

Nursing Students' Perspectives on ePortfolios: Themes and Preferences Compared With Paper-Based Experiences

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ePortfolios play an important role in tertiary education globally in the 21st Century. Several studies have advocated for the implementation of ePortfolios on the basis that they have the potential to integrate technology whilst making learning visible and meaningful for students. However, rarely is the implementation of ePortfolios, considered from the students' perspective. The development of web-based learning resources including ePortfolios platforms are often driven by software developers with an extensive degree of technical expertise, rather than teachers and educators and, without acknowledging potential difficulties this may create for students (Andrews & Cole, 2015; Beckers, Dolmons, & Merriënboer, 2016; Cordier et al. (2016); Leacock & Nesbit, 2007; Nam & Smith-Jackson, 2007). The aim of this study was to explore students' perspectives on the value of an ePortfolio platform in the final year for nursing students in the Bachelor of Nursing programme in a New Zealand tertiary institute. The data for this study were obtained through focus group sessions. Thematic analysis identified four themes from the data which were the importance of ease of use, feedback, transparency, and the role of supporting technology. This study aligns with previous literature in demonstrating students' preference for the use of ePortfolios but extends our knowledge by considering the value of ePortfolios from students' perspectives.

Background

Over the past decade, there has been a dramatic increase in the prevalence of electronic technology in tertiary institutes globally (Association of American Colleges and Universities [AAC&U], 2015; Eynon, Gambino, & Török, 2014; Newell, 1999; Rhodes, Chen, Watson, Garrison, 2014; Stuart & Dahm, 2006). Methods of assessment that were all predominately paper-based have been digitized, some with more thought than others, as to the way in which this format changes the assessment experience. In addition, philosophies of education and employment have changed from training and workforce to the integration of skills for lifelong learning and the collection of evidence to demonstrate continuous improvement.

In response to the changing vision of education and industry, many higher education institutions internationally are disbursing considerable resources developing new curriculum and integrating technologies to foster skills of integrative lifelong learning (Clark & Eynon, 2009; Collins & Crawley, 2016; O'Keeffe & Donnelly, 2013; Riden & Buckley, 2016). In the search for an instrument to assist with this rapidly changing environment, ePortfolios are incrementally viewed as an ideal tool for supporting and assessing students by enabling students to create meaning from their learning, developing intentional digital identities, connecting experiences, and collating evidence for assessment (Barrett, 2007; Cambridge, 2008; Clark & Eynon, 2009; Collins & Crawley, 2016; Riden & Buckley, 2016).

Alexiou and Paraskeva (2010) acknowledged that the ePortfolio platform is an ideal tool for assessing in both the academic and professional environments, as it

collates digital applications that enable students to learn and present material in an interactive and collaborative assessment. However, minimal literature has examined if students prefer the ePortfolio platform as a mode of assessment when compared with paper-based alternatives, particularly in the field of nursing education. In recent years, there has been a growing recognition of the link between higher retention, completion rates, and the prevalence of ePortfolios (Dahlstrom, Dziuban, & Walker, 2013; Eynon et al., 2014; Rhodes et al., 2014). Internationally, there is increasing evidence that ePortfolios have emerged as a valid and reliable tool for assessing student development, progression, and a measure of change over a duration of time (AAC&U, 2015; Dahlstrom et al., 2013; Eynon et al., 2014; Rhodes et al., 2014). However, there is little literature from the nursing student perspective comparing the experiences of collated electronic or paper-based portfolios.

In the field of nursing, portfolios are commonly used professionally to collect evidence of ongoing competence and capability, portfolios can be defined as a collection of professional work that follows the trajectory of a nurse's career from undergraduate to registration that should illustrate the background, skills, and expertise of the individual (Green, Wylie, & Jackson, 2013). Paper-based portfolios have been nursing's traditional method of assembling evidence both in undergraduate education and once in the profession. The emerging mode of ePortfolios in higher education provides an alternative to the often cumbersome, confusing, and bulky paper-based portfolios (Collins & Crawley, 2016; Collins & O'Brien, 2018; Green et al., 2013).

