



Developing an ‘ePortfolio of Evidence’ Towards Employment and Registration for Early Childhood Teachers

Pauline Roberts¹, Leonie Menzel¹, Bev Adkin¹, and Lennie Barblett¹

Corresponding author: Pauline Roberts (pauline.roberts@ecu.edu.au)

¹School of Education, Edith Cowan University

Abstract

ePortfolios have been in use in Initial Teacher Education (ITE) courses for many years. The link to employability has been part of these initiatives, however, recent concerns over workforce and employment requires additional focus to ensure the ongoing sustainability of the ePortfolio. Ensuring teachers are ‘classroom ready’ led to increased pressure on pre-service teachers (PSTs) to demonstrate achievement of the Australian Professional Standards for Teachers (APST) (Australian Institute for Teaching and School Leadership, 2017). The goal of this project was to explore and influence PST’s thinking towards the ePortfolio through changes in practice. The research entailed a rapid systematic review of ePortfolio practice towards employment and registration; an online survey of early childhood PSTs to identify their use of the ePortfolio; implementation of improved programs to scaffold the completion of the ePortfolio; and examination of Learning Management System Discussions from graduating PSTs to identify the benefits or changes resulting from the scaffolding processes. Although PSTs recognised that the ePortfolio should be augmented across the degree, many did not feel the need to fully engage with the platform before the submission of the ePortfolio was required for assessment. Many PSTs still appeared unaware of the connection of the ePortfolio to future employment and registration requirements.

Keywords

ePortfolio; employability; scaffolding; Australian Professional Standards for Teachers (APST)

Introduction

Workforce issues are at the forefront of many discussions around teaching and there are calls for increased capacity of Initial Teacher Education (ITE) courses to develop career and classroom ready teachers who will have impact in their future classrooms (Teacher Education Minister Advisory Group, 2014). The Australian Professional Standards for Teachers (APST) are the measure by which graduate teachers are assessed to be considered qualified to teach in Australia (Australian Institute for Teaching and School Leadership, 2014). For ITE providers, there is ongoing pressure to ensure graduates are meeting these standards and can demonstrate this impact.

One of the ways that achievement of competence for employment can be demonstrated is through an ePortfolio where pre-service teachers (PSTs) are collecting, collating, and reflecting upon evidence that demonstrates their achievement of the APST at the Graduate level. While the use of an ePortfolio is not new, the renewed focus on classroom impact has increased accountability and aligns with the

addition of the Teacher Performance Assessment (TPA) into ITE programs for graduation and employment. What is lesser known, however, is how PSTs might be using these items – the ePortfolio and the TPA documents, towards gaining employment and maintaining registration with required bodies.

This project aimed to identify how ePortfolios had been used in previous research in relation to employability and registration then identify where and how final year PSTs had and were engaging with the ePortfolio. The goal was to identify the PST’s perceptions of the platform’s value in applying for positions or gaining and maintaining registration.

Based on Leontiev’s theory of action, this research explored ‘the role of object-oriented activities on human development and social transformation’ (Cong-Lem, 2022a, p. 1097). This cultural-historical activity theory focuses on the change in individuals based on interaction with activities with a particular object (Cong-Lem, 2002b). In this case, the focus is on the potential transformation of participants viewpoints and use of the ePortfolio (the object) as a tool for employment through the completion of activities within the PebblePad platform. The research questions that guided this research were:

1. How can the ePortfolio be used to enhance PST focus on the APST for employment and registration?
2. What factors do PSTs consider influence their use of the ePortfolio both while at university and post-graduation?

Method

The research implemented an iterative process with three stages of data collection in which the results of an initial stage, informed the next (see Figure 1). The findings of a rapid systematic review were combined with results of an online survey (Stage 1) to identify areas for improvement to alter the content to be taught to PSTs in their final semester (Stage 2). Analysis of the in-class conversations and Learning Management System (LMS) Discussions then highlighted any impact from the implemented content (Stage 3). The mixed methods approach allowed for the triangulation of data and for additional depth to be gained across the research. The research had ethics approval from [removed for blind review] before any data collection commenced and all participants gave informed consent for data collection and use.

