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Research Article

Occupational Therapy Students' Acceptance of Using an E-Portfolio to Support Practice Education

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Abstract

Background: E-portfolios are useful for students to store and showcase evidence of developing competency. However, if the purpose and relevance of an e-portfolio is not explained or if the technology is problematic students will not engage with it. The purpose of this study was to report the difference over time in occupational therapy students' acceptance of using an e-portfolio.

Method: This observational longitudinal study was conducted with 28 Master of Occupational students using an e-portfolio embedded into the curriculum. The e-portfolio usage survey was used to measure students' acceptance of using an e-portfolio over 2 years.

Results: Comparison of the four factors in the survey from first year to final year showed significant differences in Perceived Ease of Use, p=0.00, 95% CI [0.31 to 0.94], Attitude Towards Use, p=0.02, 95% CI [0.07 to 0.78] and Behavioural Intention to Use, p=0.01, CI [0.18 to 1.00] with no significant difference in perceived usefulness, p=0.13, CI [-0.08 to 0.63].

Discussion: Students showed significant improvement in their intention to use an e-portfolio and the ease to which they used the e-portfolio. Students did not show significant change in thinking that an e-portfolio was any better than their current portfolio systems. This paper shows that when using an e-portfolio implementing a structured approach across over time will allow students to engage with the e-portfolio in an appropriate way.

INTRODUCTION

E-portfolios allow students to store and access information in an electronic format that provides a record of their academic achievement and progression [1]. E-portfolios have been used successfully by students to store work for evaluation of their skills, knowledge and competence in the classroom and on fieldwork or practice education [2,3]. E-portfolios have been shown to be an effective tool in developing critical thinking and reflective practice [4]. One of the specific uses of an e-portfolio in health education has been to store information that allows students to provide evidence of competency development [5,6]. Previously, this sort of information may have been stored in a hard copy format, but given advances in technology in terms of data storage, information presentation and retention, an e-portfolio is seen as a tool that will be increasingly used by students to store information that documents their competency development over time [7]. While the use of technology, including an e-portfolio, has increasingly been used by universities to engage students in learning, the teaching and learning outcomes have been mixed. Cordier [8] reported that while learning gains were seen when using an e-portfolio, students reported negative experiences and a lack of social and ecological validity were shown when using the e-portfolio. This is similar to other research, which reports students having difficulty engaging with an e-portfolio because the relevance was not made clear [9] or the technology was difficult to use [10].

Many of the assumptions around students engaging with technology as part of their learning assumes they will readily engage with the technology and they have the skills and knowledge to do so when in fact this may not be the case [11]. While students may be very familiar with social media platforms such as Twitter, Facebook and Instagram, they may not be able to use technology in an analytical or reflective way [11]. Therefore the skills and experience of using social media may not transfer as well to something like an e-portfolio, where a deeper engagement with the technology is required.

If students do not have the skills required to engage with the e-portfolio or are reluctant to accept the technology they are unlikely to use the technology in the way it was intended [12]. In fact many technologies developed by institutions have not been used by recipients as intended or have been abandoned all together [13,14]. It is important therefore to investigate the factors that are involved in accepting a new technology, in this case the factors that affect students' use of an e-portfolio. If educators had a better understanding of whether or not an e-portfolio was used by students they may be in a better position to develop and implement the use of an e-portfolio with a greater chance of success.

At the University of Canberra, first year Master of Occupational Therapy students were introduced to an e-portfolio (Mahara) in 2013at the end of their first semester. Mahara is an e-portfolio that combines an e-portfolio with social networking functions. Students can upload material onto their profile that shows competency development over time. Mahara can be set up so that groups of students can communicate, much like other popular social media platforms. This can allow for a supportive online environment that allows students to learn with their peers.

At the University of Canberra, the Master of Occupational Therapy students were asked to use the e-portfolio throughout their 2-yearcourse, particularly during practice education to map their experience to the Australian Minimum Competency Standards for New Graduate Occupational Therapists [15]. This paper describes how this was done and reports and quantifies the degree to which students accepted this new technology, with implications discussed for future use of Mahara in occupational therapy education. The research question was: What is the difference over time in occupational therapy students' acceptance of using an e-portfolio?

