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Creating Greater Awareness and Demonstration of the Australian Professional Standards for Teachers in Initial Teacher Education

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Abstract: Throughout their initial teacher education training in Australia, students are informed about the Australian Professional Standards for Teachers (APST) and the necessity of gathering evidence to achieve these for teacher registration. Whilst the use of digital technologies as tools for reflection has become increasingly popular, there remains a paucity of research around the types of digital technologies that students use to document their ability to achieve accreditation requirements. This study presents details of how PebblePad, a specialised ePortfolio platform, can assist teacher education students to gain increased awareness about the 37 APST descriptors through the use of tagging. Results demonstrate that students found tagging an invaluable practice and that they recognised the importance of using this ePortfolio platform after graduation to build on their growth as educators in alignment with the APST. In this way, the study addresses a significant gap in teacher education literature in this era of accountability.

Introduction

In recent years, the multiple purposes of ePortfolios in Australian Initial Teacher Education (ITE) has expanded in response to the changing landscape of requirements for professional registration, and the ways in which essential evidence must be documented. At present, ePortfolios are being utilised for assessment purposes, to demonstrate digital literacy skills, to share work with academics such as submitted assignments, and as a professional networking tool, amongst others. There remains, however, a dearth of research around the types of digital technologies that students can use to document their ability to achieve accreditation requirements. As pre-service teachers (PSTs) in Australia must demonstrate their ability to achieve the Australian Professional Standards for Teachers (APST) at the graduate level to gain professional registration, there exists a need for students to utilise a digital platform throughout their studies which can assist with the collection of evidence and allow for meaningful reflection on this evidence in order to share it with prospective employers.

Therefore, this study addresses a significant gap in the teacher education literature by investigating the use of technologies to achieve accreditation requirements in this era of accountability. The study thus focuses on answering two research questions:

1. In what ways does PebblePad assist preservice teachers to gain increased awareness of the APST through tagging?
2. In what ways can PebblePad assist PSTs to demonstrate evidence of meeting the APST at the graduate level?

The seven APST— 1. Know you students and how they learn; 2. Know the content and how to teach it; 3. Plan for and implement effective teaching and learning; 4. Create and maintain supportive and safe learning environments; 5. Assess, provide feedback and report on student learning; 6. Engage in professional learning; and 7. Engage professionally with colleagues, parents/carers and the community— are very similar to the standards of other countries, such as the *Code of Professional Responsibility and Standards for the Teaching Profession Ngā Tikanga Matatika* (Educational Council of New Zealand (2019), the *United Kingdom Teachers' Standards* (GOV.UK, 2011), and the *US National Board Standards* (National Board for Professional Teaching Standards, 2016) which also focus on knowledge of the curriculum and appropriate teaching strategies, implementation of student-centered planning, cultivating safe learning environments, as well as the importance of professional learning and professional relationships with parents, carers, and the community.

To become work ready and satisfy requirements for teacher registration through the Queensland College of Teachers, PSTs in the Australian state of Queensland, for example, must provide evidence of their ability to engage successfully with the 37 APST descriptors. The way this proficiency is demonstrated to potential employers including the Department of Education and Training (DET), requires a rethinking of the transportability and ease of access of ePortfolios, as employers have moved from centralised panel-based suitability assessments to decentralised school-based employment interviews. In addition, national requirements for ITE programs specify that all PSTs must have "successfully completed a final-year teaching performance assessment prior to graduation shown to be a reflection of classroom teaching practice including the elements of planning, teaching, assessing and reflecting" (Australian Institute of Teaching and School Leadership, 2015, p. 8). This is usually achieved through a capstone assessment task demonstrating evidence of graduate outcomes, commonly known as a 'Teaching Performance Assessment'. Through completing this task, PSTs demonstrate their readiness for classroom practice and ability to impact student learning using the full planning, teaching, assessing, and reflecting cycle. With these recent accreditation requirements in mind, there is a pressing need for students to utilise a flexible, multimodal evidence collection platform which can provide a variety of applications and be personalised to suit individual users, their respective philosophies of teaching, and their particular employment goals.

In responding to Masters and Morrison (2017) and Pate and Main's (2017) calls for ongoing investigation into how portfolios of evidence can assist PSTs to meet the APST at the graduate level, this paper presents results on the implementation of the PebblePad ePortfolio as a flexible tool for 502 first year Bachelor of Education students at Griffith University in Queensland, Australia. In particular, we investigated how regular use of PebblePad can assist PSTs to gain increased awareness about evidence gathering related to the 37 APST descriptors through the use of tagging. The discussion focuses on the experiences students had using the platform in a professional experience teacher education course, and, in particular, how the students utilised the platform to classify and document evidence of their engagement with the APST with the view to building and reflecting on this evidence as they progress through their degree and into their work as educators. From the cohort, 237 pre-service teachers participated in the study as well as four tutors who were interviewed.