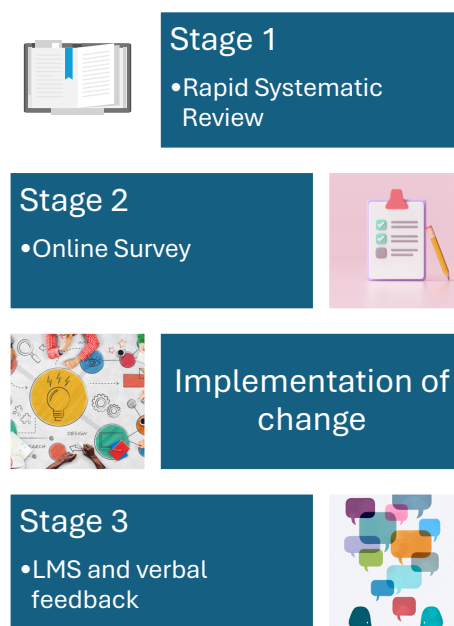


Figure 1: Research stages

Rapid Systematic Review

A rapid systematic literature review (Beynon & Straker, 2022) was conducted for this research to provide a more structured approach than a traditional narrative review and to identify the scope of research in this area. Searched databases were A+ Education, International Journal of ePortfolio, ProQuest and Scopus, to identify articles of relevance around the project focus and aims. The search period was confined to 2017-2022 to capture contemporary research in this field, with key terms being 'support' AND 'ePortfolio' AND 'evidence' AND 'teaching'. The search terms were decided with reference to common terminology used in the focus of the research project. The searches conducted on the selected databases yielded few results, with only nine articles identified using the following perimeters: the literature needed to be (1) written in English; in (2) peer reviewed journals; (3) available in full text; and (4) published within the last 5 years (2017-2022). The nine identified publications were read in full and summarized in an excel spreadsheet, highlighting the theoretical positions, sample, methods, analysis key findings with attention to key themes in each article (see Table 1). In specific relation to employability, four key themes were identified in more than one article: improved practice, reflection, professional identity, and career advancement that are each summarized in the results section.

Online Survey

The PSTs were asked to complete an online survey where the focus was on what they had done in the ePortfolio to the current point of their degree and their confidence in completing several actions towards the uploading reflections and the use of evidence within the ePortfolio platform. The PSTs were invited to participate in the online survey during Semester One 2022 while enrolled in the final Professional Experience (PEX) units in the Bachelor of Education (ECS) (BEd) (n= 262) and Master of Teaching (ECS) (MTeach) (n=35). The survey was completed online through Qualtrics and consisted of seven questions that asked what students had done in the ePortfolio to the current stage of their degree and their confidence in uploading evidence, reflecting on practice, aligning to the Australian Professional Standards for Teachers, and exemplifying their practice to identify their current use of the ePortfolio towards future employment. The survey has been used in previous research into the use of ePortfolios within ITE programs so is known to provide useful data for analysis within this context (Roberts, 2018; Roberts & Kirk, 2019). The content of the survey was designed to identify current perceptions and use of the ePortfolio platform as a way of identifying their current interaction level with the 'object' within the activity theory.

The data was analysed through a mixed methods approach where the Likert scale questions were given numerical responses that could be tabulated and graphed. The extended response questions were downloaded, reviewed, and through the application of the principles of open coding and inducing categories from common content (Saldana, 2013), themes were identified. Two researchers independently completed this review process to ensure interrater reliability. There was a high level of agreement of the key themes with only differences in wording of the themes identified.

Implementation of changes within coursework units

Based on the information gained from the rapid review and the data analysed from the online survey, the two unit co-ordinators within the three final semester units where the ePortfolio was embedded made changes to the content and scaffolding offered within these units. The updated content was co-created by the unit coordinators and embedded as lecture content or tutorial activities in undergraduate (Bachelor) - ECS4261 (n= 76); Internship (n= 9) and postgraduate (Masters) - ECE6170 (n= 41) units.

For the undergraduate capstone unit the ePortfolio was an assessment item. This meant that students needed additional content to remind them of previous interaction of the portfolio to store evidence from professional experience, to use the structure set up in second year, and to add to the files

uploaded through their Music units to show achievement of set skills and knowledge. Much of the updated content was dedicated to the use of the platform for the upcoming assessment, but also after graduation with revision of why to use it – registration and employment; reflection about what had been done to date – uploaded evidence and set the structure; as well as time provided within classes to ask specific questions as they worked on the ePortfolio submission.

For the other undergraduate unit, PSTs completing a four-day per week internship in schools, the ePortfolio was an assessed item of the program so the additional scaffolded support was similar to that outlined above. Opportunity to engage with the platform was given to the interns during the on-campus sessions offered. The interns viewed examples of completed ePortfolios and looked at how the unique aspects of the internship project could be developed and showcased effectively within the modelled structure of the ePortfolio assessment task.