METHOD

Design

This was an observational longitudinal study. The University of Canberra Human Ethics Committee approved this study. All participants gave informed consent before data collection began.

Participants

Participants were 28 Master of Occupational Therapy students enrolled in their first year of study. Participants were included if they consented to complete the survey. There were no exclusion criteria. Demographic characteristics were collected (age/sex) to describe the characteristics of the participants.

Intervention

The intervention was the introduction of Mahara, which is an electronic e-portfolio. The intervention and followed a similar application as reported in a qualitative study [16]. That is, a modified version of the guidelines of Moores and Parkes (2000) was used to guide the introduction of the e-portfolio [17]. These modified guidelines are:

1. Identify the added value of using an e-portfolio
2. Consider and articulate the long and short term benefits of using an e-portfolio
3. Having transparent but not overly prescriptive assessment guidelines
4. Providing clear instructions regarding confidentiality when using digital media
5. E-portfolios are a tool to store information. They do not "teach" reflective practice.
6. Ensure all students can access their portfolio
7. Use internal institutional resources to support the use of the e-portfolio

At the University of Canberra, the Master of Occupational Therapy students have four blocks of practice education consisting of a two week block at the end of the first semester, then an eight week block at the end of the first year of study and finally two eight week blocks in the last semester of the course. Mahara was introduced to the students in the pre-placement workshop just prior to the first eight week block of practice education in the following way:

1) A general discussion regarding the value of a portfolio generally and an e-portfolio specifically was conducted.
2) Instructions regarding setting up a Mahara portfolio. From previous experience this step is usually the most challenging for students so some time was devoted to this step. An instructional video was posted on the on-line learning platform to assist students out of class time. Students were instructed to copy a Mahara portfolio that the lecturer had constructed in the first instance as a template for their own portfolio (Figure 1). This template was set up with three different "pages" (Mr S, Case Presentation and Project). Using Mr S as an example the students were given examples of what content and evidence to post onto their portfolio and how to explicitly link this evidence to the Australian Minimum Competency Standards for New Graduate Occupational Therapists [15]. In this case the evidence supporting the posting was an uploaded audio file of the student's supervision session with his supervisor.
3) Instructions on confidentiality: Students were instructed how to de-identify information posted on the portfolio.

An assessment item at the end of each practice education unit was to submit the Mahara portfolio as a pass/fail item. To pass this item, students needed to upload 8 items of evidence that was explicitly linked to the New Graduate Occupational Therapists

(OTA, 2010). At the end of the students' first placement they attended a post placement workshop where they were given the first e-portfolio usage questionnaire [18].

A similar process was completed during the two final eight week practice education placements. That is, the importance of using an e-portfolio was re-iterated along with an explanation of the types of evidence required and the importance of confidentiality. Students were given feedback on their portfolio at the end of each placement. The final item of assessment for all students was a hurdle assessment piece where students were required to present their portfolio to an academic staff member as a pass/fail assessment item. Students were asked to complete the e-portfolio usage questionnaire [18] after their final portfolio presentation (Figures 1&2).

Outcome measure

Acceptance of using an e-portfolio was measured using the e-portfolio usage questionnaire developed by Shroff, Deneen and Ng [18]. The e-portfolio usage questionnaire is based upon the Technology Acceptance Model [19] whereby a student's acceptance of using a new technology will be influenced by the motivation of the user as well as the technology being used (Figure 3). The questionnaire asks 20 questions using a 7 point Likert scale to measure acceptance of using Mahara. The questionnaire has been empirically tested and found to be a valid assessment of e-portfolio use [18]. In this study the e-portfolio usage questionnaire measured the degree to which the use of Mahara was influenced by the ease of use (E), its perceived usefulness (U) the attitude towards using it (A) and then ultimately how these factors resulted in any behavioural intention to use Mahara (BI).

Perceived usefulness (U) is "the degree to which a person believes that using a particular system would enhance his or her performance" [20]. Perceived ease of use (E) is "the degree to which a person believes that using a particular system would be free of effort" [20]. Attitude towards usage (A) is to the "the degree to which an individual evaluates and associates the target system with his or her job" [21] (Figure 3).