Green et al. (2013) and Collins and Crawley (2016) have noted that using ePortfolios contributes to nursing students being more prepared for the clinical work environment due to the unique advantage of how and when the ePortfolio can be accessed without detracting from the clinical placement itself. Green et al. (2013) identified the benefits of using ePortfolios as a robust method of an authentic assessment due to the fact that ePortfolios present a means of assessing a student's ability in an interactive and flexible environment, which is not achievable with a paper-based equivalent. The ePortfolio assessment concept encourages realistic objectives, critical reflection, evidence of critical thinking, and, importantly, is an interactive platform for students to construct and personalize their nursing assessment and judgement.

Facilitating students' engagement in their ePortfolio experience has the potential to transform the learning journey for the student in the forms of interactive learning and in ensuring the learning experience is visible, meaningful, and relevant to the student (Eynon et al., 2014). Chang, Liang, Tseng, and Tseng (2014) acknowledged that ePortfolios are essential in the utilization of digitalization for the added benefits of collecting, presenting, and analyzing student learning (Anderson, Gardner, Ramsbotham, & Tones, 2009; Garrett & Jackson, 2006; Lettus, Moessner, Dooley, 2001; Pincombe, McKeller, Weise, Grinter, & Beresford, 2010).

Much of the research identifies the potential of ePortfolios for students from an educator's perspective; however, in contrast to other areas of education, it appears that very few studies have considered the value of ePortfolios from nursing students' perspectives. Hadjerrouit (2010) investigated the value of web-based learning resources in education and concluded "that web-based learning offers more potential learning than that considered by tradition resources, such as textbooks in terms of potential capabilities, as ePortfolio users demonstrate the ability to collaborate, provide feedback, demonstrate interactivity and flexibility" (p. 59). However, this study did not capture the notion of value directly from the student perspective.

Collins and Crawley (2016) identified that paper-based portfolios are often weighty, with students submitting academic work that is not part of, nor relevant to, the assessment. Furthermore, there is the potential for lost and/or misplaced academic work due to the colossal size of the paper-based assessment material. This is further evidenced in studies by Collins and O'Brien (2018) and Riden and Buckley (2016). By comparison, ePortfolios (a) create a structure with the convenience of many educators viewing the portfolios simultaneously, (b) are eco-friendly, (c) allow for quick dissemination of

feedback, and (d) encourage interactivity and engagement from the students with the work submitted.

International literature has shown that that ePortfolios can provide students an avenue to learn, collaborate, and present their academic requirements in an interactive, visual, and flexible manner (Andrews & Cole, 2015; Beckers et al., 2016; Cordier et al., 2016; Dahlstrom et al., 2013; Eynon et al., 2014; Rhodes et al., 2014;). Whilst there are many advocates for the use of ePortfolios over paper-based portfolios, the importance of student experiences in the implementation of new technology should not be lost, particularly as these experiences have implications for the educational experience, motivation for lifelong learning, and the transition of skills into the workplace. Furthermore, in the field of nursing education, and in environments such as clinical nursing that still rely heavily on paper-based evidence, the perspectives of students should be considered before implementing new technology. To that end, the aim of this study was to explore students' perspectives on the value of an ePortfolio platform for final year nursing students in the Bachelor of Nursing program in a New Zealand tertiary institute.

Methodology

To investigate students' perspectives on the value of an ePortfolio platform for final year nursing students in the Bachelor of Nursing program in a New Zealand tertiary institute, 10 volunteers were requested from the 2017 cohort of students enrolled in the Transition to Nursing course ($N = 44$).

Final year nursing students were selected, as they had experience of paper-based portfolios, clinical work environments, and a clear vision of what would be expected in terms of professional evidence collection once they entered the workplace. The ePortfolio platform Pathbrite was used in this study and accessed by the students through the institutional learning management system.

Participants

An initial, informal education session was held with the cohort of 2017 final year nursing students ($N = 44$ students) to explain the rationale for the research and to request volunteers four weeks prior to the commencement of their Transition to Nursing course. It was explicitly stated to participants that the research would not involve the graded marking of the portfolios and would focus on the experiences of collating paper-based versus ePortfolios for submission in the course. All potential participants were informed that they would receive an hour-long

tutorial on the ePortfolio platform prior to the commencement of the Transition to Nursing course, and that an ePortfolio support person would be available via e-mail or one-to-one based assistance for questions, clarification, and technology based complications for the duration of the nine-week course. As the ePortfolio support person was also part of the research team, it was reiterated to all potential participants that the research and researcher would take no part in grading the portfolios.