For the postgraduate ITE course, there was much less awareness of the ePortfolio, due to lack of ongoing exposure throughout the degree program. This group had been provided with online resources on how to collect and upload evidence from professional experience; how to develop the ePortfolio; and why it might be useful, however, it had not been embedded as an ongoing tool into unit content within the degree. The PSTs had completed an assessment task within the PebblePad platform as part of their Music unit, however, this was not aligned to the use of the platform for registration and employment. This meant that many additional resources were provided including an online tour of a completed ePortfolio, a workshop on why and how to use the ePortfolio, as well as reminders throughout the unit of what could be added to the ePortfolio and how the evidence could be used. In addition to this, one assignment in the final semester unit was adjusted to incorporate the completion of one page of the ePortfolio to receive explicit instruction and feedback on this process prior to graduation.

LMS and verbal feedback

The final stage of data collection was through the final semester units, where responses to some assigned readings and tutorial activities were reviewed to explore PSTs responses regarding other university's use of the ePortfolio. This feedback provided further explanation of the PSTs thinking in relation to the university ePortfolio process. These were provided either in person (in class) or through interactions within Discussions on the LMS platform.

Results

Systematic Review

The rapid systematic review identified that ePortfolios have been used in higher education ITE programs for many years, with research highlighting the clear benefits for improved teaching practice and employability (Munday, 2017). Several major findings were highlighted from the literature review (Table 1), including the key themes of improved practice, reflection, professional identity, and career advancement.

Table 1: Overview of literature reviewed

Source	Aim	Sample	Method	Findings	Themes
Alajmi, M.M. (2019). The impact of e-portfolio use on the development of professional standards and life skills of students: A case study. <i>Entrepreneurship and Sustainability Issues</i> , 6(4), 1714-1735. http://doi.org/10.9770/jesi.2019.6.4(12)	To explore what e-portfolio content is required for the development of professional standards.	n= 35, University in Saudi Arabia – education students.	Semi-experimental approach – descriptive method of analysing.	<ol style="list-style-type: none"> The use of e-portfolios improves capabilities, skills, and knowledge. The use of e-portfolios encourages student teachers to know about tendencies, trends, and interests in compiling relevant contents. 	<p>Professional identity</p> <p>Reflective practice</p>
Ciesielkiewicz, M. (2019). The use of e-portfolios in higher education: From the students' perspective. <i>Issues in Educational Research</i> , 29(3), 649-667. https://www.iier.org.au/iier29/ciesielkiewicz.pdf	<p>To understand students' perspective on the value/usefulness and importance of the e-portfolio.</p> <p>To discern what intrinsic factors can motivate successful creation of e-portfolio.</p>	n=121, initial teacher education students in private university in Spain.	Pragmatic quantitative approach.	<ol style="list-style-type: none"> E-portfolio is a valuable tool for assessment and learning, as well as career development. Greatest factor that influences intrinsic motivation to actively engage in creation of e-portfolio is their perspective on value and usefulness. Educational institutions should include strategies to support intrinsic motivation that manifest value and usefulness of e-portfolio. 	<p>Career advancement</p> <p>Improved teaching practice</p> <p>Professional identity</p>
Conefrey, T. (2017). LEADing the way with ePortfolios in a first-generation learning community. <i>International Journal of ePortfolio</i> , 7(2), 161-173. https://files.eric.ed.gov/fulltext/EJ1159900.pdf	To understand the roles of ePortfolios in first-generational student learning community.	n=15, students in LEAD Scholars Program.	Qualitative case study.	<ol style="list-style-type: none"> ePortfolios appeared to deepen student learning, encourage self-efficacy and promote valuable 21st century digital literacy skills for first year university students, when embedded synergistically within the course. ePortfolios helps students integrate their learning across disciplinary boundaries and consolidate academic identity. 	<p>Career advancement</p> <p>Improved teaching practice</p> <p>Reflective practice</p>

