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## How Can Technology Make This Work? Preservice Teachers, Off-Campus Learning and Digital Portfolios

Wendy Moran

*Australian Catholic University*, wendy.moran@acu.edu.au

Les Vozzo

*University of Western Sydney*, l.vozzo@uws.edu.au

Jo-Anne Reid

*Charles Sturt University*, joreid@csu.edu.au

Marilyn Pietsch

*Charles Sturt University*, mpietsch@csu.edu.au

Caroline Hatton

*University of Western Sydney*, carolinehatton@hotmail.com

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## How Can Technology Make This Work? Preservice Teachers, Off-Campus Learning and Digital Portfolios

Wendy Moran  
Australian Catholic University  
Les Vozzo  
University of Western Sydney  
Jo-Anne Reid  
Charles Sturt University  
Marilyn Pietsch  
Charles Sturt University  
Caroline Hatton  
University of Western Sydney

*Abstract: Utilising appropriate Information Communication Technologies (ICT) as instructional tools in teacher education can be a challenging yet worthwhile endeavour. This paper reports the difficulties and benefits of a recent inter-university project requiring preservice primary teachers to construct professional digital portfolios using the support of ICT. Challenges with regard to communication and learning were numerous as 34 preservice teachers (PSTs) from three universities in NSW (situated in country towns, and in Sydney) worked together as a collaborative learning community. Meeting regularly face-to-face during the 12-month process was not always possible and so ICT resources were employed to facilitate instruction and communication. An action research methodology generated a data set of surveys, observational field notes, and student assessment artefacts. We share the findings in this paper so that others may learn from our experiences in using free access software and commonplace hardware when constructing digital portfolios with students who are some distance from campus.*

### Introduction

The use of Information Communication Technologies (ICT) in educational contexts is increasing rapidly all over the world. Instructional settings such as early childhood through to post-secondary schooling are benefitting from the flexibility, range and possibilities that hardware (such as mobile phones, computers, tablets and iPads, and interactive whiteboards) and software programs have to offer. Strong financial and technical competition between software and hardware corporations has resulted in innumerable options making it overwhelming for educators to select the best tools for their particular classrooms and students. The enhancement of learning outcomes can come at significant cost to patience, time and money if the ICT tools selected provide little by way of enhancing learning outcomes.

The purpose of the paper is to share the process and results of a learning and teaching project conducted from 2010 – 2012 in which preservice primary teachers from three universities in NSW, Australia constructed digital portfolios using the support of Information Communication Technologies (ICT). This project was supported by funding from the

Australian Learning and Teaching Council. One of the intended outcomes of the project was for preservice teachers in their final years of teacher preparation to build a professionally presented digital portfolio constructed using the Australian Professional Teaching Standards (APTS) framework and to do so through the use of ICT and a collaborative learning community. For the majority of preservice teachers this was achieved. However, unintentional outcomes also emerged encompassing the following: a better understanding of appropriate software programs for portfolio purposes, web 2.0 tools that sometimes do and sometimes don't enhance communication across long distances or in remote locations, increased confidence and efficacy in preservice teachers with regard to ICT and their own skills as teachers, and an organic portfolio that has been used by some graduates beyond the confines of the teacher education course. Our hope is that the findings presented here will inform preservice teacher educators about the challenges and strengths of free access software, commonplace hardware, and the ways they can be maximised when using digital portfolios with students who are not necessarily physically present on campus.

### **The Educational Context**

In Australia, there are clear expectations that graduate teachers will be conversant in the use of digital technologies for use in the preparation of teaching lessons, as a pedagogical tool in the classroom, and as a means of extending ongoing professional knowledge and interaction (Australian Institute for Teaching and School Leadership [AITSL], 2011). Proof of graduate teacher ICT knowledge and skills (focus areas 2.6 and 3.4 in APTS) is required as part of the national accreditation process undertaken in the first three full time years of teaching. Supporting preservice teachers in developing this skill is a vital role for teacher educators to ensure their graduates are well prepared for the rigours of demonstrating teaching proficiency in all areas of teaching including ICT.