In this study, PebblePad was used exclusively as an assessment tool. The authors aimed to ascertain, however, if students appreciated the relevance of building a flexible and open-ended portfolio, not just for short term uses to satisfy assessment requirements and directives from their teachers, but that they displayed agency in their learning and envisioned their use of the tool in the longer term to structure their collection of APST evidence for graduation and to build upon as a professional portfolio in their teaching careers. Boud and

associates (2010) observe that assessment "powerfully frames what students learn and how they achieve" (p. 1) and is a significant influence on the way's university students approach their study. In fact, assessment constitutes "probably the single biggest influence on how students approach their learning" (Rust, et al., 2005, p. 231). To provide context to the study and analysis of the data, a review of relevant literature on the multiple uses of ePortfolios and their role in supporting PSTs to reflect on their practice and link evidence of their work to the APST follows.

Literature review

The Multiple Uses of ePortfolios in ITE

In recent years, the advantages of using ePortfolios in higher education have been highlighted. In contrast to traditional paper-based portfolios, ePortfolios allow users to add a wider variety of artefacts such as sound clips, photos, videos, graphic representations, lesson plan templates, PowerPoint slides and spreadsheets, amongst others (Botterill, et al., 2008; Oakley, et al., 2014). To better demonstrate suitability for professional registration in the Australian context, there has been a significant increase in use of ePortfolios in ITE since the 1980s (Brooks, 2017; Smart, et al., 2015). Changes to education policy and curriculum guidelines in Australia have underscored the relevance and importance of ePortfolios for PSTs to document their knowledge and skills. These include the introduction of a national curriculum by the Australian Curriculum and Reporting Authority (ACARA) in 2014 and the APST published by the Australian Institute for Teaching and School Leadership (AITSL) in 2011.

As documented in literature in Australia, the most common uses of ePortfolios for PSTs are 1) to store documents used in course work and on practicum; 2) as a professional networking tool; 3) as a means of increasing digital literacy skills with new and emerging technologies; 4) as an assessment tool; 5) as an evolving storage of evidence pieces to demonstrate the development of knowledge and skills over time; and 6) the showcasing of achievement of the APST to potential employers (Munday, et al., 2017; Oakley et al., 2014). Thomas and Liu (2008) note that ePortfolios "are able to demonstrate, in a more holistic and complete way, the complex skills that PSTs must develop in order to become full-time teachers" (p. 3249). Smart et al. (2015) emphasise the potential longevity of well-conceived ePortfolio as a "career-long and lifelong investment from graduation, registration, and career promotional advancement in developmental and leadership career stages" (p. 1881). Most importantly for teacher education, ePortfolios afford a central focus on critical reflection on practice (Winberg & Pallett, 2016) and as assessment tools, support criterion-referenced as well as formative assessments, and allow for authentic, flexible, and self-directed evaluation (Chaudradhi 2017).

To display a competitive edge over other applicants, however, students need to express their unique perspectives on teaching and learning in innovative ways. Much more than offering a collection of surface level content, PSTs are encouraged to reflect purposefully on their motives for teaching, their professional identity, and highlight the added value they bring to their work in the classroom. This requires strong self-regulation skills over the course of their degree to move from the documentation of content knowledge, to evidencing deep learning in these areas (Biggs & Tang, 2011; Hattie & Donoghue, 2016). Lewis and Gerbic (2012) emphasise that deep learning is possible when ePortfolios are conceptualised with an emphasis on not just the product but also the process of meaningfully engaging with the APST. They suggest that the challenge is to encourage users "to become student-centred, self-regulated 'owners' of their eportfolios; users who recognise the value of

the eportfolio as a developmental tool for deep learning" (p. 23). This requires a platform which can feature these abilities. In support, Masters (2013) states that "an ePortfolio is by nature, a representation of self-directed learning and reflection" (p. 8) and Oakley et al. (2014) suggests the ePortfolios "are ideal for promoting this kind of integrated thinking" (p. 39).

