

2019

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Pauline Roberts

*Edith Cowan University, pauline.roberts@ecu.edu.au*

Gillian Kirk

*Edith Cowan University, g.kirk@ecu.edu.au*

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### Recommended Citation

Roberts, P., & Kirk, G. (2019). Introducing an ePortfolio into Practicum-Based Units: Pre-service Teachers' Perceptions of Effective Support. *Australian Journal of Teacher Education*, 44(5).  
<http://dx.doi.org/10.14221/ajte.2018v44n5.5>

This Journal Article is posted at Research Online.  
<https://ro.ecu.edu.au/ajte/vol44/iss5/5>

## Introducing an ePortfolio into Practicum-Based Units: Pre-service Teachers' Perceptions of Effective Support

Pauline Roberts  
Gillian Kirk  
Edith Cowan University

*Abstract: ePortfolios are gaining momentum as a preferred way for graduates to demonstrate current and developing capabilities against industry standards. Effective training is essential for new graduates to produce quality and competitive ePortfolios. This research focused on the perspective of pre-service teachers on the effectiveness of learning opportunities provided to increase confidence and skills in developing an ePortfolio in an Australian four-year undergraduate degree. The initial phase of this research employed a survey to examine the perspective of 132 second-year and 105 third-year pre-service teachers. Results indicated that for the second-year cohort there was a minimal increase in the levels of confidence across all areas. In contrast, the third-year pre-service teachers showed some increase in confidence in developing an ePortfolio and understanding its purpose. While the findings from this study emphasised the pre-service teachers' need for ongoing hands-on support, it also highlighted their reluctance to seek support at an independent level.*

**Keywords:** ePortfolio; teacher education; support; perception

### Introduction

Electronic portfolios (ePortfolios) are rising in popularity and increasingly being implemented into higher education courses. The United Kingdom (UK), in particular, have experienced rapid implementation of the ePortfolio in non-professional degree programs where they have become compulsory (Joyes, Gray, & Hartnell-Young, 2010). The United States (US) and Australia have also experienced increased interest and implementation of the ePortfolio in many tertiary level courses (Hallam, 2008). This popularity has grown out of the known diversity of the tool including common utilisations such as a platform to demonstrate competency against industry standards; a repository to collate reflections on student experience, as well as evidence of competency (Gerbic, Lewis & Amin, 2011). While the increased focus on graduate employability is universal, for Australian teacher education courses in particular, recent recommendations from government bodies (Teacher Education Ministerial Advisory Group [TEMAG], 2014) have called for a greater focus on evidence of achievements against nationally recognised standards (Australian Institute for Teaching and School Leadership [AITSL]). This has added focus to a 'Portfolio of Evidence' for pre-service teachers that can be directly applicable to practicum-based units where these competencies are generally assessed.

While there has been research on ePortfolios to demonstrate industry competency (MacEntee & Garii, 2010; vonKonsky, Oliver, & Ramdin, 2009), this research took an alternate view to investigate the supports that pre-service teachers identified that assist in

developing a professional ePortfolio and the influence this support had on their confidence in using the platform. The intent was to establish a baseline from which to inform future support and contribute to the successful implementation of the ePortfolio.

A survey was used to examine the confidence and perspectives of 132 second-year and 105 third-year pre-service teachers enrolled in the practicum-based units of their Bachelor of Education (Early Childhood) course. In these units the pre-service teachers were provided with guidance and support surrounding the different capabilities of the PebblePad ePortfolio platform and encouraged to start using this context as a repository for evidence. The focus of the implementation was for the pre-service teachers to use the platform as a means of documenting reflections and recording evidence of teaching practice against the AITSL standards (AITSL, 2014). Following the implementation of instructions from support providers, the pre-service teachers were asked to provide feedback on their perspective of which supports assisted in raising confidence and those required for further successful construction of an ePortfolio. This paper reports on the initial stage of the research with the first cohort of pre-service teachers that consequently informed ongoing implementation of these structures with the next group of pre-service teachers.

## **Literature Review**

### **The Australian Context**

In 2010, AITSL was established to promote quality practices for teachers in all Australian schools (AITSL, 2014). The institute's mission is to promote excellent standards amongst teachers and school leaders in order to improve student learning and outcomes. The aim is to develop and maintain rigorous standards that drive teachers to continually improve practice through professional learning and development.

In 2014, TEMAG were tasked with making recommendations for improving initial teacher education to ensure new teachers were better prepared (TEMAG, 2014). They identified the need for pre-service teachers to develop a "Portfolio of Evidence" that demonstrates their achievement of the Graduate level of Professional Standards (p. 33). In turn, this portfolio would enable pre-service teachers to demonstrate their teaching capability while demonstrating to future employers their classroom readiness.