### **ICT Knowledge and Skills in Undergraduate University Courses**

Hence, numerous teacher education institutions aim to develop ICT proficiency in their students and consequently offer courses that strategically and systematically provide experiences and appropriate ICT tools to prepare undergraduates for their profession. It has been reported in the United Kingdom (Kirkup & Kirkwood, 2005) and in an international comparative study (Collis & Wende van der, 2002) that the adoption of ICT in higher education has been a gradual process rather than taking the sector 'by storm'. Similarly, results from a study administered across 38 Australian universities indicate that there is considerable variation among undergraduate experiences of the use of ICT in all courses (Ingvarson & Hattie, 2008) suggesting that until recently the utilisation of relevant ICTs has not been consistently integrated across higher education in Australia. Despite unsystematic uptake of ICT in university teaching and learning, the role that universities play in ensuring graduates are ready to embrace all forms of lifelong learning places teachers in the university system under some responsibility to explore appropriate tools for use in their profession. One recent technological shift in higher education has been the transition from paper-based portfolios to digital portfolios as a means of demonstrating professional skills and knowledge in assessment of teacher education students (Woodward & Nanlohy, 2004; Wray, 2007). The purpose of portfolios and their renovation into presentation media is explored further here.

## Use of Portfolios and Eportfolios in Teacher Education

Since the 1990s portfolios have been used as a means of documenting teaching progress and as a reflection tool (Borko, Mihalec, Timmons, & Siddle, 1997; Loughran & Corrigan, 1995; Zeichner & Wray, 2001). The subject matter in portfolio reflections largely consists of teaching experiences: the content of lessons, management of student behaviour, the school context, and teacher performance. A few studies have commented that portfolio reflection also requires discussion with peers and/or mentors to facilitate higher quality deliberations so that perspectives and understandings are not limited to individuals' experiences (Masvelder-Longayroux, Beijaard, & Verloop, 2007; Orland-Barak & Kremer-Hayton, 2001). The importance of a supportive learning community during the process of constructing a teaching portfolio is elucidated here:

By coming together around a common purpose, the participants engaged in a public sharing of their understandings of the portfolio process in general. The voicing of concerns, sharing of strategies, and clarifying questions specific to portfolio development aided in the feeling of camaraderie among the group members. (Wray, 2007, p. 1150)

And Masvelder-Longayroux et al. (2007) have further claimed that the construction of the portfolio requires a different type of reflection, that which is more focused on “the process of interpreting experiences during the production of the portfolio” (p. 49). It appears that the portfolio construction is better undertaken in dialogue with others as it enables an exchange of ideas, the opportunity for clarification, and the sharing of issues to gain the most from the experience.

As higher education has moved to a more technological approach in teaching and learning, the portfolio in an electronic or digitised format has become popular in enabling a much broader selection of entries and artefacts to evidence quality practice. This type of portfolio is typically referred to as a digital portfolio or educative ePortfolio – the concept of which represents a personal “virtual space contain[ing] a collection of digital products, artefacts and reflections to demonstrate competencies in a field of knowledge to a teacher, a colleague, a professional or a community” (Lopez-Fernandez & Rodriguez-Illera, 2009, p. 609). The purpose of the digital portfolio is similar to that of its predecessor, i.e., to enable preservice teachers to “select, share, and reflect on artefacts such as educational philosophies, classroom management plans, unit and lesson plans, plans to meet the needs of diverse and special needs pupils, and video clips of practice teaching” (Strudler & Wetzel, 2005, p. 412). However, the digital portfolio has some additional benefits over its earlier format. For example, established teachers have found that use of an electronic or digital repository for teaching portfolios has facilitated efficient construction, organization and sharing of their work (Georgi & Crowe, 1998; Kilbane & Milman, 2003; Sung, Chang, Yu, & Chang, 2009) and the same has been said for preservice teachers (Milman, 2005; Strudler & Wetzel, 2005; Woodward & Nanlohy, 2004). Digitised portfolios have also found favour with preservice practitioners from other professional fields. For example, a study of students in 38 Australian universities found that 84% of participants from a range of faculties agreed or strongly agreed that using ePortfolio software assisted them in evaluating and reflecting on their learning journey (Hallam et al., 2008). Similarly, students in the UK (Joyes, Gray, & Hartnell-Young, 2010) and USA have reported similar findings with regard to the strength of ePortfolios as a learning tool (Bartlett, 2006; Peters, Chevrier, LeBlanc, Fortin, & Malette, 2006; Ring & Foti, 2006). Support for the ePortfolio is reasonably strong and widespread.