ePortfolios for Reflection on Practice and Evidencing the APST

A feature of current ITE programs is the facilitation of students' skills in reflexivity to enhance links between theory, content, practice, and the APST (Lewis & Gerbic, 2012; Munday et al., 2017; Shepherd & Skrabut, 2011). Brooks (2017) describes the use of ePortfolios in ITE as "an ideal receptacle for holding evidence of achievement of such standards because they can support the synthesis of theory and practice, demonstrate professional development across time and offer the opportunity to reflect on learning processes" (p. 100). The use of ePortfolios has been noted to assist students develop these skills more effectively than traditional portfolios (Masters, 2013; Munday et al., 2017; Pelliccione & Dixon, 2008). Baronak (2011), emphasises that "when students participate in the selection, discussion, and evaluation of their work in an ePortfolio they begin to think of themselves as learners" (p. 4). Ideally, students should begin collecting evidence and reflecting on their learning journey from the moment they begin their studies. The inclusion of ePortfolios in ITE must then be based on authentic tasks, address a valid need, and be challenging and engaging for the students so that they see the value and purpose in building an ePortfolio (Huba & Freed, 2000).

A search of recent literature in this area has revealed a need for further research into the effective linking of student evidence to the APST through a flexible and dynamic ePortfolio platform. PebblePad is an example of a platform which has the capabilities of fulfilling these needs. Sutherland et al. (2011) describe PebblePad as more than an ePortfolio, and more accurately an 'ePortfolio system' "containing multiple tools to support the creation of different kinds of ePortfolios depending upon the needs of the author and their intended audience" (p. 3). The authors do acknowledge that PebblePad is a commercial product and may not be a feasible option for some countries. Brooks' (2017) investigation into the use of PebblePad notes many advantageous features such as "the ability to create, represent and present multiple ePortfolio identities independently" (p. 106) thus enabling students to present their skill set to a variety of audiences. Masters (2013) describes the introduction of PebblePad with successive cohorts of first year ITE students at La Trobe University. She highlights the challenges associated with providing regular and scaffolded assistance so that students and tutors alike understand the various components of the platform and value its potential. Pate and Main (2017) similarly report the use of PebblePad in an education course at Edith Cowan University. The primary focus was for students in this study to map their course work and graduate capabilities to the APST over the course of their degree, to reflect on this over time, and to share this with accreditation bodies and with potential employers. In this way, the authors note that scaffolded use of a platform such as PebblePad provides students "with an opportunity to draw meaning from their stories, clearly articulate their unique knowledge, skills and achievements, and demonstrate meaningful evidence to support their claims" (p. 49). As a preliminary report, Masters and Morrison (2017) stress, however, the need for ongoing investigation into "documenting a snapshot of current practice around the use of preservice teachers' portfolios of evidence of their practice in meeting the Graduate Teacher Standards in Australia" (p. 57).

Tagging

Tagging can be defined as "a kind of indexing, a process of labelling and categorizing information made to support resource discovery for users" (Rafferty 2018, p. 1). The use of tagging is of significance in this research as it was used to prompt students to identify relevant APST descriptors and then to make an explicit and annotated connections between their evidence and the descriptor. Although tagging is frequently used in social media (e.g, hash tagging), little research has been completed on the use of tagging in ITE and as such, this research highlights possible ways for tagging to benefit PSTs.

Methodology

Rationale

Extending Masters (2013) and Pate and Main's (2017) research, we report on a study conducted with first year Bachelor of Education students undertaking their first Professional Practice course at Griffith University, Australia. PebblePad was selected as an effective platform for PSTs to gather and reflect on evidence pieces from their practicum to demonstrate achievement of the APST and was part of a wider implementation of this platform. Stingu (2012) notes that "there is a mismatch between knowledge and understanding of teaching, developed in two different contexts: formal coursework undertaken at university… and practicum experiences in schools" (p. 619), and that it is "necessary to develop better coordination between the various strands of teacher education" (p. 619), as critical reflexive practice is a complex practice developed over many years. As students were in their second semester of their degree, the rationale for the project was to create a deeper awareness of APST and how PebblePad could be used to assist students develop a beginning teacher identity, make authentic connections between their course work and practicum, and appreciate how they might utilise the platform over the course of their degree and into their working lives as teachers.

Approach

This study utilised a mixed methods approach. Described as 'a third methodological movement' (Tashakkori & Creswell, 2007) in educational research, the use of both quantitative and qualitative methods allows researchers to measure trends, commonalities, and outcomes in a more "nuanced, contextualized, and corroborated" manner (Plano Clark, 2017, p. 305). Students enrolled in a first-year ITE course in an Australian university completed an online survey using Likert Scale questions with opportunities for extended qualitative responses survey. These students were then provided with the opportunity to contribute to 10-minute focus group sessions to follow up on their survey responses.