TEMAG (2014) further articulated the need for pre-service teachers to make connections between theory and practice. They noted that professional experience interwoven with coursework was identified as being consistent with the exemplary teacher education observed in the United States (Barber & Mourshed, 2007). To this purpose, the Portfolio of Evidence has the additional capacity to house evidence that, through professional reflection, can be attached to theoretical notions providing a platform for professional growth. As an ePortfolio enables the user to effectively organise and cross-reference reflections and evidence in multiple modes, it is fast becoming the preferred option for collecting evidence and promoting pre-service teacher reflection and improvement (Oakley, Pegrum, & Johnston, 2014).

For undergraduate pre-service teachers this necessitates critical reflection and documentation of evidence that demonstrates their proficiency at Graduate Teacher level (AITSL, 2014) which also demands a degree of self-directed learning (SDL) (Beckers, Dolmans, Knapen & van Merriënboer, 2018). Carefully selected and well-presented items demonstrating knowledge and expertise are essential for graduates as they compete with others for employment both nationally and overseas. One way to demonstrate and present these skills and abilities is through a portfolio that is developed through regular, consistent and guided contributions over the course of the pre-service teachers' degree and presented in

a platform that best showcases their competencies. Pre-service teachers' evidence of competencies are enriched through critical pedagogical reflections that are fundamental to professional growth (Kumari & Naik, 2016). These processes, while embedded within this context, are not unique to Australia.

### **The ePortfolio**

The ePortfolio is defined as:

*a collection of authentic and diverse evidence, drawn from a larger archive representing what a person or organization has learned over time on which the person or organization has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose (Barrett, 2005, p. 5).*

Globally, over the past decade the ePortfolio has grown in popularity as a tool to demonstrate achievement as well as for assessment and as a means of reporting learning over time (Allan & Cleland, 2012; Boulton, 2014; Donnelly & O'Keeffe, 2013). This particular capability provides an effective platform in which pre-service teachers can map their performance against professional standards. Moreover, ePortfolios are an increasingly popular tool for both developmental learning (the process of collecting and reflecting) and for assessment and accreditation (the presentation of a product) in a number of institutions worldwide (Lewis & Gerbic, 2012; Ring & Ramirez, 2012). This increase in popularity may be attributed to the integrative learning potential that ePortfolios possess that facilitate a connection between experiences and knowledge with professional standards (Wuetherick & Dickinson, 2015).

ePortfolios can be developed and presented in a variety of formats and platforms. These range from a blog-style ePortfolio in free Web 2.0 tools such as Blogger, Wordpress or Wikispaces (selected by Oakley, Pagrum & Johnston, 2014), through to licensed platforms that are often supported within organisations and universities such as Mahara (as used by Briggs & Jensen, 2013), and PebblePad, that was developed in the United Kingdom (UK). This current research used PebblePad (version 4) as the university licensed platform for three reasons: first, the private nature of the platform (all assets remain private unless shared); second, prompts for reflection are embedded into the platform itself and finally, it was decided to honour a previous agreement the university held with PebblePad.

### **Developing ePortfolios using the PebblePad Platform**

A number of universities have reported their versions of implementing PebblePad ePortfolio platforms into their Bachelor of Education courses. In 2010, the University of Tasmania introduced PebblePad to demonstrate pre-service teachers' development in addition to providing a complete exit portfolio (Allan & Cleland, 2012). The researchers documented the implementation procedures of the ePortfolio over a three-year period and found that the pre-service teachers were supported through a community of practice, along with the incorporation of templates and scaffolds with additional support from the University's Teaching and Learning and Information Technology (IT) departments. They also found that assessment with the ePortfolio needed embedding across units and the pre-service teachers required modelling in developing exemplars.

La Trobe University in Victoria reported the process they took in introducing PebblePad for the purpose of building an ePortfolio (Masters, 2013). Masters (2013) stressed the need to scaffold pre-service teachers' acquisition of new knowledge and skills within the

learner's Zone of Proximal Development (ZPD). This study found that pre-service teachers did not require scaffolding in simple tasks using the PebblePad, but were immobilised when required to access non-interactive supports such as practice web folios and digital and printed supports when attempting tasks that were more complicated. Masters (2013) concluded that the pre-service teachers lost motivation because they were required to operate outside of their ZPD. A second attempt at using the PebblePad was more successful as the pre-service teachers were initially given small achievable challenges and then were facilitated in developing the shell for the ePortfolio. With this tangible end product, the pre-service teachers gained ownership and were more motivated to engage with it. There is consensus amongst the literature that increased ownership is associated with a heightened degree of learner autonomy (Beckers, et al., 2018).