The use of an ePortfolio as a repository therefore appears to be a clear choice for preservice and graduate teachers as a means for demonstrating professional competency in teaching. However, there can also be challenges and difficulties with ePortfolios. Some studies have reported that low confidence in using technological tools and the effort of

learning how to use such tools were disadvantages in the initial stages of digital portfolio construction (Lopez-Fernandez & Rodriguez-Illera, 2009; Milman, 2005; Woodward & Nanlohy, 2004). Other concerns include the over-emphasis by students on the ‘bells and whistles’ available in software programs resulting in detraction from the main content (Lopez-Fernandez & Rodriguez-Illera, 2009; Woodward & Nanlohy, 2004), and the large storage capacity of computers and associated servers that can inspire unwieldy and overly-cumbersome portfolios (Woodward & Nanlohy, 2004).

### Professional Teaching Standards and ePortfolios

Alignment to teaching standards in portfolio construction as a means of structure, assessment or as a tool for reflection as a typical framework has been reported by Delandshere and Arens (2003), Strudler and Wetzel (2005) and Zeichner and Wray (2001). The decision to use standards in this manner is logical given that the demonstration of professional teaching standards is a commonplace expectation in educational systems around the world (Day, 2004; Day, Sammons, Stobart, Kington, & Gu, 2007; National Commission on Teaching and America's Future, 1996). Digital portfolios have the advantage of multimedia showcasing of teaching resources, lesson plans, photos and audio files thus enabling a strong link between practice and the standards. However, there is substantial skill and knowledge needed to be able to identify an appropriate artefact and justify its inclusion against a standard (Delandshere & Arens, 2003; Strudler & Wetzel, 2005). Furthermore, skills in ‘cutting’ video and audio footage, uploading clips and/or protecting the privacy of children are needed or need to be learned. The preparation of preservice practitioners in portfolio construction requires considerable attention to several factors if we are to ensure the best outcomes.

### The Project and Participants

The focus of an 18-month inter-university project was to design the means by which preservice teachers could be supported in developing digital portfolios that would effectively demonstrate achievement of professional teaching standards in their professional experiences. Data reported here derives from the first 12 months of the project. Four cohorts of preservice teachers participated in the project ( $N = 34$ ) representing the three universities involved. The majority of participants were living in rural settings. A brief explanation here shows the breakdown of student participant groups and additionally Table 1 (Tab. 1) gives an overview to provide further clarification. Two of the cohorts were in their final year of primary preservice teacher education (in two different universities – A and B) and were of Indigenous backgrounds. Each of their courses consisted of a residential-style approach specifically designed for Aboriginal and Torres Strait Islanders who mostly travelled from country towns to the university campuses in the city for study. The residential mode consists of individual study and assignment preparation at home supported through phone calls, reading materials and pre-recorded lectures sandwiched between on-campus blocks of group study of one to two weeks’ duration at least twice during a semester. The preservice teachers in the residential-style learning were often already employed in schools as Aboriginal Aides, were not typically in the first years out of school, and many had families of their own.