Participants

A total of 502 students were enrolled in this first year ITE course. 239 Bachelor of Education students over three campuses completed the survey. 97.5% (n=233) of students were in their first year of the program, four were in their second year, and two in their third year.

26% (n=62) of the participants were male, 73.5% (n=176) were female and 1% of the participants identified as 'other'. The vast majority of the students (60.25%) were aged 20

and below with the next largest age group being those aged 21-24 (27%). There were 15 (6.28%) in the 25-29 age group and 10 in the 30-39 age group. Only 6% of participants were aged over 40 years with five (2.09%) in the 40-49 age group and one person (0.42%) over 50. All students had some limited experience of using PebblePad in the previous trimester and had just submitted their final piece of assessment at the time they undertook the survey. Additionally, the 14 tutors who facilitated the delivery of content and marked the assessment with four of these tutors participating in the study through an interview. Interviews were conducted individually, were approximately 40 minutes in length and were audio recorded and subsequently transcribed. The transcriptions were then given to participants for member checking prior to being coded and analysed for themes.

Methods

At Griffith University, the PebblePad implementation was university-wide and spanning all five campuses with a combined total of over 48,000 students and 5,000 staff at the university. This was a large project that involved courses and programs across all four academic faculties with the implementation being led by the Centre for Learning Futures which is the central teaching unit. This was also supported by collaborative work within and across each of the academic faculties. Ethics approval for the project was granted by Griffith University as part of the wider PebblePad implementation initiative. For this specific research, an amendment was obtained, to include conducting interviews with tutors and for specific questions around the APST to be asked of the participants in this study.

Data was collected from 239 Bachelor of Education students via an online survey. A total of 20 students participated in a focus group interview and a total of four tutors from the course who participated in an individual interview.

At the completion of their Professional Practice course, a survey about their experiences of using PebblePad was completed by a total of 239 Bachelor of Education students over three campuses, representing 48% of the total cohort. 97.5% (n=233).

The third task of the course that was the focus of this research required students to begin developing their Professional Portfolio which would be built upon throughout their degree. Every time students added an example of evidence (called an 'asset' in PebblePad) which aligns with an APST, they would tag or label it with relevant descriptors. Examples of evidence included in this task were: structured observations and critical reflections from their first-year practicum, their practicum report, and a reflective essay using a reflective framework. Depending on what was observed, structured observations of their mentor teacher might, for example, be linked to APST 2.1 (Content and Teaching Strategies of the Teaching Area), 3.3 (Use teaching strategies), and 4.4 (Maintain student safety). Each piece of evidence might include multiple tags.

The process of tagging is very simple. The user clicks on the information icon for each asset and adds a tag (see figure 1). When a tag has been used initially, it appears as predictive text the next time the user begins typing. As students build their evidence of the APST they can search for a particular standard or descriptor and view all the evidence pieces assigned. Using the AISTL Teacher Self-Assessment Tool (AITSL, 2021), students can note which descriptors have few or no evidence pieces tagged and aim to collect evidence for these on their next practicum or include relevant future assessment submissions for these.

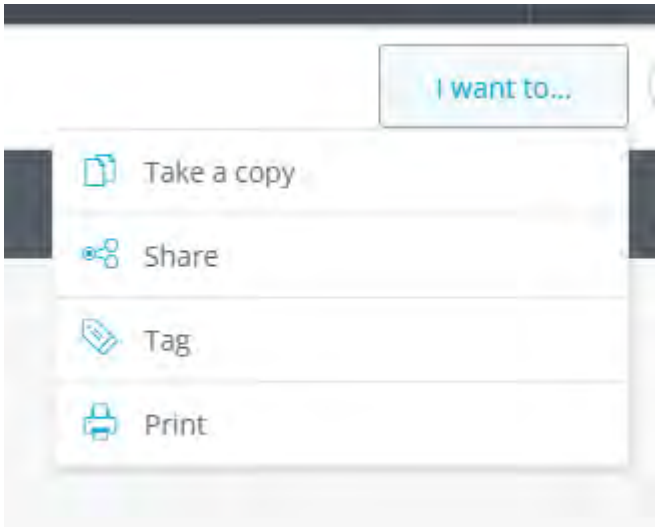

Figure 1: PebblePad Tagging Icon

The online survey consisted of 20 questions covering foci such as the types of functions students utilised, employment of formative feedback from assessment tasks, how links between evidence pieces and the APST were created, and the challenges of certain features of the platform. Questions also included check boxes to indicate if the students used the tagging function, and if they tagged the graduate attributes, or the professional competencies. Several open-ended questions were also included to allow students to comment openly on the advantages and disadvantages of using PebblePad. The survey was optional, and students were assured their anonymity if they chose to complete it. Students were aware that the intention of the survey was for academics to gain feedback on the use of PebblePad to better structure the course and inclusion of PebblePad in subsequent years, and anecdotal comments in tutorials indicated that this was appreciated by the PSTs. The survey was a modified survey that had been implemented across the university and previously been used. Thus, questions were adapted to ensure it was specific to preservice teachers and to include questions on APST.