Data analysis

The results of the e-portfolio usage questionnaire were compared using SPSS (version 21.0) between Time 1 and Time 2 by using a paired t test. Time one is represented as the time immediately after the 8 week practice education block at the end of the first year of study. Time 2 is represented as the time immediately after the last 8 week block in the final semester of the second and final year of study.

RESULTS

In August 2014, the technology acceptance surveys were given to 32 Master of Occupational Therapy students at the University of Canberra following their first 8 block of practice education block. The average age of the students was 26 years (SD 0.8), with 27 female students (96%) and one male student (4%). Twenty-eight students returned the survey (87% response rate). In May 2015, the same survey was administered to the same cohort following their final practice education block. Twenty-eight students returned the survey (87% response rate).

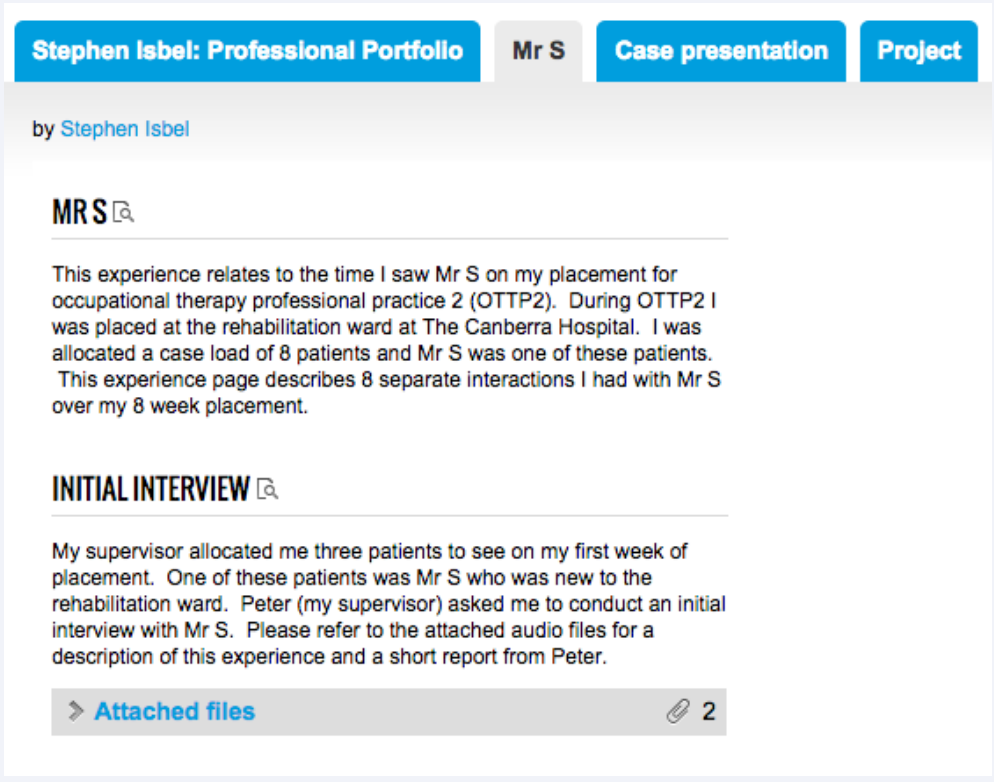

Figure 1 Mahara portfolio setup template.