University	Cohort	Course	Residential mode	Weekly face-to-face classes	Indigenous	Non-Indigenous
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A	1	Primary	Yes	No	Yes	No
B	2	Primary	Yes	No	Yes	No
C	3	EC/Primary	No	Yes	No	Yes
	4	EC/Primary	No	Yes	No	Yes

**Table 1: University cohort groupings and characteristics**

Whereas the other two cohorts in the project were from the third university (University C), were enrolled in a combined Early Childhood/Primary qualification, and studied on two different campuses in regional cities. These preservice teachers were unlike the other students in three respects: 1) they were not of Indigenous background; 2) they attended university in a typical on-campus weekly pattern; and 3) their mean age was somewhat lower than the students in the other two cohorts. Differences between the groups of preservice teachers were not intentional nor will this paper explore comparisons of portfolios between university groups but these differences are mentioned here to highlight the effect these disparities had on project decisions regarding particular approaches used to support ePortfolio construction. The paper will instead explain the rationale behind the selected processes and ICT tools used in this digital portfolio project and will evaluate the strengths and weaknesses of the selected tools in the development of preservice teachers in long distance settings. Observations, survey feedback and ePortfolio artefacts form the basis of data collected.

### **Indigenous Preservice Teachers**

There are a number of complexities regarding Australian Indigenous post-secondary education, and the distance-learning mode described here. Firstly, where study is facilitated through residential block mode some graduates from teacher education courses report feeling that their pre-service education marks them as different from ‘mainstream’ graduates – even though the content of their degrees is identical (Reid, Santoro, Crawford, & Simpson, 2009). It is important therefore to ensure that the delivery and content of the courses are equitable and that both Indigenous and non-Indigenous cohorts are aware of the parity.

Secondly, there is an absence of Indigenous teachers at all levels of education resulting in an experience of alienation for Indigenous students in school and an under-representation of Indigenous students in higher education (Reid et al., 2009). In 2009 “there were just 1565 Indigenous teachers in Australian schools” (Reid et al., 2009, p. 68) suggesting that the presence of Indigenous teachers is still not prominent. This can result in a lack of role models, and in limited encouragement and understanding within Indigenous communities and/or family contexts when a student pursues a tertiary education. Thirdly, Indigenous peoples of Australia, according to the Australian Human Rights Commission (2008), have lower general levels of employment, education, and health than non-Indigenous Australians. Importantly, these levels become proportionately lower for Indigenous peoples according to the remoteness of their location, yet significantly increase when higher education qualifications are attained. The need for post-secondary qualifications is vital but the fact remains that Indigenous students are required to study with fewer resources and support than their non-Indigenous counterparts.

Finally, many Indigenous higher education students do not access university qualifications upon leaving school; tertiary study is a decision often made later after some period of time in the workforce. Indigenous Australians are also four times less likely to attain a university degree than non-Indigenous (Australian Human Rights Commission, 2008). To become successful graduates then, Indigenous preservice teachers need financial, academic and emotional support to facilitate the process (Reid et al., 2009). This project was designed to some extent to partially ease these complex issues in Indigenous preservice

teacher education with specific regard to the demonstration of their expertise while undertaking practicum in schools. Working as an aide supporting Aboriginal students in classrooms before commencing a teacher education degree is a common career pathway for many of the Indigenous undergraduates (Reid et al., 2009). During this period strategies, both interpersonal and educational, are learned intuitively, through experience, and by watching other teachers. By the time these particular preservice teachers commence undergraduate teacher education their knowledge and skill in teaching is informed by these experiences (of variable quality and frequently unaccompanied by critique or discussion) and is therefore quite often embedded, implicit and tacit (Lortie, 1975). Recognising the value of one's own expertise in the knowledge and skills utilised for many years as an aide, can be difficult due to its embedded position in the teaching repertoire. The result is that while these particular preservice teachers may demonstrate competency in their teaching – the skill to recognise it, name it, and/or provide documentation to show how it meets competencies is not easily achieved. Support in identifying what they are doing and how their work aligns with teaching standards is critical. This is equally important for non-Indigenous preservice teachers whose experiences of teaching may have been only as students in the classroom.