<p>Cordie, L., Sailors, J., Barlow, B., & Kush, J. (2019). Constructing a professional identity: Connecting college and career through ePortfolios. <i>International Journal of ePortfolio</i>, 9(1), 17-27. http://www.theiejep.com/pdf/IJEP319.pdf</p>	<p>To understand how ePortfolios are used and develop more authentic learning experiences.</p> <p>To determine if ePortfolios can improve skills such as communication, technical competency, visual literacy and critical thinking through reflection.</p>	<p>Undisclosed.</p>	<p>Three case studies – separate programs within public land-grant institution.</p>	<ol style="list-style-type: none"> 80% of students view ePortfolio as an effective tool to demonstrate their preparedness to a professional audience. ePortfolio is a valuable tool for constructing a professional identity, preparing students for assuming responsibilities of their prospective careers. The ePortfolio is valuable for students and attractive to potential employers – results in all three case studies. 	<p>Professional identity</p>
<p>Farrelly, D., & Kaplin, D. (2019). Using student feedback to inform change within a community college teacher education program's ePortfolio initiative. <i>The Community College Enterprise</i>, 25(2), 9-38. https://home.schoolcraft.edu/ce/25.2.9-38.pdf</p>	<p>To discover the extent to which an ePortfolio program can serve as a tool for the development of students' technological skills, professional development and overall growth.</p>	<p>n=67, completed survey, n=9 in-person interviews.</p>	<p>Mixed-method, surveys and interviews.</p>	<ol style="list-style-type: none"> Students expressed favourable attitudes towards ePortfolio in survey results, encouraging deep reflections. Proper initial training and subsequent technological support is crucial for students to make the most of their ePortfolio experience. 	<p>Reflective practice</p>
<p>Munday, J. (2017). An embedded ePortfolio in a master's degree: Is it working? <i>International Journal of ePortfolio</i>, 7(2), 175-185. https://files.eric.ed.gov/fulltext/EJ1159833.pdf</p>	<p>To report whether the ePortfolio capstone task was an effective means for students to: draw together key elements of their study within the Masters program; and to reflect and identify changes in philosophy, thinking, or practice in professional work.</p>	<p>n=105, graduates Master of Education program at Charles Sturt University.</p>	<p>Case study – interviews and ePortfolio samples.</p>	<ol style="list-style-type: none"> ePortfolio use and process were highly successful with many graduates using learned skills in professional work as classroom teachers or leaders in education. Embedded ePortfolio programs lead to reflective practice and better teaching outcomes in classroom teachings, transferrable skills, online technology use, reflective practice on professional and personal thinking and learnings, and the ability to share a personal and professional 'narrative', across different audiences. 	<p>Improved teaching practice</p> <p>Reflective practice</p>

Thibodeaux, T., Harapnuik, D., Cummings, C., & Dolce, J. (2020). Graduate students' perceptions of factors that contributed to ePortfolios persistence beyond the program of study. <i>International Journal of ePortfolio</i> , 10(1), 19-32. https://files.eric.ed.gov/fulltext/EJ1279409.pdf	To examine the factors that contribute to ePortfolio persistence in an online program.	n=50 graduates online survey, n=7 participated in semi-structured interviews.	Convergent, parallel mixed-methods design – over multiple years.	<ol style="list-style-type: none"> ePortfolios value is based on student perceptions and instructors' views. There is a positive correlation between instructors who align learning outcomes with student experiences in the use of ePortfolio. Real-world projects that result in authentic artifacts are highly desired by students in academic learning experiences. 	Improved teaching practice Professional identity
Torre, E. (2019). Training university teachers on the use of the ePortfolio in teaching and assessment. <i>International Journal of ePortfolio</i> , 9(2), 97-110. https://iris.unito.it/bitstream/2318/1725628/1/IJEP335.pdf	To present the characteristics and results of a training course on the use of ePortfolio.	n=48, teachers at University of Turin.	Initial survey, then final survey – linked to previous studies.	<ol style="list-style-type: none"> ePortfolio can facilitate students' reflecting on their own learning and plan their own professional learning based on an area of interest or need. The successful application of the tool linked to several factors including, digital skills, technical rigidity and increase in workload perceived by teachers and students. 	Improved teaching practice Professional identity
Walland, E., & Shaw, S. (2022). E-portfolios in teaching, learning and assessment: tensions in theory and praxis. <i>Technology, Pedagogy and Education</i> , 31(3). 363-379. https://doi.org.10.1080/1475939X.2022.2074087	To explore the challenges and opportunities of e-portfolios for teaching, learning and assessment in secondary school and higher education settings.	A 14-keyword search in Cambridge University library online.	Literature review	<ol style="list-style-type: none"> E-portfolios can offer opportunities for transformative practices in teaching, learning and assessment in secondary and higher education – especially providing opportunities to access hard-to-measure constructs (reflection, collaboration and student journey). Several tensions identified, more research needed on linking e-Portfolio use and practices back to their intended outcomes. 	Professional identity Reflective practice

The reflective nature of students' reviewing their knowledge and practice to compile their own digital ePortfolio, leads to improved classroom practice and accountability against required professional standards (Munday, 2017). Research by Munday (2017) identified that a student's awareness of career expectations and knowledge is evident through the creation of their personalised ePortfolio, as the act of sourcing evidence to address professional expectation is required. Conefrey (2017) concurs stating that when ePortfolios are used within teaching programs and operate synergistically with other learning experiences, students demonstrate persistence towards completion, and are more likely to be successful with addressing professional expectations. The creation of an ePortfolio allows students to identify moments of change and growth within their practice and note opportunities for further development, which can act as a positive influence in changing students' thinking and actions (Munday, 2017; Torre, 2019). Ciesielkiewicz (2019) stated that when pre-service teachers see ePortfolios as useful for their future employment and not just a component of their coursework, they are able to gain ongoing motivation for the successful completion of tasks within the platform. The ePortfolio allows students' to not only demonstrate competence against standards but see the value and the usefulness of a professionally presented ePortfolio, to showcase knowledge and skills as a job search tool (Ciesielkiewicz, 2019). An effective and professionally presented ePortfolio can be used for ongoing career advancement, well after university graduation.