The open-ended questions allowed for the manual coding of themes from the responses. As so many students wrote such detailed responses (n=385 survey responses) this allowed for an in-depth analysis from the emerging themes for both the focus group interviews and the open-ended questions. The data was coded for general themes and then once these were gained coding for more specific themes was conducted. To add depth to the data five tutor interviews were conducted. These interviews were recorded and transcribed by a professional transcription company and coded for emerging themes. The tutors taught the students over three campuses and therefore had excellent insights into the ways their students engaged with PebblePad.

A total of four student focus groups were conducted on two campuses with the interviews digitally recorded. A total of twenty students participated in the focus groups with group size ranging from three students to six students in each interview. The focus group interviews allowed for a greater depth of data to be collected and for clarification around some of the survey questions. The interview questions are listed in Appendix 1.

As described above a total of four tutor interviews were also conducted. These interviews were also transcribed and coded for themes. Questions for the tutor interviews included gaining in-depth data on their thoughts about using PebblePad with their students, training received, positives and negatives about using the platform and any anecdotal

comments they received from students about using PebblePad. Draft questions were then expanded upon during the interview depending on the tutor answers.

Results and Analysis

Awareness of the APST Descriptors

In answering the first research question, our data indicates that PSTs gained increased awareness of the APST through the use of tagging. In tagging their evidence, PSTs were involved in much more than just labelling; they were required to categorise, classify, and analyse with reference to the how they experienced the evidence and the processes in creating evidence products. As such, "ascribing such qualities to a piece of personal work is an act of self-assessment" (DuClos, 2015). This process was invaluable to PSTs as it allowed them to keep a track of their progressive collection of evidence according to the 37 APST descriptors.

PSTs felt it was quite easy to tag to the APST with one student commenting in the interview "[It was] very easy to just type it in and tag", while another commented on the fact that they just needed to work towards "the standards that were given to us in the assignments. The assignments usually have an APST standard we have to work to". One student reported using tagging for the APST in a positive way: "Being able to tag the relevant APST which could be useful for my future career". When asked about how the APST were addressed in their ePortfolio, in the focus group interviews, one student commented:

> *Those were good because a lot of them were already attached as tags in the pre-made workbooks. And it's good to have that reference. These are the APST that we were taking care of. And in a couple of the others, I noticed that they were provided elsewhere so we could look and we could see what we'd covered and it was so easy to just go in and tag them. It's a very simple process.*

Use of PebblePad to Demonstrate Evidence of the APST

Data also highlighted the ways in which PebblePad assists preservice teachers to demonstrate evidence of meeting the APST at the graduate level in response to the second research question. PebblePad was used in a variety of ways in the three core first year course. Some of the uses that PSTs identified for PebblePad included:

- as a reflection journal and to store assessment documents;
- to build a portfolio for job applications;
- as an assessment tool for their own students;
- as a tool for 'flipped classroom' activities;
- to collect evidence of their ability to satisfy the APST at the Graduate level.

Although submitting assessment (n=196) was the main application for PebblePad, participants also report they used it for a variety of other applications such as completing prescribed workbooks (n=125), using the tagging function (n=75), as well as keeping all course work in one place (n=55). Students also reported using PebblePad to receive feedback from teaching staff (n=154). Interestingly, all students in the course actually submitted their assignments via PebblePad, which suggests not all students reported it in the survey. This was perhaps because they did not feel the need to answer this question as it was mandatory. PST's comments were positive, for example:

"I intend to use PebblePad to add to my professional portfolio and to store resources for my teaching career".

"I would use [it] to keep a log of documents collected over my preservice teaching years".