### **Justification of the Selected ICT Tools**

A variety of tools were used in the implementation of the project. These can be roughly divided into two groups: programs that enabled construction of and housed the portfolios themselves, and communication tools for facilitation of the development of portfolios. The project team spent substantial time exploring the possibilities for ePortfolio platforms. There were many options available: MAHARA®, WikiSpace®, PebblePad, Weebly®, WordPress™, and Elluminate® – each with varying levels of interactivity, storage, cost, and opportunities for creativity. Some were currently supported or encouraged by one or more of the universities. Our final choice of platform needed to meet the following criteria:

- Easy to learn and use but afforded the opportunity to be creative and individualistic if the preservice teacher wished;
- Aesthetically attractive (with options for preservice teachers in terms of style and 'look') but with clear structure so that the portfolios were easily navigable;
- Viable on pc or apple;
- Free/open access so that preservice teachers could continue to use it in the absence of university funded software; and
- Able to produce publishable sites with URL links when deemed ready.

After much consideration we selected Weebly for the purposes of the project. It is exceptionally easy to use with drag and drop features yet has the flexibility to allow selection of personal photos, styles and fonts. Navigation is assisted through the templates available but extra navigation features can be added if the owner wishes. If given a website name that is a series of numbers rather than a person's name (for example, 123456785.weebly.com) it becomes very secure, as its identification cannot be stumbled upon by others who may be searching for a particular person's portfolio. This can be easily renamed later when ready for public viewing. It is free, unless upgrading to Weebly Pro®, and it can be accessed anywhere where Internet is available on either Apple or android devices.

In addition to the portfolio program we wanted tools to create a community of learners sharing discussion of the ePortfolio process so we needed a program that was reliable, accessible at home and at school, and cost free. We believed that whatever we chose to use for communication in small groups, large groups, and one-to-one needed to facilitate:

- Face-to-face communication wherever possible to ensure clarity;
- Confidence and learning opportunities for the future so it needed to be a program with which the preservice teachers may have been familiar or could easily learn;
- The capacity to view selected artefacts or fully constructed portfolios by the learning community in dialogue about the process; and
- Accessibility from home, school or any other location.

Again, the choices were numerous. Finally, the decision was made to use video-conferencing for the large cohort meetings so that artefacts, drafts and portfolios could be viewed at the same time with all participants. Although these large group discussions could only be held on campus, given the nature of the study arrangements and the widespread locations of students in non-residential periods this was appropriate, although of course such conferences were limited to when the student cohorts were actually on campus. For more regular, small group, and one-to-one communication Skype™ was selected as a popular, familiar program, flexible to any device, and reasonably easy to use.

The finished ePortfolios consisted of a professional profile, a teaching philosophy, and seven web pages each of which detailed a professional teaching standard, focus areas and descriptors of the standard, and a justified selection of artefacts relevant to the descriptors. The artefacts were either embedded or hyperlinked and were accompanied by annotations showing precisely what part of the artefact was relevant to particular descriptors. The Microsoft Office® suite, in particular PowerPoint®, the review tab or the textbox function in Word®, was also available to the preservice teachers as tools for artefact demonstration or annotation.

## Research Methods

Across the 12-month project there were 34 students and up to seven academics who actively participated in instructional sessions. Data were collected primarily through qualitative methods such as observations during tutorials, conferences and discussion; surveys after instructional sessions; and analysis and assessment of the preservice teachers' work samples – the ePortfolios. An action research approach was adopted which enabled the team to systematically and intentionally research their practice with the aim of improving practice for their cohorts (Lytle & Cochran-Smith, 1990; Oberg & McCutcheon, 1987). Each phase of the project was reflected upon and strategies modified for future use.