### **Developing ePortfolios Using Alternative Platforms**

The University of Western Australia introduced ePortfolios using Wikispaces to first year early childhood and primary pre-service teachers in two phases. The first phase of implementation engaged the pre-service teachers in constructing a developmental ePortfolio that provided scope for networking. This was a reflective space, or "personal learning environment," where they could submit rough drafts of assignments; have feedback given on their work, and were able to provide comments within the bounds of pre-set categories while making links with resources and people (Oakley, et al., 2014, p. 37). This phase was integrated across course units, where assignments and tasks were set to contribute to the ePortfolio development. The emphasis of this phase was on reflective practice.

The second phase came in the final semester where pre-service teachers converted their developmental ePortfolio into a showcase ePortfolio. This process took place within a dedicated Information and Communication Technology (ICT) unit where the end product was assessed by a panel of School Principals and Deputy Principals and the finalised version was recommended for use in future job applications. The emphasis of this latter phase was on the promotional aspect of the ePortfolio. Oakley et al., (2014) state the decision to separate the phases into reflective practice and promotional ePortfolios was deliberate to address potential conflict between the two. While the platform and implementation processes described by Oakley et al. differed to how the ePortfolio was implemented in this current study, their emphasis on the importance of purpose has synchronicity. It is interesting to note that while their study had more emphasis on purpose, the pre-service teachers were still unsure due to the integration of the process across units and the different perspective each unit attached to the purpose.

### **Student Perceptions of Learning to Construct an ePortfolio**

Studies from the United States of America (USA), including those conducted by Singh and Ritzhaupt (2006) and Lin (2008), identified student frustrations in learning to use the technology in which to develop their ePortfolios. While pre-service teachers in Singh and Ritzhaupt's (2006) study cited a lack of support and training, and little understanding and investment from their teachers, Lin (2008) reported on the frustrations and challenges that occurred when pre-service teachers created their first ePortfolios. In particular, Lin (2008) found that most of the challenges pre-service teachers experienced were related to digitizing artifacts and troubleshooting hardware and software problems. Recommendations for further

support cited in this research included the use and benefits of peer support, an online forum and the involvement of Information Technology personnel and other education staff.

### **Implications for Student Support**

Collectively, this literature review has highlighted the need for the gradual release of support when learning how to develop an ePortfolio (or any new concept). Masters (2013) suggested that pre-service teachers were able to work independently with tasks below their ZPD or at their actual level of development, but need sufficient and responsive scaffolding within the ZPD. A responsive reaction will eventually see the learner take ownership of the concept, thus increasing learner autonomy (Beckers, et al., 2018; Masters, 2013). This responsivity is indicative of the transformation of participation theory proposed by Rogoff (2003). This theory is discussed later in the paper as the theoretical framework of the research.

Another way to support pre-service teachers in independently utilising the ePortfolio is to provide regular and purposive opportunities for its use across different units (Allan & Cleland, 2012). This familiarisation may alleviate some of the frustrations cited by Lin (2008), and once again offer learners a sense of control and ownership. Oakley et al. (2014) alerted readers to potential problems that may arise from putting the ePortfolio in several units and stressed the need for consistent support being provided to pre-service teachers.

The cited studies indicated the importance of responsivity to pre-service teachers during the learning process. In particular, they noted that pre-service teachers (Masters, 2013) felt unresponsive supports such as practice webfolios and digital and printed materials made learning ineffective. Rather, responsive scaffolds or supports such as peer support (Lin, 2008); as well as additional support from the University's Teaching and Learning and Information Technology (IT) departments (Allan & Cleland, 2012) have been found to be more effective, possibly due the potential for gradual release. Moreover, responsivity suggests that both the learner and the support provider are flexible and dynamic.

### **Theoretical Framework**

This study adopted tenets of Rogoff's (2003) development as transformation of participation theory to frame data collection and conceptualise the findings. Central to this theory is that people inherit practices invented by others as they engage in sociocultural activity. This theory explains learning as a process and through participation in the process both the learner and the support provider change as they engage in sociocultural activity.

In Rogoff's (2003) words, "Humans develop through their changing participation in the sociocultural activities of their communities, which also change" (p. 11). It is important to use these words to position the paper within this frame. As pre-service teachers participate in developing an ePortfolio, their participation requires change from novice to expert. The support given to pre-service teachers in developing an ePortfolio constitutes the sociocultural activity, and the cultural community are the pre-service teachers and teaching staff. The cultural community comes with history. In this case, some of the pre-service teachers had prior experience with ePortfolios and/or the PebblePad platform. The cultural community has relations with other communities and for this purpose, these relations are contained to the support given in developing their ePortfolio.