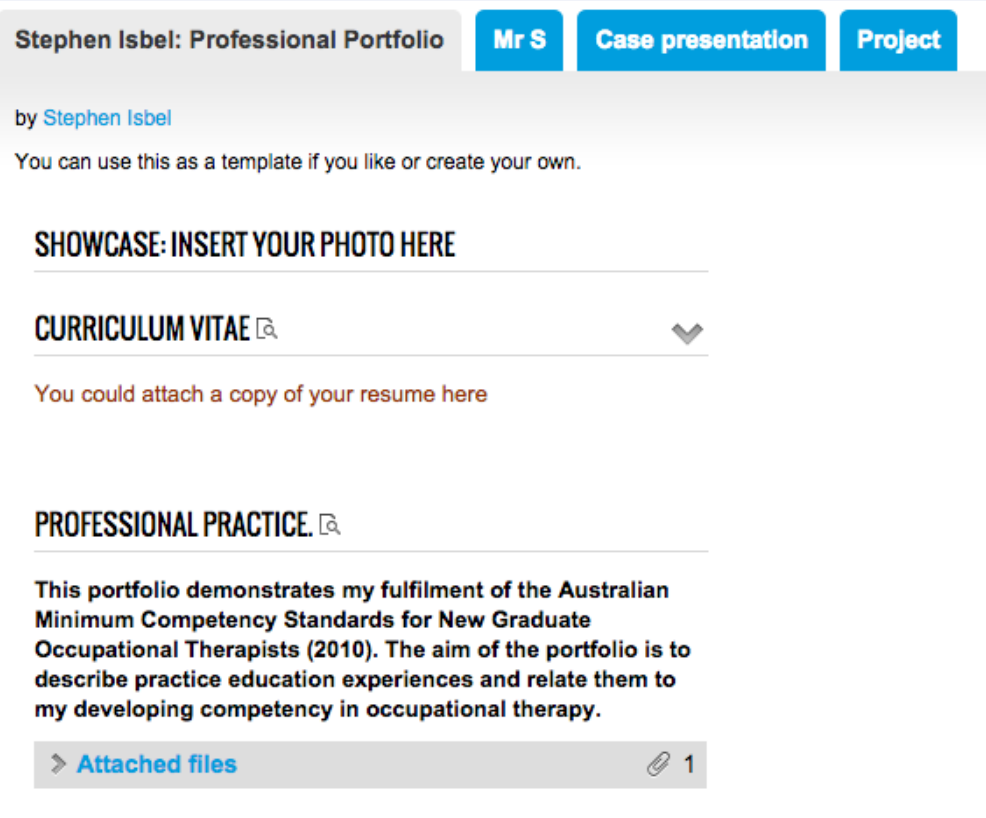

Figure 2 Mahara pages template.

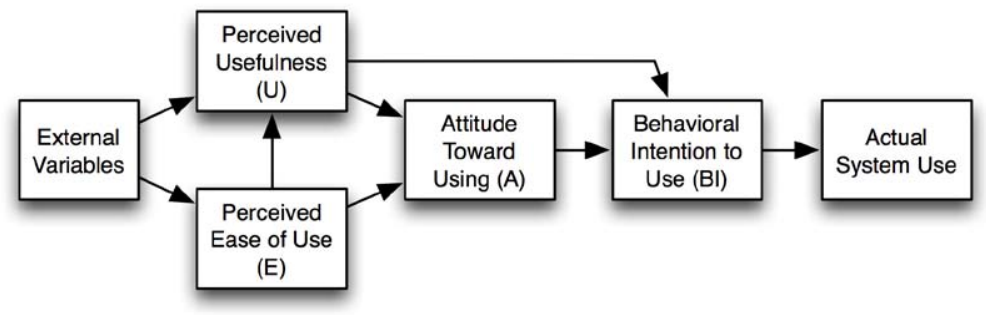

Figure 3 Technology Acceptance Model [19].

Difference over time in occupational therapy students' acceptance of using an e-portfolio to support practice education

There were significant differences between Time 1 and Time 2 Perceived Ease of Use (p=0.00; CI 0.31 to 0.94), Attitude towards Use (p=0.02; CI 0.07 to 0.78) and Behavioural Intention to Use (p=0.01; CI 0.18 to 1.00) with no significant difference in perceived usefulness (p=0.13; CI -0.08 to 0.63) (Table 1).

DISCUSSION

E-portfolios have been used extensively for a variety of reasons from a teaching and learning tool [22] as a medium to store information showing competency development with students [23] and as a tool to store and organize information supporting currency of practice [24].

In this study we answer the research question: What is the difference over time in occupational therapy students' acceptance of using an e-portfolio? In answering this question we report a method whereby a cohort of occupational therapy students used Mahara throughout their course with specific attention given to explaining the purpose of using Mahara, embedding the use of Mahara thorough the course and paying particular attention to how the students engaged with the technology.

This study showed that over time students showed a significantly improved behavioural intention to use Mahara. This included significant improvement in students' attitude towards

Table 1: Results.