"As a future educator, I believe PebblePad will not only better my students' learning but will allow for concise and timely feedback through notifications PebblePad offers". PSTs also understood the relevance of using PebblePad for their future career with 56% (n=125) agreeing with this. Other students were unable to see the relevance with 20.63% (n=46) neither agreeing, nor disagreeing to the statement. As students were developing their skills of using PebblePad, not all students appreciated that it positively impacted on their readiness towards being a professional. This was evident with only 31% (n=69) agreeing or strongly agreeing. This left 36% (n=80) neither agreeing nor disagreeing. 85% (n=196) of respondents strongly agreed or agreed that they felt comfortable using digital technologies and 59% indicated they were confident using new technologies. While these results addressing the relevance of using PebblePad in their future career, and readiness towards being a professional are less positive than the other results, this indicates and area to be investigated in more depth in the future. Another possibility is that more scaffolding in the course around these areas could be beneficial.

Summative Observations

Overall, 56% of survey participants strongly agreed or agreed that they saw relevance in using PebblePad for their learning and for their future career. Students felt that there are several positive features about using PebblePad which include the fact that it is an online platform everything can then be kept and organised into one place online. They saw this as a strength, both at this stage in their degree and also when they enter the profession. Comments about the positive aspects of PebblePad include:

- "The portfolio function was great to keep all the separate assets in one place for the one assessment".
- "The ability to store all information in one place, and then be able to share assessments with teachers instantly".
- "I thoroughly enjoyed how it was sectioned. It made the work look less overwhelming".
- "It records our learning achievements".
- "Mapping out assessment into individual sections as opposed to assigning a full essay".
- "I liked how once saved its already shared with the course staff".

Feedback and Suggestions

In addition, PSTs provided qualitative feedback and suggestions for future use of the platform. The challenges mentioned may have been due to a lack of training for the PSTs when they initially used the platform in Trimester 1. Students offered some very constructive comments to improve the efficiency of the platform with the main areas for improvement identified being:

- Initial training and ongoing support;
- Accessing PebblePad directly from the course sites;
- Copying from Word into PebblePad;
- Limited referencing capabilities, and no spell check or text matching capabilities;
- Organisational issues when working with data from several courses at once;

- No receipt of submission or proof that the work was accepted;
- Difficulties locating feedback.

Feedback included detailed and helpful comments. Some of which are reported here:

- "Maybe the different courses could have their own folders in the assets section. It just makes it easier to access".
- "It's good for assignment submissions but there should have been more of an initial focus on how to use it at the beginning of the course".
- "Finding templates and feedback was often difficult as you had to follow multiple links and go to unusual areas to find things".
- "The feedback part was confusing, and I had no way of knowing that the tutor had seen my work".
- "The biggest thing was at submission times no receipt or proof of submission was provided and it wouldn't provide you an email on time when the task was due".

One area of concern that became clearer when speaking with tutors and course convenors, was the incorrect assumption that students would be trained in the use of PebblePad at the beginning of the year and that teaching staff would not need to teach the students how to use the platform. Mandatory, carefully scaffolded initial training for all students and teaching staff would assist to overcome some of the knowledge gaps and allow for teaching staff to better support students when problems were encountered.

It was positive to note, however, that when students had difficulty using PebblePad, they sought guidance from a variety of sources. This includes, accessing the resources/instructions on the Learning@Griffith course site (n=114) as well as asking for guidance from other students either by email or phone, or in person (n=120). Quite a few students (n=82) report that they did not ask for support from anyone else but worked it out for themselves (n=82).

Tutor Interview Responses

The results from the tutor interviews also demonstrate how PebblePad can assist PSTs to gain an increased awareness of the APST as well as how PebblePad can assist PSTs to effectively demonstrate evidence of meeting the APST at the graduate level through tagging. Firstly, the tutors were reasonably comfortable using the platform with one tutor commenting "I felt it was fairly easy to access. Once you know what to do it's fairly simple" which another tutor stated:

> *I'd recommend it as a platform. The communication that I had with a few of my students was that they found it pretty easy to attach documents and those sorts of things, so I think it came across as a fairly easy platform to use, from their point of view.*

This suggests that generally the tutors' students found the platform easy to use as well as attaching the various types of evidence they require for the APST.

