students wanted to recommend this e-Portfolio to their friends.</li><li>• Students said they will e-Portfolio is suitable to be used for all the different courses.</li><li>• Students said that this e-Portfolio can help them to improve their oral communication skills.</li><li>• Students said that this e-Portfolio is something new for them.</li><li>• Students said this e-Portfolio is interactive and interesting.</li><li>• Students said they can bring this e-Portfolio anywhere.</li><li>• Students said they have the freedom to upload whatever they want into the e-Portfolio.</li></ul> <p><b>Negative feedbacks</b></p> <ul style="list-style-type: none"><li>• Students said if there is no internet connection they cannot get access to their e-Portfolio.</li><li>• Students said at the beginning they did encounter problems to create their own portfolio because this is a new thing to them.</li><li>• Students said although they did face problems at the beginning to create the e-Portfolio in the end everything is fine because the instructor guides them well hence they are able to create their own personal e-Portfolio.</li><li>• Students said there are limited designs when they use bloggers to create their personal e-Portfolio.</li></ul>

The students plan, collect, select, review, and share their artifacts in their e-Portfolios. The positive learning experiences enable the students to be actively engaged in constructing their e-Portfolios and learn to be reflective, collaborative, and communicative with their peers. According to Khoo (2012), a study on 66 Engineering students have also similar findings where the use of the e-Portfolio in the course had enabled the students to gain a lot of experiences and knowledge in the learning process. They had enhanced their interpersonal skills in oral and written forms when they interacted with their peers: they brainstormed ideas, gave and received constructive comments and critics to improve artifacts and generated new ideas in their e-Portfolios. The



collaboration with peers had enabled them to be more confident to speak and write in English. Students-centred learning can be observed here as students actively collaborated in activities that involved active learning, exploration, and construction of knowledge with their peers, as well as with the lecturer, who acts as a facilitator supporting them in their learning process and constructing knowledge

## **5.0 CONCLUSION**

This paper is to find out the impact of an e-Portfolio in a technical communication course to enhance information technology students' soft skills in communication, critical thinking and problem solving and teamwork. The objective of the research is to find out the undergraduate's perception on e-Portfolio as a tool in a technical communication course. This study has managed to answer the research question where the undergraduates found the e-Portfolio as a useful and an effective tool to enhance their learning. They have given positive feedback on the use of e-Portfolio in their learning. This study is significant as it shows that the e-Portfolio has the potential tool to enhance the undergraduates' soft skills which may lead to an effective learning process. Future studies should focus on more variables to enhance performance in learning. More researches should be carried out to evaluate the effectiveness of the e-Portfolio as a potential tool in other courses.

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## **REFERENCES**

- Ahmad, A. R. (2005, March 20). The unemployable Malaysian graduate. *New Sunday Times*. Retrieved from <http://pgoh13.com/unemployable200305.php>
- Asma, A., & Lim, L. (2000). Cultural dimensions of Anglos, Australians and Malaysians. *Malaysian Management Review*, 9-17.
- Aziz, H. (2018, October 3). Graduate skills gap. *The New Straits Times*. Retrieved from <https://www.nst.com.my/education/2018/10/417327/graduate-skills-gap>



- Chalil, M. (2019, August 20). Study: More than 63pc of students in Malaysia can't explain what IR4.0 is. The Malay Mail online. Retrieved from <https://www.malaymail.com/news/life/2019/08/20/study-more-than-63pc-of-students-in-malaysia-cant-explain-what-ir4.0-is/1782417>
- Baird, K., Gable, J., & Sidebotham, M. (2016). Assessment of the quality and applicability on an eportfolio capstone assessment item with a Bachelor of Midwifery Program. *Nurse Education in Practice*, 20, pp. 11-16. Doi:10.1016/j.nepr.2016.06.007
- Buente, W., Winter, J. S., Kramer, H., Dalisay, F., Hill, Y. Z., & Buskirk, P. A. (2015). Program-based assessment of capstone eportfolio for a communication BA curriculum. *International Journal of Eportfolio*, 5(2), 169-179. Retrieved from <http://www.theijep.com/>
- Corley, C. R., & Zubizarreta, J. (2012). The power and utility of reflective learning portfolios in honors. *Journal of the National Collegiate Honors Council*, 13(1), 65-76. Retrieved from [https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1333&context=nchc\\_journal](https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1333&context=nchc_journal)
- Duffy, T. M., & Jonassen, D. H. (1991). Constructivism: New implications for instruction technology? *Educational Technology*, 31(5), 7-12.
- Eynon, B., Gambino, L. M., & Torok, J. (2014). What difference can eportfolio make? A field report from the connect to learning project. *International Journal of Eportfolio*, 4(1), 95-114.
- Glasgow, N. (1997). *New curriculum for new times: A guide to student-centered, problem-based learning*. Thousand Oaks, CA: Corwin.
- Hillyer, J., & Lye, T. C. (1996). Portfolios and second graders' self-assessments of their development as writers. *Reading Improvement*, 33(3), 148-159. Retrieved from <http://www.personal.psu.edu/sam7/EDUC586/Hillyer-LeyArticle.pdf>
- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Journal Studies in Higher Education*, vol.40(2), 350-367.
- Jonassen, D. H. (1991). Evaluating constructivistic learning. *Educational Technology*, 31, 28-33.
- Kanapathy, V. (2001). Building Malaysia's IT society. *Raffles Review*, 5(1), 1-14.
- Khalid Saifullah Mazlan , Linda Khoo Mei Sui & Zanariah Jano (2015). Designing an E-Portfolio Conceptual Framework to Enhance Written Communication Skills among Undergraduate Students. *Asian Social Science*, Vol. 11, No. 17; pp. 35-47.