## **Methodology Implementation**

The initial stage of this research project was implemented in a four-year Bachelor of Education degree course in an Australian university with a focus on ongoing improvement of the implementation of the PebblePad ePortfolio platform for pre-service teachers. The research involved the provision of support for pre-service teachers in the use of the ePortfolio platform in practicum-based units of study. After the support was given, feedback was sought from the pre-service teachers via a paper-based survey on this support and what they felt was required in addition to this.

### *Sample*

One hundred and thirty-two on campus and off campus second-year pre-service teachers and 105 on campus third-year pre-service teachers were invited for this research. The return rate for the survey was 22% ( $n=29$ ) for second-year pre-service teachers and 73% ( $n=77$ ) for third-year pre-service teachers. The lower rate of return from second-year pre-service teachers could be contributed to the unit attendance design where there was no clear point of contact following their practicum took place after four weeks of university preparation.

### *Research Instrument*

Data were gathered through a survey that was developed based on prior knowledge of the research team through doctoral studies that had identified strengths and challenges surrounding student experience with the ePortfolio platforms as well as additional key points from the literature. The questions were trialled in focus groups within tutorials to identify if they were worded appropriately for consistency and that they provided results that could be analysed against the research questions. Minor changes to the wording of the questions and their order in the survey were made from this piloting, however, the overall content remained the same. The survey was one page in length and asked pre-service teachers to rate their levels of confidence in their ability to independently use the PebblePad ePortfolio platform and what support they perceived as being most helpful in raising this. This instrument asked for two ratings (beginning and end) to ascertain pre-service teachers' view of their confidence, before and then after implementation. The survey questions and response types are outlined in Table 1.

Question Asked	Response Type
At the beginning of the unit, how would rate your confidence with the following: Understanding the purpose of an ePortfolio Ability to use the Pebble+ platform Ability to record reflections in the ePortfolio Skills in creating an ePortfolio in Pebble+	Rating scale:  Very confident Confident Not confident
What support did you think you needed to increase your level of confidence?	Short answer
Did you create any ePortfolio assets within the Pebble+ platform in this semester? If yes, which ones?	Yes / No  Short answer
Did you use the <i>PebblePocket</i> App? If yes, what for? Which format did you find more user friendly and/or efficient?	Yes / No Short answer
What support was MOST useful to you in using the Pebble+ ePortfolio this semester?	Short answer
What ADDITIONAL support do you think you need?	Short answer
Do you think you will use the Pebble+ platform to continue to collate evidence of your professional development? If yes, how? If no, why not?	Yes / No  Short answer
At the end of the unit, how would you NOW rate your confidence with the following: Understanding the purpose of an ePortfolio Ability to use the Pebble+ platform Ability to record reflections in the ePortfolio Skills in creating an ePortfolio in Pebble+	Rating scale:  Very confident Confident Not confident
Pre-service teachers were also asked to provide any additional comments on the back of the survey document.	Open-ended

**Table 1. Survey questions asked of pre-service teachers**

**Procedure**

The second and third-year pre-service teachers were introduced to the concept of developing an ePortfolio using the PebblePad platform in their respective practicum units. As mentioned, for second-year pre-service teachers there were four weeks of preparation time. The third-year pre-service teachers had 10 weeks. Within this time, the second-year pre-service teachers were shown how to use the PebblePad platform to complete reflective entries by a staff member of the University’s Centre for Learning Development (CLD) using a predesigned template for completing reflective entries. These steps were also documented in a Word document and shared on the Blackboard Learning Management System (LMS) for all pre-service teachers. While the purpose of the reflective journal was stated, it was not discussed at length with pre-service teachers due to time constraints.

The third-year pre-service teachers were presented a one-hour lecture on the purpose of the ePortfolio including examples of how it could be used. They then participated in a two-hour hands-on workshop that guided them through the process to set up the shell of the ePortfolio with assistance of the support providers in the unit. During this time, they were given a demonstration of how to use the PebblePocket App which allows for evidence such

as photos and videos to be remotely added to the pre-service teachers' ePortfolio resources. Table 2 provides a summary of these procedures.