Reflective practice has always been central to education (Dewey, 1933) and embedded into ITE courses. The use of ePortfolios is an extension of this practice, as ePortfolios have the potential to transform the way material is taught to students enrolled in ITE programs (Conefrey, 2017). Through the support of self-reflective autonomous learning that occurs in the gathering of essential evidence, students are demonstrating the skills necessary for future employment (Walland & Shaw, 2022). PSTs are encouraged and empowered to be knowledgeable about tendencies, trends, and interests by creating and compiling the contents of an ePortfolio against required professional standards, therefore improving their knowledge of career expectations (Conefrey, 2017; Alajmi, 2019). Through reflective practices, pre-service teachers gain more in-depth knowledge of what teachers do and why, thus preparing them for future employment opportunities and encouraging them to demonstrate increased autonomy over career aspirations. The reflective opportunity that using an ePortfolio presents, allows students to plan their own professional learning at the point of need, ultimately improving adaptability and employability (Torre, 2019). Through this, PSTs are constructing their own professional identity.

Constructing a professional identity is a key competence of any PSTs learning journey and the ePortfolio is a valuable platform for establishing this identity (Cordie et al., 2019). Through the implementation of ePortfolios in ITE programs, PSTs can construct a digital presentation of themselves as a professional teacher, capturing the lived experiences within their course and emphasising elements aligned with professional requirements which connect to future employment opportunities (Alajmi, 2019). A completed ePortfolio may be attractive to future employers as it has the potential to build a PSTs professional identity enhancing future career opportunities. This is especially true when the ePortfolio is presented professionally, including the 'real world projects' undertaken with authentic artifacts (Cordie et al., 2019; Thibodeaux et al., 2020). Hard to measure constructs such as collaboration, reflection, and the PSTs' whole learning journey, can be captured in the construction of an ePortfolio and this assists in being able to demonstrate competence in key areas required for employment (Torre, 2019; Walland & Shaw, 2022).

The creation of an ePortfolio affords students the opportunity to improve teaching practice and be able to articulate knowledge and skills towards future employment opportunities, making the ePortfolio a valuable learning and job-search tool for PSTs to utilise as they graduate (Ciesielkiewicz, 2019). Conefrey (2017) states that ePortfolios prepare PSTs for roles as engaged citizens and leaders in an increasingly technologically connected society. The platform allows PSTs to continue to improve practice, reflect and adjust their professional identity as they continue to learn in the classroom. The ability to personalise the professional presentation of an ePortfolio, makes this tool attractive to

employers and empowers the PST to address future employment opportunities independently and professionally (Ciesielkiewicz, 2019).

The major findings from the literature review, highlight the use of the ePortfolio for fostering employability opportunities for PSTs. The goal of this research was to share these insights with the pre-service teachers, so they also make these connections to their practice, and this is an ongoing challenge for the sector.

Online Survey

There was a less than predicted response rate to the online survey with only 38 surveys returned out of a potential 297 students (262 in Bachelor of Education; return rate 12.79%). As all participants (PSTs) were in the middle of their final professional experience which may have been a strong contributor to the low response rate received, however, the results were consistent with previous iterations of the survey being used (Roberts & Kirk, 2019; Roberts et al., 2021). Results of the online survey identified that 60% of the students who responded were not confident overall in using the platform for building their ePortfolio. However, it was interesting to note that a total of 67% were confident and very confident in demonstrating their competence against the Australian Professional Standards for Teachers which may not necessarily be contingent on using the platform to build this.

Fifty-three percent of PSTs that responded did not understand the purpose of the ePortfolio and did not feel confident in writing a reflection or adding assets to their ePortfolio. The survey did not specifically ask which program the PSTs were completing, however, many PSTs made this explicit within their responses either through specifically naming the course, through the explanation of the engagement with the ePortfolio, or through mention of codes of other units within their program. It is estimated that of the 38 returned surveys, 13 were from the undergraduate program and 16 from the postgraduate course with the remaining nine not giving any indication of program. When asked if they had added assets to the ePortfolio during the current semester 73% of PST respondents answered 'No'. This response supports the findings of the Likert Scale – Confidence by Purpose question, where a high percentage of students indicated they did not have confidence in this task. 53% of PSTs were also not confident in writing a reflection in the ePortfolio. The responses to this question indicated that the PSTs had other priorities leading up to the final professional experience including university assignments, preparation for their professional experience and the Teacher Performance Assessment.