- Khoo, L. M. S., Maor, D. & Schibeci, R. (2011). *The Engineering E-Portfolio: Enhancing communication, critical thinking and problem solving and teamwork skills?* A paper presented at International Conference of World Academy of Science, Engineering and Technology (WASET), 24-26 June 2011. World Academy of Science, Engineering and Technology 77, 1027-1032
- Khoo, L. M. S. (2012). *Using an e-Portfolio to enhance graduate attributes among engineering students in Malaysia* (Doctoral dissertation, Murdoch University, Perth, Australia).
- Klenowski, V., Askew, S., & Carnell, E. (2006). Portfolios for learning, assessment and professional development in higher education. *Assessment and Evaluation in Higher Education*, 31(3), 267-286. doi:10.1080/02602930500352816
- Lee, S. K. V. (2000). *The demand for business and management education in Hong Kong beyond 1997*. doi:10.1080/13602380012331289110
- Lorenzo, G., & Ittleson, J. (2005). *An overview of e-portfolios. Educause Learning Initiative Paper 1: 2005*. Retrieved from <http://net.educause.edu/ir/library/pdf/ELI3001.pdf>
- Mayer, R. E. (1998). *The promise of educational psychology: Learning in the content areas*. Columbus, Ohio: Merrill.
- Means, B. (1994). Introduction: *Using technology to advance educational goals*. In B. Means (Ed.), *Technology and education reform: The reality behind the promise* (pp.5-12). San Francisco: Jossey-Bass.
- Meeus, W., Questier, F., & Derks, T. (2006). Open source eportfolio: Development and implementation of an institution-wide electronic portfolio platform for students. *Educational Media International*, 43(2), 133-145. Retrieved from [http://cnypeportfolios.pbworks.com/f/Open%2Bsource\\_Meeus.pdf](http://cnypeportfolios.pbworks.com/f/Open%2Bsource_Meeus.pdf)
- Mills-Courts, K., & Amiran, M. R. (1991). *Metacognition and the use of portfolios*. In P. Belanoff & M. Dickson (Eds.), *Portfolios process and product*. Portsmouth: Boynton/Cook Publishers Heinemann.
- Ministry of Education Malaysia (MOE). (2013). *Malaysia Education Blueprint (2013-2025)*. Kuala Lumpur: Retrieved from <http://www.moe.gov.my/userfiles/file/PPP/Preliminary-Blueprint-Eng.pdf>
- Morreale, C., Van Zile-Tamsen, C., Emerson, C. A., & Herzog, M. (2017). Thinking skills by design: A capstone eportfolio to promote reflection, critical thinking and curriculum integration. *International Journal of Eportfolio*, 7(1), 13-28. Retrieved from <http://www.theijep.com/>

- New Straits Times Newspaper (2004). *Computimes*. Retrieved from <http://www.nst.com.my>
- Oliver, K. M. (2000). Methods for developing constructivist learning on the web. *Educational Technology*, 5-18. Retrieved from <http://kevoliver.com/pdf/edtech.pdf>
- Orlich, D. C., Harder, R. J., Callahan, R. C., & Gibson, H. W. (1998). *Teaching Strategies: A guide to better instruction*. New York: Houghton Mifflin Co.
- Overseas graduates lack soft skills too. (2007, February 4). *The Star*. Retrieved from <http://thestar.com.my/education/story.asp?file=/2007/2/4/education/16757394&sec=education>
- Perry, N. E. (1998). Young children's self-regulated learning and contexts that support it. *Journal of Educational Psychology*, 90(4), 715-729. doi: 10.1037/0022-0663.90.4.715
- Quek, A. H. (2000). Career choice and vocational fitness. *Asian Psychologist*, 2(1), 56-58.
- Savery, J. R., & Duffy, T. M. (1995). Problem-based learning: An instructional model and its constructivist framework. *Educational Technology*, 35(5), 31-38. Retrieved from [http://crlt.indiana.edu/publications/duffy\\_publ6.pdf](http://crlt.indiana.edu/publications/duffy_publ6.pdf)
- Schon, D. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Stefani, L., Mason, R., & Pegler, C. (2007). *The educational potential of e-portfolios*. Routledge: London.
- Universities and Colleges Information Systems Association. *2014 Survey of technology enhanced learning for higher education in the UK*. Retrieved from <http://www.Ucisa.ac.uk/~media/groups/dsdg/Tel2014Final18August.ashx>
- Vonderwell, S., & Turner, S. (2005). Active learning and preservice teachers' experiences in an online course: a case study. *Journal of Technology and Teacher Education*, 13(1), 65-85. Retrieved from <http://www.sarasotaintranet.usf.edu/ir/Documents/DistanceLearning/vonderwell.pdf>