Another tutor was less confident when stating:

> *Well [name of IT assistant] provided a video which I watched, so that was instructive. I also muddled through with students throughout the trimester because where they were raising issues we were looking at it together trying to figure it out. I watched the video, I played around with it intuitively, and I asked students to discuss their issues.*

It is evident, however, that not all tutors found it easy to use with one reporting some students were also having some difficulty:

> *I saw clusters of students after class who were trying to work on their assignment, trying to figure it out, each teaching the other. It was a stressful process for many*

> *of them. This is not something about the system, this is something about the need for training for them. I suppose reflecting back on my experience, if I knew what I was doing more, I could have given better advice to students.*

The tutors did understand why it was being used with one stating "my understanding is that this is an ongoing document that they can store [evidence] there so they can come back and add to that". Tutors also commented on the depth of use of PebblePad stating "we used it in probably the most complex way because it underpinned everything that we did". However, it was also commented how the tags helped the students to tag the APST:

> *We did automatic tags. So, we created the assessment item and we tagged it with the standards so later they can come back and search by standard and bring up all the assessment items, but they don't know they're doing that. We tried to make them aware that that's what they were doing but it's different when you're making them aware to them building. And I think pedagogically them building it is much better.*

One tutor commented that they liked the PebblePad layout "I just like that you open it up that's good, presenting-wise. Things are quite clear, but that's in digital format. I didn't see major changes, marking-wise, from PebblePad to TurnItIn, to be honest". Overall, even though some tutors had some difficulties in using PebblePad initially, they were able to use it as well as teach their PSTs how to use it effectively so that students could upload their evidence of the APST and then tag that evidence.

Discussion

As PST participants were at the beginning of their first teacher education degree, for most, the notion of professional standards was new and unfamiliar. So too was the understanding that they needed to build a portfolio of evidence to demonstrate their ability to satisfy the APST at graduate level to obtain their degree and gain professional registration. Through this Professional Experience course, students became cognisant that they needed to find an efficient way to document, reflect upon, and share this evidence and were receptive to utilising a platform like PebblePad that could be accessed after graduation and shared with prospective employers. Our study extends on Pate and Main's (2017) research and addresses a gap in the current research by specifically investigating how the PSTs used tagging to the APST by including their voices and personal opinions. In answering the first research question, results demonstrated an increased and more nuanced awareness of the APST and descriptors as students applied them to the way their personal experiences aligned with the APST. Tutors also felt that the students used PebblePad in the most complex ways which suggests that it was a well used platform.

In answering the second research question, survey responses revealed that apart from acting as vehicle for creating greater awareness of the APST, the vast majority of students were positive in their approach to using PebblePad and forecasting to applying for teacher registration saw value in tagging their artefacts according to the APST. Students found tagging very easy and an efficient way for them to keep track of the type of evidence pieces they were collecting. As one student stated, "we could look and we could see what we'd covered and it was so easy to just go in and tag them. It's a very simple process". Students were able to tag their assets directly according to the APST. This allowed students to gain an in depth understanding of the APST as well as to learn the types of evidence required to collect in order to meet each APST at the graduate level. The ease of using the tags is an advantage to using the platform PebblePad, however, other platforms can also be used such as those reported by Brooks (2017). Importantly, students were given feedback by the tutors

on their assets which allowed the students to learn which types of their assets may fit the APST better than others.

The researchers were particularly interested in whether students at such an early stage in their teacher training saw the relevance of building a flexible and open-ended portfolio over many years based on the APST as a valuable tool for the deep learning and career progression. As Lambert and Lines (2000) suggest, students often view traditional authoritarian models of assessment as something which is done *to* them, and not *with* them. The PebblePad ePortfolio is an alternative multimodal model of assessment with purposes and potential much greater than the initial summative assessment. The survey responses were mixed in this regard, however, but there were several comments which suggested that students were taking ownership of their portfolio with a sense of agency to support their applications for employment and map their teaching progression as a "career-long and lifelong investment" (Smart, et al., p. 1881).

In the survey, open ended question responses allowed for coding of themes which showed future projection of the uses for PebblePad. This came through overwhelmingly in the results. As PebblePad will be available to the PSTs to use once they are practising teachers, they were also able to project that they could see uses of it both in their future studies and when they become practising teachers. Students suggested it would be useful as a professional portfolio and also as an excellent online tool to store resources when teaching. Comments such as "being able to tag the relevant APST which could be useful for my future career" and "I intend to use PebblePad to add to my professional portfolio and to store resources for my teaching career", suggest that even at this early stage in their teacher training, some students do indeed view themselves as "self-regulated 'owners' of their ePortfolios; users who recognise the value of the ePortfolio as a developmental tool for deep learning" (Lewis & Gerbic, 2012, p. 23). This may be because they view the development of a portfolio not merely as a mandatory assessment task, but one that is based on authentic requirements of the teaching profession, that has value and purpose, one that allows for choice and agency in its preparation, and which presents challenging and engaging options in an open-ended response (Huba & Freed, 2000).