The responses that stated the PST had no knowledge of any aspect of the ePortfolio were identified from the comments included to have come from PSTs in the Master of Teaching course as there had been minimal exposure to the ePortfolio in the course prior to completing the survey. Some Master of Teaching (ECS) students had completed an assignment in a previous unit using the platform, however, most students had no understanding of the purpose or structure of an ePortfolio or how to construct this within the platform which significantly influenced all their responses in the survey.

The Bachelor of Education students did acknowledge they had received scaffolded support in building their ePortfolio in their 2nd, 3rd, and 4th Year professional experience and professional engagement units, however, due to lack of time and different priorities, they had not engaged fully in the development of their ePortfolio until it was required for assessment in their capstone unit in 4th year. If they could 'talk to their first-year selves' the PSTs reported that they would say to: 'start collecting evidence from the very first prac' (PST 26) and 'take some time after each prac or during prac to add in evidence' (PST 20). There were calls to 'collect more evidence' (PST 8) and to 'pay attention to it. It is something that you will be continuing to do throughout your course and it can be valuable' (PST 5). There was a strong theme throughout the discussion that it is essential to 'be aware and mindful of the APST' (PST 17), and to 'think about what evidence you need to meet the standards' (PST 7).

When asked if PSTs would continue to use the ePortfolio post-graduation, 72% of the respondents answered with 'maybe' while only 17% said they would definitely continue to use this tool. The feedback for this question highlighted the need for the ePortfolio to be 'easily accessible' (PST 24) and

to 'serve its purpose well and authentically' (PST 19). These comments reinforced the need to clearly identify both the purpose and relevance of the ePortfolio in maintaining registration and ongoing employment requirements.

From the MTeach (ECS) PSTs the strong message was that the ePortfolio needed to be introduced to all students so they could develop their knowledge and skills in collecting evidence, building the ePortfolio and competently understanding how to apply this knowledge to continue to use it. They wanted 'more tutorials on how to use PebblePad' (PST 8); 'further experience' (PST 9) on what to include and 'some good examples' (PST 21) that could guide their practice. For all PSTs, it was clearly about believing that the ePortfolio has an authentic purpose and is relevant in their future employment and registration. This was exemplified by comments such as 'If I knew that employers actually looked at it or cared about it, I would use it?' (PST 5), and 'if I was assured it was relevant, there was interest from prospective employers' (PST 14). These responses demonstrated the focus on the here and now and getting a job rather than the process and knowledge gained through the development of the ePortfolio.

There was the opportunity in the survey for the PSTs to provide overall feedback and suggestions regarding the ePortfolio, which also reiterated the key themes of effective communication about the platform. This is required to sit alongside the portfolio's purpose from the beginning of each course to support and scaffold PSTs knowledge and skills in building an ePortfolio. PSTs desired easy to use strategies to gather strong evidence with the provision of quality examples of ePortfolios to illustrate they are graduate ready and to ensure the ePortfolio is purposeful for future employment.

Changes within coursework

Given these concerns, it became a priority to ensure the PSTs were given additional information of the purpose and additional uses of the ePortfolio within units in the following semester. It was important to engage them in discussions of ongoing requirements where sustaining the practice of adding to their stories within the platform might be of benefit. To assist with this within the tutorial classes, the undergraduate PSTs were asked to respond to a reading by Cain and Campbell (2021) that reported a much higher proportion of PSTs seeing the ePortfolio as something they would continue to use post-graduation. The current PSTs were asked why they felt the response to ongoing use of the ePortfolio was higher in the Cain and Campbell (2021) study than it was in the survey for the research being reported here. The PSTs in class responded that in the reading, the ePortfolio appeared to have been embedded more effectively across the ITE course and that there was additional support for its use. While the PSTs in the research reported here agreed that they were not ready to think about the graduate standards in first year, they believed it needed to have been given additional explicit focus from second year onwards. The responses from the 27 online PSTs through the Learning Management System noted similar positive and negative perceptions.

Five PSTs who studied online were positive about the experience of the ePortfolio in terms of layout, structure, and flexibility to showcase their learning. One PST responded that they knew of a school where ePortfolio interaction was part of monthly processes within the school for all teachers. This perception, however, was still in the minority.

The less positive responses highlighted concerns with lack of time (26% n=7) and other priorities taking over once they have a teaching job (15% n=4). Some PSTs that responded felt there was a lack of training of how the ePortfolio could effectively be used, especially given it was not specifically requested in job application processes. There was also feedback about the platform itself and PSTs preferring other, more innovative tools to be used instead of the PebblePad platform adopted within this course.