<b>Year Level</b>	<b>2<sup>nd</sup> Year</b>	<b>3<sup>rd</sup> Year</b>
Placement details	5 week practicum in WA Kindy or Pre-Primary 4 weeks of classes then practicum	6 week practicum in Junior Primary 10 weeks of classes then practicum
Prior Practicums	Observational Days (Birth – 8) 4 week practicum in Daycare	As with 2nd Years + Second-year placement
Number of pre-service teachers	132 (ON and OFF campus)	105 (ON campus only)
Tasks Required	Reflections on practice based on a template	Set up ePortfolio 'shell' Add Philosophy and Wordle
Support given	(1) Training session facilitated by staff member of CLD - how to access the template and complete the reflective entries. These steps were documented in a Word document and shared on Blackboard for all pre-service teachers. (2) Asked to add additional entry at next in-class session	(1) one hour lecture of the what and why of the ePortfolio including examples of how it can be used (2) Hands-on workshop (2hrs) to set up the shell of the ePortfolio with assistance of the support providers (3) Demonstration of PebblePocket App (4) Asked to add to ePortfolio during the practicum
Surveys returned	29 (22%)	77 (73%)

**Table 2. Participant groups and the support given**

At the end of the teaching units, each cohort was invited to complete a survey on their experience and levels of confidence as well as the support they had received through the unit. During the process of approval by the University ethics committee it was decided that the survey would be provided in a tutorial by the support provider of that class – not the researcher - and the pre-service teachers were provided with an information letter and consent form that outlined the anonymity of the survey and the option not to be involved in the research.

### *Data Analysis*

The survey responses were entered into an Excel spreadsheet to provide collation of the numerical responses and the direct comparison of the written comments made by the pre-service teachers. The data for the confidence levels were utilised to provide descriptive graphs of the reported levels of confidence. The open-ended responses were initially coded with descriptive codes as outlined by Miles and Huberman (1994) where key words and phrases such as “time”; “in-class practice” were identified. From this initial coding, pattern coding (Miles & Huberman, 1994) was then used to determine the frequency, connections or relationships of particular themes. This process enabled the research team to identify the most useful support mechanisms and most requested additional support strategies by the pre-service teachers across year levels. These comparisons were made initially within the year-level cohorts and then across the two groups to identify similarities and differences based on the support given through the implementation. There were many common themes and repeated comments that were identified through the analysis that enabled conclusions to be drawn about the perceptions of the pre-service teachers about the ePortfolio support they had received.

## Findings

This section outlines the results of the survey and is organised by question so that comparisons could be made between the two groups of pre-service teachers. It outlines the numerical data of the confidence levels and the key statements pre-service teachers made in completing the survey.

### Confidence Levels

The first section of the survey asked the pre-service teachers to rank their confidence levels at the beginning of the unit and again at the end of the unit in the areas of the Purpose of the ePortfolio, their ability to use PebblePad, their ability to record reflections and their skills in creating the ePortfolio. The results indicated that there were minimal increases in confidence levels for second-year pre-service teachers from the beginning to the end of the unit. As can be seen from the graphical representation shown in Figure 1, the pre-service teachers reported minor improvements in their confidence with the purpose of the ePortfolio, but there was little change in any of the other areas.