Following the information session, a sample size of 10 final year students were recruited for this research study ($n = 10$). All potential participants were advised of the intention of using focus group sessions at the end of the nine-week clinical placement to obtain data for analysis. To avoid power imbalances, the researcher who conducted focus group sessions was not responsible for the organization, facilitation, or marking of the academic work associated with this course.

The only exclusion criteria for this research was that all the participants' clinical placement had to be within a 50 km radius of the institution to facilitate the ePortfolio education session and to provide one-on-one support, if required.

Focus Group Sessions

In order to facilitate participant attendance and the opportunity to fully share experiences in small groups, three focus group sessions were scheduled. Session one included six participants, session two included two participants, and session three included two participants. The focus group sessions were up to an hour long.

To guide the sessions, a series of semi-structured questions were composed (Table 1). The survey was not validated, but questions were trialed with a pilot group prior to use with the first focus group.

Ethical Considerations

Ethical approval was granted by the relevant institutional committees prior to the commencement of any student involvement in this research.

Data Analysis

Thematic analysis is one of the most common forms of analysis in qualitative research. Thematic analysis was selected to pinpoint, examine, and identify the recording patterns (i.e., themes) obtained within transcribed data (Creswell, 2013; Denscombe, 2014; Koshy, Koshy, & Waterman, 2011; Kreuger & Casey, 2009; Teddlie & Tashakkori, 2009). Initial themes are then identified as patterns across data sets that are important to the critical discussion and analysis of a phenomenon, which are associated to the research's specific research questions. Previous authors have described thematic analysis as research that allows for the "identification within the data of three to six overriding abstract ideas that summarize the phenomenon of interest" (Gray, Grove, & Sutherland, 2017, p. 273). The fact that the researchers were heavily involved in the action research journey with the participants informed the focus group questions but not the development of focus group data.

All data from the focus group sessions were collated initially by one researcher, transcribed, coded, and evaluated in order to identify themes from the data using the method previously described by Braun and Clarke (2013). In order to enhance the trustworthiness of the data, all themes were then evaluated and re-evaluated by the research team before settling on the findings using methods suggested by Nowell, Norris, White, and Moules, (2017). Braun and Clarke (2013) posited that thematic analysis has only recently become more prevalent and is fundamentally a technique of categorizing and examining patterns and themes in qualitative data.

Table 1
Focus Group Questions

Item No.	Questions
1	How would you describe the concept of ePortfolios?
2	How important to you is the flexibility aspect of an ePortfolio?
3	What type of device did you most commonly access your portfolio from?
4	How do you rate the convenience of using an ePortfolio?
5	What method of portfolio do you prefer and why? (ePortfolio vs. paper portfolio concept)
6	How would you describe what you perceive as the positive benefits of using an ePortfolio?
7	How would you describe what you perceive as any negatives attributes if any of using ePortfolio?
8	How did the ePortfolio concept encourage you to be a reflective practitioner?
9	Will you consider continuing with an ePortfolio as a method of obtaining evidence for your Professional Development Recognition Portfolio (PDRP) and to use in the work environment once graduated?