The preservice teachers were taught and supported through a combination of inter-university groups as well as small group or individual instruction. Three main strategies were used:

- Strategy #1 – an initial interuniversity video-conference where information regarding the project, the task, and the tools were explored and participants were introduced to each other;
- Strategy #2 – small groups, pairs and one-to-one support and discussion during or directly after practicum experiences; and
- Strategy #3 – final video-conference where preservice teachers shared and discussed finished eportfolios.

The initial conference consisted of lectures delivered by academics from all three universities, discussion of lecture content, introduction of the university groups to each other, and an interactive session in learning how to use the ICT skills needed for Skype, Weebly and Word features. The interactive approach consisted of some basic instruction, scaffolded with support by way of printed manuals and online tutorial sites for students to use when off campus, and an extended opportunity to 'play' and explore the software individually



alongside their peers and academics. Hence a constructivist approach was used to enable the preservice teachers to learn the skills and knowledge needed.

Because there were two cohorts of preservice teachers from different campuses of one university, two dyads of student groupings were formed, i.e., University C (cohort 3) combined with University A, and University C (cohort 4) combined with University B (see Table 1 (Tab. 1) for further clarification). Aligning university study calendars as well as practicum and on-campus residentials for video-conferences was a challenge requiring some flexibility in delivery and approaches across the dyads.

Data were collected through surveys of the students, summaries of Skype and telephone conversations across sites, and field notes and artefacts from the ePortfolio sharing conferences. The survey data (from strategy #1) consisted of open-ended questions and Likert-style statements that would assist in determining how well the preservice teachers had been able to absorb and understand the professional standards information and the ways in which they could collect and use practicum artefacts and software tools to demonstrate their competency at the Graduate Teacher level. Responses were tallied and open-ended answers were transcribed in full. The data from these surveys enabled the inter-university team to modify and confirm strategies used for duplication in subsequent years. Summarised notes from the Skype and phone conversations (from strategy #2) were used to determine those areas where preservice teachers found it hard to make connections between what they were producing on practicum and how it could be used as evidence for particular standards. The actual ePortfolios were shared between participants and academic staff at the two inter-university video-conferences (strategy #3), where comments from participants in these video-conferences were recorded and presentation of the ePortfolios via Weebly provided further evidence. The ePortfolios were then examined and assessed on the suitability of artefacts to support the selected standards; the clarity of explanations and justification of artefacts; the use of Microsoft Word tools to highlight, emphasise, and locate the relevant part of the artefact; and the innovative and professional use of Weebly to showcase the professional skills and knowledge.

## **Findings and Discussion**

The data used to determine how effectively the project has enhanced preservice teachers' use of ePortfolios in demonstrating professional teaching standards were a) survey data, b) observational data taken as notes during discussions and tutorials, and c) work samples of preservice teacher ePortfolios. Each of these will now be considered.

### **Survey Results**

Thirty-four preservice teachers participated across the two dyad videoconferences consisting of three sessions each of two hours' duration (strategy #1). Data were gathered through a post-conference survey administered to the preservice teachers focusing on the impact of sessions on their familiarity with professional teaching standards; knowledge about types of artefacts that are possible in an ePortfolio; and their skills and knowledge in working with Weebly, Skype, and use of Microsoft Office. Of the 34 responses the results showed that 31 preservice teachers believed that the delivery of information regarding professional teaching standards and the use of ICT (such as Weebly, annotation features in Microsoft Word, and Skype) was appropriate in terms of depth and time spent. Thirty-three preservice teachers made positive responses about professional teaching standards and ICT materials provided. Likert style statements listed in Table 2 (Tab. 2) required preservice teachers to

rate their change (if any) of understanding with regard to differing aspects of content and skills presented in the conference.