Technology Acceptance Model Concept	Times			
	Time 1 Mean/SD	Time 2 Mean/SD	p	CI
Perceived usefulness	3.6 (1.4)	3.9 (1.6)	0.13	-.08 to 0.62
Perceived ease of use	3.4 (1.4)	4.1 (1.6)	0.00	0.31 to 0.94
Attitudes towards use	3.6 (1.4)	4.0 (1.7)	0.02	0.07 to 0.78
Behavioural intention to use	3.3 (1.6)	3.9 (1.6)	0.01	0.18 to 1.00

using Mahara and perceived ease of use Mahara. Perceived ease of use in this context is a measure of how comfortable the students were when using Mahara. This includes aspects such as availability of technical support, ease of access, portfolio navigation, ease of uploading files and successfully troubleshooting problems.

Interestingly there was no significant improvement in the third factor contributing to intending to use Mahara, which was perceived usefulness. Perceived usefulness includes the notion that students require convincing that Mahara offers a significantly better platform than their current systems for doing the same job. The participants in this study failed to demonstrate that they thought Mahara was any better than the current systems they had of storing and organising evidence of developing professional competency.

These results indicate that students changed their attitude towards using an e-portfolio. They intended to use an e-portfolio more over time but the platform (Mahara) did not offer anything more than their current system. If e-portfolios have reported benefits for teaching and learning tool as well as a tool to store evidence of lifelong learning then the results of this study are noteworthy. These results indicate that educators should consider using portfolio platforms that the students are already using.

While the benefits of using an e-portfolio have been reported in the literature there are also reported problems. For example one study [8] found the use of an e-portfolio not be appropriate and lacked social and ecological validity. Similar issues have also been reported [10]. These findings were not seen in this study, although the focus of this study was specific to practice education unlike Cordier et al. [8], for example who was using an e-portfolio to assess a specific academic subject or Wilhelm et al. [10], who focused on primary education. It may be that the context in which the e-portfolio was used in the study (practice education) combined with the relatively flexible requirements (8 items of evidence uploaded in 8 weeks) meant the challenges reported in other studies did not eventuate.

Accepting to use an e-portfolio will be influenced by several factors. The literature reports that among other things, careful consideration must be given to the purpose and planning of the e-portfolio, the time taken to implement an e-portfolio, staffing support and adequate institutional support should be available in terms of technical support and ongoing maintenance [8,23] as well as how the student engages with the technology [24]. In this study, we designed the tasks the students were required to do with these considerations in mind. For example, the University of Canberra has purchased the e-portfolio (Mahara), which includes ongoing maintenance. Technical advice is available in-person or on-line to students and staff when using Mahara. In this way the challenges reported in terms of technical advice and ongoing support and maintenance have been addressed in this study.

The purpose of using the e-portfolio was explicitly explained in the students' first year of study and reinforced at every practice education block. The assessable tasks associated with the use of Mahara linked practice education experiences with occupational therapy competencies, which strengthened the purpose and relevancy to students.

This study has several limitations. The sample size is small so results should not be generalised. We report on the use of one e-portfolio platform (Mahara) used in a prescriptive way. That is, the set up of the portfolio, the types of evidence accepted and the assessable tasks associated with the e-portfolio were all defined by the educators. Other e-portfolios are available that offer students a different experience which may affect how a student engages with the technology. Future research could involve comparing different e-portfolios with a larger sample size.

CONCLUSION

E-portfolios can be a valuable tool for students to store information that shows evidence of developing competency. However, if students are asked to engage with an e-portfolio without its relevance explained, with inadequate instruction or with poor user support they are unlikely to realize the potential benefits. This study describes a method where an e-portfolio was introduced and then embedded into an occupational therapy curriculum. This paper specifically addresses some of the reported difficulties in using an e-portfolio by explicitly explaining the relevance to students, requiring students to use the e-portfolio over the duration of the course, providing detailed technical support and ongoing user support. The student's acceptance of using the e-portfolio was measured over time and while students reported significantly better results in their ability to use Mahara and their overall intention to use Mahara, they did not necessarily think that Mahara was significantly better than the current portfolio systems they use. This paper shows that when using an e-portfolio using a structured approach across over time will allow students to engage with the e-portfolio in an appropriate way.