Figure 1
Ease of Use/Convenience

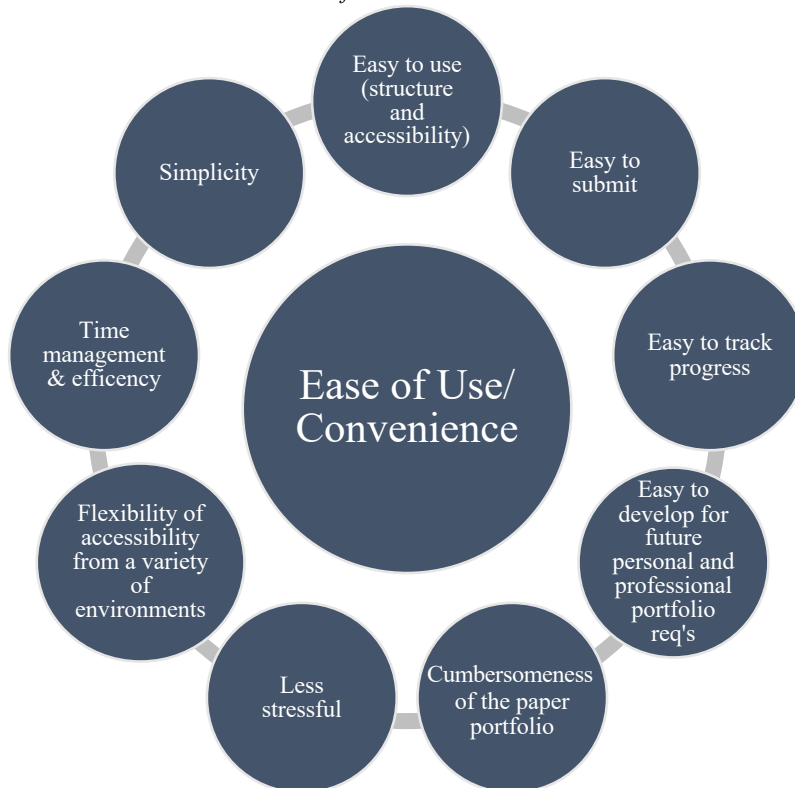


Figure 2
Feedback



Research Findings

Five initial themes were collated from the focus group data. On review, the five initial themes were condensed to four final themes:

- Ease of use/convenience
- Feedback
- Transparency
- Supporting technology

Theme One: Ease of Use/Convenience

Initial analysis identified ease of use and convenience as distinct themes. On re-evaluation, we decided to merge these two themes because there were distinct similarities within the data. Figure 1 shows some of the coded extracts used to evidence this theme.

The theme ease of use/convenience could be identified clearly in the data with virtually every student recognizing an aspect of timely accessibility of an ePortfolio over a paper-based portfolio as relevant to the experience. For example, one student stated,

I think it was . . . being able to track your progress. I really liked that and not having to come into school and submit it. . . . Not racing around the morning of and submitting it was less stressful.

A second student noted,

[The] convenience of not having to drive in on the day it was due, to not have not having to drive it into sit to hand it is, it was crazy, the night before it was uploaded and that was it.

Others similarly explained, “There is less room for error I think [all agreed] because you can’t lose something, and you don’t have to dig around or worry about finding specific pieces of paper” and “You can get to your portfolio however you wanted to, you didn’t have to bring the whole thing with you.”

Theme Two: Feedback

The concept of feedback was expressed by participants. In particular, they described relevance to the ongoing feedback facilitated through the ePortfolio by the course coordinator whilst students were collating the evidence in a variety of clinical contexts.

The relevance of feedback is of particular note in this situation, as evidence was collected by students on placement, often with limited contact with the course coordinator. As such, the ePortfolio in this context worked very much as the collection

of evidence would do in an on-the-job training scenario. The participants also acknowledged that receiving a prompt notification in the form of an e-mail from the ePortfolio platform was of great benefit. They found it reassuring and comforting that the academic work they were submitting could be viewed throughout the nine-week clinical course, and that the institute’s academic staff were aware of their progress in the clinical environment.

Figure 2 summarizes the participant’s comments, which identified that ePortfolios helped them in several ways. One student stated, “To get the comments back the next day [yeah] . . . yes, I am on the right track with what I am doing.” Another noted, “So easy to be able to upload, and I really like the feedback. . . . Oh, it was cool to get that feedback throughout and I didn’t have to carry around a big folder!” A third student described other positive features like, “Comments like ‘excellent’ throughout, you are progressing well. [I] loved the ‘like’ button, it is like a Facebook like, it is a like button.”

Theme Three: Transparency

The theme of transparency was identified in relation to participants acknowledging that they found that the ePortfolio assisted them in being able to “see” their portfolio effortlessly. The value to the students of timely access and navigation came through in the focus groups (see Figure 3). In addition, the structure of the portfolio and being able to track progress toward completion was also seen as of importance.

The concept of transparency aligns with the “visual” concept of ePortfolios. The transparency of the ePortfolios transcended to what was available on the screen due to the structure and tracking capabilities of an ePortfolio platform in comparison to paper-based alternatives. For example, students explained, (a) “It was nice to see 4/4 completed and 14/14 completed”; (b) “It was nice to see it was all there, to see the portfolio being structured and filled in and having a look through it and looking through it and having it uploaded was quite nice”; and, (c) “It was really easy . . . to keep track on what I have done and what I needed to do and upload.”