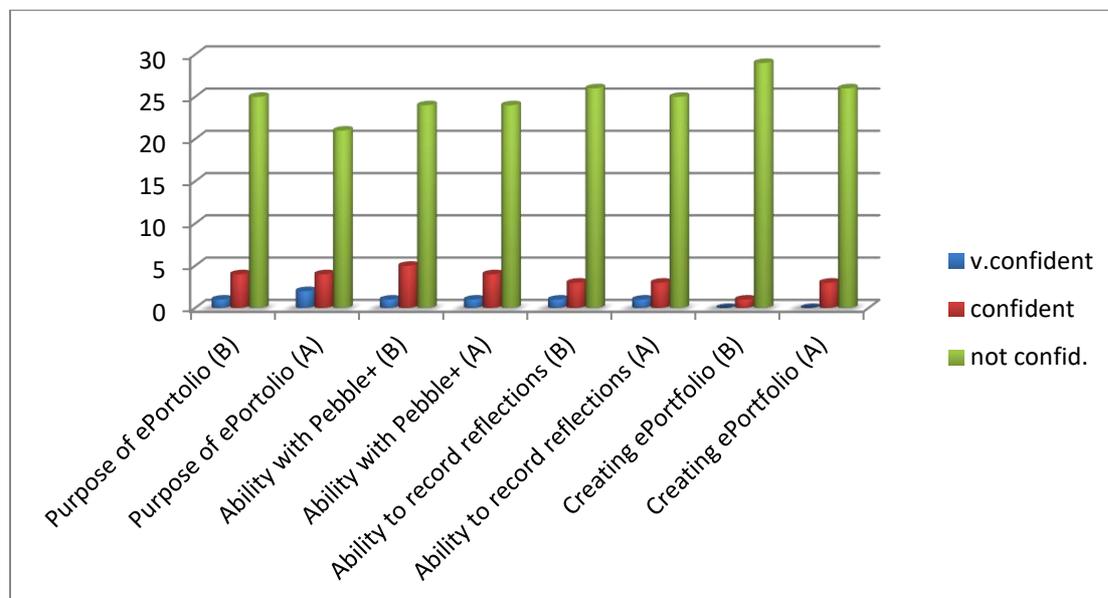


Figure 1. Student confidence BEFORE (B) and AFTER (A) implementation – 2<sup>nd</sup> Year

In contrast, the third-year pre-service teachers did show some increase in confidence in the use of the ePortfolio platform although their levels did start higher (see Figure 2). In terms of the purpose of the ePortfolio, there was an overall increase in confidence. There was a similar increase in the reported ability to use PebblePad / Pebble+. The largest area of change for the third-year cohort was the variation in the confidence in recording reflections, which saw the *not confident* numbers reduced from 68% before to 29% after, while the *confident* increased from 32% to 68%. The final criteria of creating the ePortfolio also saw an increase in confidence although to a lesser degree than the recording of reflections, with 34% of the pre-service teachers still not being confident in creating an ePortfolio after the completion of the scaffolded hands-on sessions.

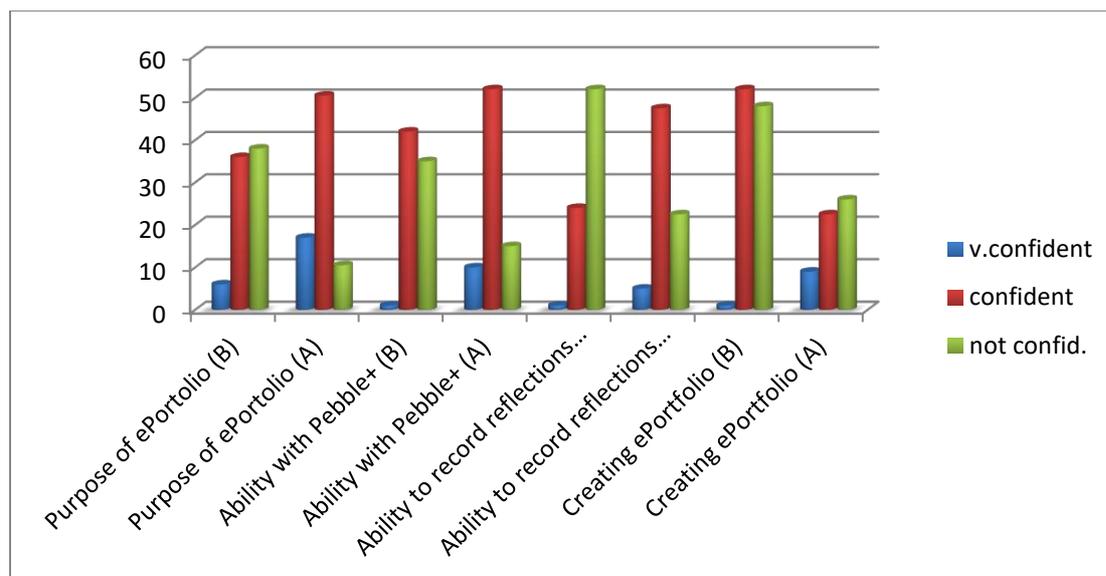


Figure 2. Student confidence BEFORE (B) and AFTER (A) implementation – 3<sup>rd</sup> Year

### Perception of Support Needed

At the beginning of the implementation, the second-year pre-service teachers responded that they felt they needed more tutorials and hands-on support (52%); and more practice (17%) to improve their confidence in the use of the ePortfolio. Other responses to this question were related to ideas on how to use the platform for reflection and as an ePortfolio, as well as why it was needed. There was one suggestion to use another platform for this process.

When the third-year pre-service teachers were asked what support they felt they needed, there were overwhelming calls for in-class demonstrations / step-by-step instructions and practice (70%). Pre-service teachers also indicated they thought they needed more specific help with writing reflections (4%) and online help, particularly videos (9%). Several pre-service teachers suggested another facilitated hands-on session after practicum to act as refresher (4%) would also be useful.