Implications for Future Practice

With the increasing use of ePortfolios in ITE in Australia, there are several implications for educators of PSTs evidenced in this research. As the results of this study suggest, the vast majority feel confident with learning emerging technologies and new platforms in their course work. Students in their first year have little knowledge of and experience with the APST and do not naturally forecast to the end of their studies when they will need to provide evidence of these for teacher registration. They do, however, understand the need to be proactive in this area. When prompted, students can become aware of, and work to collect and organise the types of evidence pieces that can contribute to a professional portfolio, such as assessment tasks, lesson plans, reflections, observations, and teaching resources that they have developed. The participants in this study could also see value in the many applications and flexibility of an ePortfolio platform such as PebblePad for the collection and tagging of the 37 APST descriptors and arranging these in different ways to share with a variety of audiences, such as accreditation boards, potential employers, and for promotion. Although students expressed confidence with using unfamiliar technologies, not all was smooth sailing when using PebblePad in the course. Both students and tutors expressed their concerns with the lack of training they received prior to using PebblePad, and that they needed to reach for a number of resources to answer their questions. Tutors also

lamented the lack of a text matching application and their inability to annotate students' work with comments. This may have been partly due to the university not turning on the ATLAS Turnitin integration despite the feature being available in PebblePad.

With these experiences in mind, there are some major implications for program course directors and academic staff in ITE. With the final practicum report in mind, PSTs can assess themselves against the APST descriptors and note which areas they need to gain more experience in and gather relevant evidence for inclusion in their professional portfolio. In this way, PebblePad could be used in conjunction with the AITSL Self Assessment Tool (AITSL, 2021). Working with academic and IT staff across the degree to implement a shared vision and systemic approach for the use of a platform such as PebblePad is essential. Academic staff and students need to have a clear understanding of the potential of PebblePad for creating a dynamic collection of evidence tagged to the APST to facilitate the building of the platform, and closely support students in this endeavour. The carefully scaffolded development of the ePortfolio with practical examples and time to practice in tutorials will encourage greater confidence in both students and tutors. Information technology staff and university instructional designers must allow time and resources for initial training, periodic assistance, as well as a resource bank of documents and videos for users to draw on. A coordinator who is well versed in PebblePad and who is available to attend training sessions and tutorials would be ideal.

Conclusions and Limitations

As mentioned, this study extends on Pate and Main's (2017) research and addresses a gap in the current research by specifically investigating how the preservice teachers used tagging to the APST by including their voices and personal opinions. This study further provides evidence that ePortfolios have moved from being used in a one-off way to store artefacts, to being an embedded learning and teaching tool used in meaningful ways to build connections between university course work, assessment, practical experiences on placements and the professional requirements of teaching (Rowley & Munday, 2018). A focus has been on students from their first year providing a collection of evidence pieces tagged to the APST through the use of a flexible ePortfolio platform that allows for reflexivity and deeper connections to the requirements of the everyday work of teachers.

This study investigated one cohort of students and their tutors in the implementation of PebblePad in creating greater awareness of the APSTs in ITE. One limitation of the study is that the cohort was not studied for a greater period of time in a longitudinal way. Another limitation is that only the one group of 502 students were studied at one university. A greater percentage of survey completion would be beneficial while future studies could target students over a longer time or at more than one university. This would add greater depth to the body of knowledge.

A particular strength of this project was the fundamental inclusion of student and teacher voices, a recommendation in previous studies of preservice teacher ePortfolios (such as Maher & Gerbic, 2009). In this way, this paper has presented an authentic presentation of the use of PebblePad by inexperienced users over the course of two semesters and through to the beginning structure of a professional portfolio. In reflecting on the study's research questions, it is evident that students gained increased awareness of the APST and the need to provide evidence of their ability to employ these in their work through the inclusion of a variety of evidence pieces. It is suggested that future research focus on inculcating a richer understanding of the value of building and continually refining an ePortfolio across students'

ITE degree, at the time of applying for jobs, and throughout their careers to fully realise what it means to be a teacher.

Appendix 1: Focus group questions

1. What course(s) did you use PebblePad this trimester?
2. In what ways did you use PebblePad in your course?
3. Can you describe how you created your portfolio using PebblePad?
4. How did you address the APSTs in your ePortfolio?
5. What was the process of tagging the APST?
6. What type of training did you get to use PebblePad?
7. How did this help you?
8. Did you use any of the help that is available to you? (helpdesk, videos, tutorials etc)
9. Did you have any difficulties using PebblePad?
10. What were the best features of PebblePad?

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