In specific relation to the changes made within the capstone Professional Engagement unit as part of this research, one PST who studied online commented:

A possible reason for the massive comparison ... is that many like myself had not thought of the possibilities PebblePad had to offer past registration, where this week's reading explained many reasons that continued adding to this software can have benefits to progression in your professional career. Using this ePortfolio as an ongoing document to display what you bring to each job position you apply and interview for, adding in the versatility of what you can bring with experience a teacher encounters as no year is the same (PST online 29).

This quote highlights that resources be made available to the PSTs and mapping the use of the ePortfolio throughout the course from second year would be helpful. The data suggest the bulk of the PSTs are not engaging in the ePortfolio until they need to submit it for assessment in their final year.

Discussion

The data from this this research has further supported the investigation into the use of an ePortfolio in ITE courses and continues to highlight that there is still more to be done for the potential of these platforms to be realised in terms of use for registration and employment post-graduation. This ongoing supportive work needs to include meeting the expectations of PST on useability and access to the program and additional attention needs to be given to the value of the process over the product that outline the additional benefits inherent in completing the ePortfolio. Convincing PSTs of this may continue to be challenging in the current employment climate, however, which means the messaging will need to be strong and persistent from the beginning of their degrees. These are the key points further considered throughout this Discussion section.

Useability and access

The findings of this research support the work of other scholars that for PSTs to fully engage with the ePortfolio, they need ongoing support, autonomy of the process and multiple opportunities to engage in the process from the beginning of their degrees (eg Allan & Cleland, 2012; Roberts, 2018; Roberts & Kirk, 2019; Beckers, et al., 2018; Masters, 2013; Oakley et al., 2014). The feedback provided through the survey, particularly from the postgraduate students was the need to embed the ePortfolio across the course so they are regularly able to practice using the platform and can begin to build their evidence stores before needing to submit the ePortfolio or use it for employment and registration.

Effective use of the ePortfolio requires the platform to be seeded within the curriculum design process for all three potential purposes (Nguyen, 2022). PSTs need the scaffolds in place (Hall & Townsend, 2017) that allow them to collect, select, reflect, and project their knowledge and skills within the platform (Kwong & Churchill, 2023). PSTs require regular opportunities to reconcile concepts to goals, practice, and beliefs (Hall, 2023) and while this was being implemented within the undergraduate program, the lack of integration and scaffolded opportunities to engage was a significant problem for the PSTs in the postgraduate program. Without this ongoing exposure, the focus remains on the product rather than the process.

Process not the product

The findings showed that while at university, the PSTs view the purpose of the ePortfolio as being an assessment piece to pass a final semester unit. The PSTs do not appear to recognise the learning, self-regulation, critical thinking, and metacognitive benefits of completing the tasks in developing their ePortfolios. Alexiou and Paraskeva (2020) identified that organising a way to collect and personalise data was a holistic learning process that required self-regulation, while Hamdan and Yassine-Hamdan (2022) saw this as important in 'preparing critical thinkers who participate in the learning process rather than act as passive recipients' (p. 2). By systematically integrating the reflective process of the ePortfolio (Carneiro & Alves, 2022), the PST can develop metacognitive skills (Pate & Main, 2017) as they need to provide an 'elaboration of the memory that [they] want to transmit' (Carneiro & Alves,

2022, p. 6). This 'heightened self-awareness in student-teachers [can] contribute to their personal and professional development' (Hall & Townsend, 2017, p. 3) as well as 'their identity as teachers and learners' (Chye et al., 2019, p. 24) through critical reflective inquiry. Chye and colleagues (2019) suggest that explicit opportunities to reflect in the ePortfolios that detail the learning process that is embedded, as well as use of the platform over time rather than at the last minute for assignment submission, may assist with the recognition of the different purposes of the ePortfolio.

While some PSTs in the research reported in this paper made this connection 'I know we have to do one for TRB registration' (PST 16) it is often in the feedback received after graduation via emails from graduate teachers where the recognition of this learning has been realised. These graduates write to thank the university team after they have used the platform for an additional purpose. This delayed appreciation does demonstrate that what is happening in the program does have an impact, however, while at university the focus still seems to be on the assignment. The purpose of the ePortfolio in terms of learning from the process or it being of use beyond graduation is still not fully appreciated. The PSTs are initially focused on gaining employment and current advertisements for positions do not request a portfolio submission.

ePortfolio for employment

To apply for positions for the Department of Education and some other school sectors, PSTs are asked to develop Situation, Action, and Outcome (SAO) statements in relation to the professional standard domains and submit this document with their Curriculum Vitae (CV) in the application process. This documentation allows PSTs to emphasise their alignment to standards and provide authentic artifacts towards employment (Conefrey, 2019; Cordie et al., 2019; Alajmi, 2019; Thibodeau et al., 2020). While PSTs are encouraged to share the link to their ePortfolio when applying for jobs, there is no current evidence to suggest potential employers look at this additional demonstration of competence.