### Most Useful Support

When asked what support was MOST useful in supporting the reflective writing and ePortfolio development, there were fewer responses to this question. There were three respondents who reported that none of the support was useful and one second-year pre-service teacher said “not a lot”. There was some support for the demonstration of how to set up a reflection (3%), one-on-one help during the tutorial (3%) and the PebblePad demonstration in general (3%).

The third-year pre-service teachers were more diverse with regard to their comments about the support received. There was some agreement that the hands-on support sessions in class that worked through setting up the ePortfolio had been the most useful (57%). One student reported using the online HELP centre while others felt that nothing had been useful (1%) or that there was not enough time given to the process (2.5%).

### **Additional Support**

The pre-service teachers were also asked what other support they felt they needed. The second-year cohort highlighted that they needed more tutorials or lessons (21%); demonstrations with slower instructions (17%); and more time / exposure / practice in using the PebblePad platform (14%). There were also calls for general assistance in using the platform (10%), more explanations of why it is important (3%), how else it can be used (3%), as well as reassurance that it will always work (3%).

For the third-year cohort, the time limit was the key factor when asked what additional support they needed with 45% asking for more time to work with the program in class and 12% of third-year pre-service teachers asking for further support around the additional uses of the platform, such as for applying for employment and completing registration requirements. Fourteen percent of the cohort surveyed requested extra support in the form of documented instructions or videos.

### **Creation of Assets**

Only three (10%) second-year pre-service teachers reported that they had created assets in the ePortfolio platform, while 25 respondents (86%) did not create anything outside of the classroom tutorial. No second-year pre-service teachers utilised the PebblePocket app, likely because they did not have the opportunity to examine it during the instructional tutorial session.

When the third-year cohort was asked if they created any assets within the platform after the in-class sessions, 73% of the pre-service teachers answered 'yes' and the created items ranged from their philosophy (38%); and a Wordle (10%), which were both components of the tasks completed in class. Some pre-service teachers reported setting up their ePortfolio (8%) and outlining the required AITSL standards (23%). A number of pre-service teachers uploaded photos and documents as evidence (6%), one pre-service teacher reported that they had uploaded lesson plans and three completed reflections in the platform.

The PebblePocket App. was less popular than the full PebblePad platform, although 30 third-year pre-service teachers (39%) responded that they had used it – particularly to upload photos, videos and certificates as evidence (33 items). Forty-eight pre-service teachers (62%) did not use the App and one reported that they had never heard of it. Of those who did use it, 17% reported that they preferred this version of the platform.

### **Future use of the Platform**

The final questions of the survey related to future use of the platform and the second-year cohort were varied in their opinions about this (32% yes, 65% no, 3% maybe). They did highlight that they would only continue to use the ePortfolio platform if provided with additional support. The key reasons for not wanting to use it in the future were that they did not know how to use it (17%), or that it was too hard to understand and use (24%).

For the third-year cohort, 69% of pre-service teachers answered yes and while some were honest in saying that this was because they had to (5%), the majority outlined that they would use it to collect and document evidence from practicum experiences (38%) and to complete reflective entries (12%). The key reasons given by the 19% who said 'no' were due to issues with the platform itself (12%) or their level of confidence (3%). Those who answered 'maybe' (10%) did so because they felt they needed more information about the

how and why of the ePortfolio (4%) and some were not satisfied with the level of training and support received to date (4%).

## **Discussion**

An examination of the data identified three main themes for discussion that align with elements of the theoretical frame. These were:

1. Pre-service teachers' understanding of the purpose of learning and using the PebblePad platform contributing to an informed choice to participate in the learning,
2. The level of perceived hands on support given by the support provider, and
3. An identified need for pre-service teachers to be active in their participation in the learning process, hence facilitating the graduation from novice to expert.

The following sections discuss these themes in relation to the research literature.

### **Understanding the Purpose: An Incentive for Participation**

Overall, the data from the second-year pre-service teachers highlighted that they did not understand the purpose of learning and using this platform. The transformation of participation theory suggests that with limited sense of purpose, the pre-service teachers would less likely participate in the activity nor would they independently engage with support tools. McAllister, Hallam, and Harper (2008) explain that not understanding the purpose of doing something impedes pre-service teachers' development of habits of lifelong learning, or in this case being part of the learning. It was found in Allan and Cleland's (2012) study that when pre-service teachers could relate the purpose of developing an ePortfolio with long-term benefits for themselves, they were more motivated to participate in learning how to use the PebblePad platform.

Similarly, the data from the third-year pre-service teachers highlighted that the purpose behind the ePortfolio needed to be clearer for the pre-service teachers if they are to participate in the learning process. During the implementation with this group of pre-service teachers, the support provider outlined some key reasons for the inclusion of the ePortfolio but this did not appear to resonate with all the pre-service teachers. Although they were further into their degree program, at this stage they did not appear to see the long-term purpose of the ePortfolio to invest their time (Allan & Cleland, 2012).