REFERENCES

1. Green J, Wyllie A, Jackson D. Electronic portfolios in nursing education: a review of the literature. Nurse Educ Pract. 2014; 14: 4-8.
2. Avila J, Sostmann K, Breckwoldt J, Peters H. Evaluation of the free, open source software WordPress as electronic portfolio system in undergraduate medical education. BMC Med Educ. 2016; 16: 157.
3. Chertoff J. Global differences in electronic portfolio utilization-a review of the literature and research implications. Journal of Educational Evaluation for Health Professions. 2015; 12: 1-3.
4. Lorenzo G, Ittelson, J. An overview of e-portfolios. Educause Learning Initiative. 2005; 1: 1-27.

5. Sánchez Gómez S, Ostos EM, Solano JM, Salado TF. An electronic portfolio for quantitative assessment of surgical skills in undergraduate medical education. BMC Medical Education. 2013; 13: 65.

6. Scheele F, Teunissen P, Luijk SV, Heineman E, Fluit L, Mulder H, et al. Introducing competency-based postgraduate medical education in the Netherlands. Med Teach. 2008; 30: 248-253.

7. Tochel C, Haig A, Hesketh A, Cadzow A, Beggs K, Colthart I, et al. The effectiveness of portfolios for post-graduate assessment and education: BEME Guide No 12. Med Teach. 2009; 31: 299-318.

8. Cordier, R, McAuliffe T, Wilson N, Totino R, Dender A, Smith C, et al. The appropriateness and feasibility of an on-line e-portfolio for assessment of undergraduate allied health students. Aust Occup Ther J. 2015; 63: 154-163.

9. Andrews T, Cole C. Two steps forward, one step back: the intricacies of engaging with e-portfolios in nursing undergraduate education. Nurse Educ Today. 2015; 35: 568-572.

10. Wilhelm L, Puckett K, Beisser S, Wishart W, Merideth E, Sivakumaran T. Lessons learned from the implementation of electronic portfolios at three universities. Tech Trends. 2006; 50: 62-71.

11. Kennedy G, Dalgarno B, Gray K, Judd, T, Waycott J, Bennett S. et al. The net generation are not big users of Web 2.0 technologies: Preliminary findings. 2007.

12. Joyes G, Gray L, Hartnell-Young E. Effective practice with e-portfolios: How can the UK experience inform implementation? AJET. 2010; 26: 5-27.

13. Park S. An Analysis of the Technology Acceptance Model in Understanding University Students Behavioural Intention to Use e-Learning. Educ Tech & Soc. 2009; 12: 150-162.

14. Teo T. Modeling technology acceptance in education: A study of pre-service teachers. Computers Educ. 2009; 52: 302-312.

15. Occupational Therapy Australia. Australian minimum competency standards for new graduate occupational therapists. 2010.

16. Isbel S, Wicks A, Nuessler, S. E-Portfolios: Are they useful in occupational therapy education? Med Ed Publish. 2014; 9.

17. Moores A, Parks M. Twelve tips for introducing E-Portfolios with undergraduate students. Med Teach. 2010; 32: 46-9.

18. Shroff R, Deneen C, Ng E. Analysis of the technology acceptance model in examining students behavioural intention to use an e-portfolio system. AJET. 2011; 27: 600-618.

19. Venkatesh V, Davis FD. A model of the antecedents of perceived ease of use: development and test. Decision Sci.1996; 27: 451-481.

20. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly. 1989; 13: 319-340.

21. Davis FD. User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. Int J Man-Machine Studies.1993; 38: 475- 487

22. Knight W, Hakel M, Gromko M. The relationship between electronic portfolio participation and student success. Professional File. 2008; 107: 1-16.

23. Anderson D, Gardner G, Ramsbotham J, Tones M. E-portfolios: developing nurse practitioner competence and capability. A J Adv Nurs. 2009; 26; 70-76.

24. Gerbic P, Lewis L, Northover M. Student perspectives of eportfolios: a longitudinal study of growth and development. Auckland: Ascilite Proceedings. 2009.

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