Research by Mitchell et al., (2021) found that the use of ePortfolios in recruitment was very low and while advantages were identified, the ePortfolio was an underutilised tool in employment spheres. The advantages of an ePortfolio were that they showcased the skills and work of the owner, and employers could use them to comprehensively differentiate between candidates as well as being able to see if the candidate might fit within the organisational culture. The notions that the ePortfolio can demonstrate digital literacy and that the accessibility of the platforms for candidates to target employer preferences were well understood, however, the time needed to review them, and the excessive amount of information given made their use less desirable. There were also concerns raised in terms of being able to verify the authenticity of the claims and the evidence within the submissions.

The ePortfolio can demonstrate the ability to learn which 'is essential to become and stay employable' (Ziegelbauer & D'Errico, 2021, p. 37) and when the ePortfolio activity is closely aligned to employment, it becomes more important it is to the person developing it (Jackson & Tomlinson, 2022) so the lack of use by employers impacts on the PST attitudes to its use. Even though the PSTs prepare SAO entries to their ePortfolio, the feedback suggests that they have not made the connection to this process when completing job applications, despite the options to personalise this representation (Ciesielkiewicz, 2019). This is made more problematic in the current employment market where a reported shortage of teachers means many PSTs have secured employment before finalising their degrees.

ePortfolio in a time of plentiful employment

The current 'teacher shortage' is an additional factor in ePortfolio use currently as workforce challenges in education result in PSTs regularly working in schools prior to completing their degrees or are successful in securing positions based on connections through completed professional experience. The PSTs are already engaged citizens and sometimes leaders in the education sector (Conefrey, 2017) who have constructed their teaching identity (Cordie et al., 2019) prior to completing their ePortfolio. The job market is currently not requiring the ePortfolio, so making the case for the

ePortfolio assisting with employment is not aligning with the experience of the PSTs at this point. This may change in the future but in the meantime, the difficulty in engaging PSTs in the process when the focus is on the product remains problematic, even when the need for ongoing registration is mentioned.

In terms of registration, the other purpose of the ePortfolio given to PSTs, there is a delayed response time here that may be impacting on the lack of connection. The current registration process for graduating PSTs is that on completion of their course, the PSTs' final transcript is forwarded to state/territory-based Teacher Registration Board (TRB). The systems within the registering authority then match this transcript to a completed online registration application and the PST gains Provisional Registration. This initial process currently does not require any additional evidence from the PST. Once registration is granted, PSTs are out teaching and facing the challenges as a new teacher which can be overwhelming in the first few years, and so the ePortfolio is out of mind. The PSTs do not tend to be thinking about career expectations (Munday, 2017) or reflecting on evidence to demonstrate skills (Walland & Shaw, 2022) because they are surviving the first years in a challenging position within a classroom. While the PSTs (or by now early career teachers) are required to submit evidence of achievement of the professional standards at the Proficient Level to move to Full Registration, this process is not necessarily front of mind in these first teaching years. It is often at the time when graduates are moving to full registration that emails are received that highlight that the graduate teacher has made the connection to the ePortfolio as a learning tool. The delay in this process, however, further adds to the lack of urgency the PSTs place on the ePortfolio prior to graduation.

Limitations

A key limitation of this research project was the inability to complete the initially planned focus group interviews with the PSTs post submission of the ePortfolio. Many of the PSTs commenced work directly following the submission of the ePortfolio and so despite numerous requests, no participants volunteered. This reduced the depth of data available for analysis that may have further informed future ePortfolio implementation within the two ITE courses.

Conclusion

ePortfolios continue to offer potential for pre-service teachers to map achievement against professional standards that can be used in gaining employment and to maintain ongoing registration. What this research continues to highlight, however, is that further work is required to remind the PSTs of the relevance and relationship of the ePortfolio to the professional standards and that the learning gained while engaging with the task is actually why it is important. Currently, the distal nature of ePortfolio use given employment conditions and the time lag until re-registration is failing to support these opportunities.

Ongoing supports throughout the degree may continue to enhance the focus of the pre-service teachers on the ePortfolio and employment connection, and further develop the knowledge that they will need to come back to it for ongoing registration. For this to be successful, however, the courses will need to ensure all other enabling factors are in place and barriers are reduced. This includes strategies such as, increasing confidence in the platform through the provision of training and time in each year of the courses in ways that embed the ePortfolio across the course from early in the degree program. This is especially important for the postgraduate students who currently receive less scaffolding and support across the shortened degree program.

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