### **Hands on Support and Time – The Role of the Support Provider**

The second-year pre-service teachers felt the support made available was too minimal. They stated that they were not provided with enough time and opportunity to practice using PebblePad in a way that they could confidently use it again independently – they did not see that the support provider had fulfilled their role in the shared experience. Their perception was that the time they had with the expert staff member from the CLD was too rushed and those pre-service teachers who were absent, or did not have their own appliance to access the Internet were particularly disadvantaged. A further disadvantage was that after the CLD staff member left, there was no lingering expertise to continue to fulfil the role of the support person. Allan and Cleland (2012) identified ongoing support as crucial in their first year of introducing PebblePad.

As reflected in the data, 45% (35/77) of third-year pre-service teachers suggested that more time was needed to be shown how to do things within the platform and this included being given support as they created assets. For this cohort of pre-service teachers, they had been given a two-hour tutorial timeslot to work with the platform and be guided through the process of setting up their ePortfolios. The frustrations experienced by the pre-service teachers, particularly those centred around support and training are consistent with the literature (Lin, 2008; Singh & Ritzhaupt, 2006).

Although this ongoing connection to the support provider was there for the third-year cohort, these responses bring to the fore the idea of how much time is enough? At what point do the pre-service teachers begin to change within the learning process to move from the role of novice to that of the expert?

### **Changing from Novice to Expert**

The second-year pre-service teachers felt a supportive environment was not made available to them after their initial introduction to PebblePad; that is, there was not the shared space for participation in the learning activity to occur. While the support providers need to successfully engage the pre-service teachers with using PebblePad, the ongoing learning becomes a shared responsibility and a collegial environment in which to problem-solve needs to develop (Edwards, 2013). This approach necessitates time to practice in an environment that supports trial, discovery and sharing and where pre-service teachers gradually assume responsibility over their own learning process (Beckers, et al., 2018).

Similarly, the data collected from the third-year cohort indicated that they felt a loss of support after the initial instructional tutorial session, even with the support provider being present each week. Beckers, Dolmans, Knapen and van Merriënboer (2018) identified that many students lack self-directed learning skills, which may explain why these pre-service teachers did not access the PebblePad help videos and other supports. It is possible that these SDL skills in using PebblePad needed to be further embedded in the unit and the level of support slowly released as indicated earlier.

### **Research Limitations**

While this research had some useful findings, there were some limitations. Firstly, the survey asked the pre-service teachers to rate their level of confidence at the beginning and the end of the implementation, but was administered at the end. This relied on the pre-service teachers recalling their confidence in the beginning. More accurate results may have been gleaned from a pre- and post- survey at separate intervals. Secondly, the use of the survey also limited the depth of responses that may have been increased through an interview with the pre-service teachers. The third limitation was the structure of the second-year unit at the time of the implementation, which meant the pre-service teachers did not return to tutorial classes after the placement. This made it more difficult to involve them in further scaffolded sessions with the ePortfolio and the data collection process.

### **Conclusion**

As this paper reports on the initial implementation of this research project, these findings have direct implications for the next round of implementation of this work. Future

renditions of this study will include both new and existing cohorts of pre-service teachers in their next year of study. Based on these findings, the key recommendations for the transformation (Rogoff, 2003) of future implementation include:

- 1) Additional explicit focus on the purpose and value of the ePortfolio for job readiness, employment applications and registration in the future. This may increase pre-service teachers' level of engagement with the PebblePad ePortfolio platform through their participation in the socio-cultural activity (learning).
- 2) Extending the access of the support provider across both year levels to not only provide additional support but to more explicitly scaffold the transformation of the pre-service teacher from novice to expert.
- 3) Explicitly supporting pre-service teachers SDL skills in participating with the PebblePad and associated supports, and gradually releasing support to facilitate the independent use of the platform.

It is anticipated that future implementations will have adopted these recommendations and be open to being responsive to ongoing pre-service teacher needs. The progression from novice to expert in developing and using an ePortfolio goes beyond just learning the intricacies of the PebblePad platform; it extends to realising its purpose and how that purpose applies to professional growth and standing. Additionally, understanding the purpose will lead to the independent participation and application that is necessary to ensure that graduates are ready to meet the recommendations of TEMAG. It is also anticipated that the ongoing work in this area will allow the pre-service teachers to be able to become experts within the process to enable them to react to the future changes that will surely come in the arena of initial teacher education.

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