Theme Four: Supporting Technology

The final theme that emerged from the data was the reliance all participants placed on supporting technology during their ePortfolio experience. Figure 4 identifies the codes from within the data. Examples of supporting technology included the use of software such as CamScanner or Fast Scan to capture ePortfolio evidence; however, the data demonstrated that this need to engage technological support went further than

Figure 3
Transparency

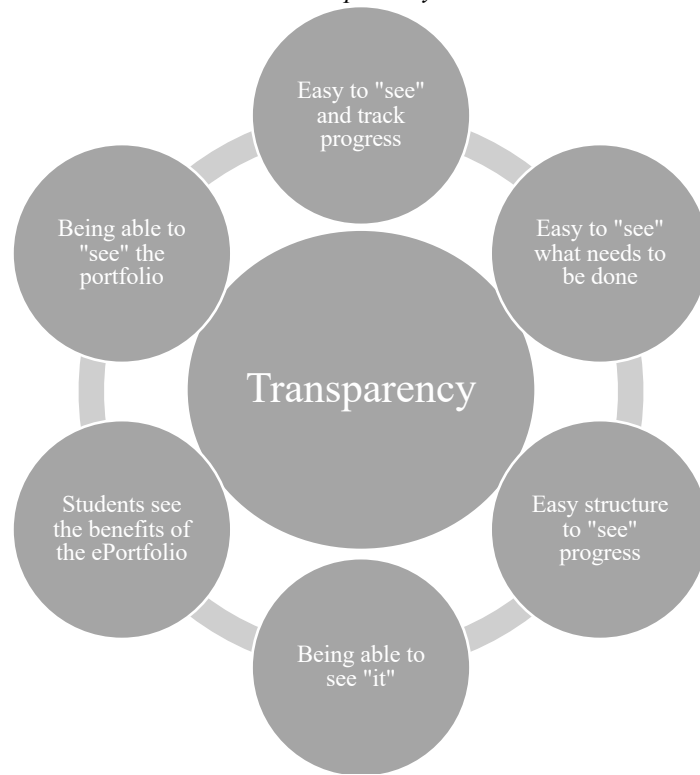


Figure 4
Supporting Technology



evidence capture in terms of the need for technology assistance in editing and collating evidence when compiling the ePortfolio. Of the 10 participants in the trial, five identified scanning technology on their mobile devices, one used a scanner at home, and the remaining four used a scanner in the institution's library. Several students explained, (a) "I could just take a photo and use CamScanner"; (b) "I have a scanner at home, but I didn't have to come to the library"; and, (c) "You just take photos of the documents on your phone and it converts it to the PDF and you upload it from there."

The nature of the assessment used with this ePortfolio required a portion of documentation signed or written by their registered nurse preceptor who was based in the clinical environment. This was the commonly cited requirement for the use of supporting technology. It is noteworthy that while the students did identify the need for supporting technology to fulfill the requirements of the ePortfolio, this collectively was not seen as a negative experience when using the ePortfolios.

Discussion

The most apparent finding to emerge from the analysis of these data is that ePortfolios "worked" from the students' perspective, due to the themes identified as ease of use, feedback, transparency, and supporting technology when using ePortfolios.

This research has found that the use of ePortfolios work favorably for students due to the ability to collate evidence in a versatile electronic mode through ePortfolios that is not provided by paper-based portfolios. The ease of use, feedback, transparency, and supporting technology facilitated through ePortfolios created a powerful and flexible tool for students to integrate both academic and practical work. Furthermore, the ability of final year nursing students to transition from paper-based to ePortfolio production sets a precedent for the integration of ePortfolios into the workplace.

The findings from this study are consistent with that of Beckers et al. (2016); Eynon et al. (2014); Garrett, MacPhee, and Jackson (2013); O'Keeffe and Donnelly (2013), Riden and Buckley (2016); and Williams et al. (2008). Participants reinforced the added value that ePortfolios bring to their studies. These results corroborate ideas from Hadjerrouit (2010), who suggested "that web-based learning offers more potential learning than that considered by traditional resources, such as textbooks in terms of potential capabilities, as ePortfolio users demonstrate the ability to collaborate, provide feedback, demonstrate interactivity and flexibility" (p. 59). This added value of

ePortfolios was represented in this study by the four themes. Participants involved in this study positively favored and preferred the concept of ePortfolios in order to receive prompt feedback

The perspectives from this study reinforce findings by Fawns and McKenzie (2010) and Rhodes (2011), who observed the convenience of the ePortfolio concept. Their work suggested that ePortfolio assessments allow for the assembling and documentation of a student's individual journey in an electronic platform, which offers a compelling, multipurpose, convenient, and transferrable podium that aids in the expansion and synthesis of clinical judgement and academic knowledge. This study goes further by adding a nursing student perspective to that of the educator's opinion.

An explanation as to why ePortfolios could be considered easier to use than paper-based alternatives could be found in the consideration that while paper-based portfolios can include a similar structure to that provided by the ePortfolio, due to the nature of online layout and the hierarchy of menus used to navigate to the evidence, ePortfolios can be perceived by users as easier to use or more convenient for accessing the evidence. This premise is supported by Green et al. (2013), who recognized from students the advantage of ePortfolios as an assessment method is due to the fact ePortfolios provide an online visual, easily maneuverable structure that permits students to present and submit assessment material in an interactive, personalized, and flexible environment.

In this study, there was an overwhelming preference for ePortfolios versus paper-based portfolios due to the inherent flexibility, convenience, and the ability to receive quick feedback on academic work. The focus group sessions indicated that the participants collectively identified that there was significant value in receiving quick feedback. It is important to note that the ePortfolio platform we utilized provided notification to students in the form of e-mails when work had been viewed and/or commented on, aiding in the facilitation of quick dissemination of feedback. Prior studies relating to ePortfolios have also noted the importance of the ability to receive and deliver quick feedback (Collins & Crawley, 2016; Green et al., 2013; Hadjerrouit, 2010); however, this feature is not easily integrated into paper-based portfolios feedback.

An important finding from this research was that the participants disclosed that by using ePortfolios, the learning experience became visible in its unique ability to be creative and interactive. Secondly, the ePortfolio design allowed them to accept more ownership of their assessment material, and it became more meaningful due to its flexibility and ability to collaborate with

fellow students. This finding is consistent with the literature (Butler, 2006; Eynon et al., 2014; Hadjerrouit, 2010; Richards-Schuster, Ruffolo, Nicoll, Distelrath, & Galura, 2014), and the consideration of this perspective of meaningful assessment should not be lost in terms of the encouragement of lifelong learning.

Previous commentary has identified concerns about the ability of participants to adapt from paper-based to ePortfolio submissions during undergraduate education (Williams et al., 2008), which are not supported by this study. Although students preferred the concept of ePortfolios as a mode of assessment, one unexpected finding was how reliant the students were on additional supporting technology to successfully use the ePortfolio platform within the academic portfolio requirements of the course. While the participants in this study expressed a need for supporting technology when submitting via ePortfolio, they still confidently believed that—even though the ePortfolio platform is not specifically designed for the academic requirements of the nursing course—by using supporting technology to assist with their ePortfolio, there were noteworthy advantages in comparison to a paper-based submission. This finding will help draw the attention of other ePortfolio users to consider the implementation of free applications to aid in the smooth transition of uploading documents to ePortfolios from smart devices, thus minimizing reliance on additional technology.

Limitations

It must be acknowledged that each ePortfolio platform is unique, just as each student perspective is unique. The recruitment of only 10 participants and use of a single ePortfolio platform in conjunction with specific needs of a final year nursing course are undoubtedly very specific and may differ substantially from larger student cohort perspectives on ePortfolios. It is therefore unreasonable to assume that all ePortfolio platforms would be able to identically replicate the experiences of students in this study; however, the themes from this study could transcend topics, platforms, and assessment environments. Thus, the limitations of this study are acknowledged, but we consider that the findings are still transferable.

Conclusion

This study shows a preference of final year nursing students for ePortfolios over paper-based portfolios due to the ease of use, feedback, and transparency associated with the electronic submission. These themes are not unknown in the provision of ePortfolio; however, their representation from a student's perspective is a novel addition to the literature.

A key recommendation from this study is the consideration of supporting technologies when implementing ePortfolios, particularly when evidence may still need collation from a paper-based form, as is the case in nursing education. Further research should be explored that measures learner outcomes and learner experience. Overall, the learners enjoyed using an ePortfolio in this course and saw value in the use of ePortfolios regarding their life-long learning journey. As a result of this research, the tertiary institute has implemented ePortfolios in all undergraduate and postgraduate nursing qualifications and an additional longitudinal study examining the value of ePortfolios is currently being completed.

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