As a result of today's conference my:	Did not increase	Increased by a small extent	Increased by some extent	Increased by a large extent	Nil response	Total number of responses (n)
- understanding about professional teaching standards	0	6	15	13	0	34
- knowledge of how to provide evidence of my competency	0	2	17	15	0	34
- skills and knowledge in using Weebly and Skype	0	10	17	6	1	33
-skills in using Microsoft Word to annotate, hyperlink and embed artefacts	0	8	20	5	1	33

**Table 2: Rating results of preservice teachers survey regarding the videoconferences**

The responses from students suggested that a little more time would have been helpful in exploring the capabilities of Weebly and Skype and practising the use of Microsoft Word tools in annotation and presentation of artefacts. Some time was lost in the course of both days because of difficulties in setting up inter-university videoconferencing with all the features of shared PowerPoints and video links for all conference participants. Overall, however, the videoconferences that had utilised combined knowledge and skills from three presenting university lecturers had been successful in familiarising preservice teachers with the teaching standards, Weebly, Skype and Microsoft Office tools.

### Observational Data

Strategy number two involved academics from all three universities working with individuals or small groups of preservice teachers via Skype during or directly after practicum in schools. Observational notes were made by the academics as to the nature of questions, difficulties and success experienced by preservice teachers in collecting artefacts, using artefacts in a way that would evidence standards, and technical skills in mounting artefacts on Weebly sites. A summary of the most commonly discussed areas, the nature of the discussions, and the main points of each are given in Table 3 (Tab. 3). The range of questions and concerns was broad reflecting the complexity of skills and knowledge needed to construct a professional portfolio.

Area of discussion	Examples of main questions underpinning discussion
Knowing what artefacts to collect	<ul style="list-style-type: none"> <li>• What standards are exemplified in my lesson planning?</li> <li>• What can I use as evidence for classroom management</li> </ul>

Area of discussion	Examples of main questions underpinning discussion
Privacy and confidentiality	<p>skills?</p> <ul style="list-style-type: none"> <li>• What about standard 7 (collaborating as a professional) – what can I use to show that I have done that?</li> <li>• How can I show that I have communicated clearly to my students?</li> <li>• If I want to photograph a display of students’ work how can I protect their privacy?</li> </ul>
How to make links between artefacts and standards e.g. explanations and annotations	<ul style="list-style-type: none"> <li>• Can I use photos of my students in role-plays as an example of a different type of assessment strategy?</li> <li>• I have written lesson plans and units of work but how can I show that I used outcomes to plan my lesson or that a particular assessment strategy meets the lesson outcomes?</li> </ul>
Using one artefact as evidence for several standards	<ul style="list-style-type: none"> <li>• If I want my unit of work to show quite a few different standards how can I make that clear?</li> <li>• Can I use different colours or fonts or coding to show how one artefact can be used for evidence for several standards?</li> </ul>
Technical aspects in Microsoft Word e.g. reviewing tools or text boxes to highlight specific parts of artefact	<ul style="list-style-type: none"> <li>• Why do I need to annotate if my Weebly page has a clear explanation of the artefacts?</li> <li>• How do I annotate a photo? a PowerPoint? or a scanned work sample?</li> </ul>
Technical aspects of Weebly e.g. uploading documents and photos, changing fonts, styles, etc.	<ul style="list-style-type: none"> <li>• When I upload documents it appears on the screen as an icon but when I close my Weebly and re-open it, the icon has disappeared. Why?</li> <li>• How do I change the font style and size?</li> </ul>
Additional inclusions to ePortfolio content	<ul style="list-style-type: none"> <li>• If I wanted to include my teaching philosophy and a unit of work I designed for a university assessment could I include that in my Weebly too?</li> <li>• What about referencing – where should that go?</li> </ul>

**Table 3: Summary of areas of discussion during individual and small group support sessions**

The strategy of small learning communities during this part of ePortfolio construction appeared to assist preservice teachers in recognising and articulating how their practice demonstrated teacher competency as predicted by Wray (2007). The conversations featured a strong focus on pedagogy and what constitutes sound evidence of learning. Frequently, responses such as “*Do you mean that just showing how I have used an oral presentation, a worksheet, PowerPoint slides and draft writing in my unit of work would be enough to demonstrate that I am using a range of assessment strategies?*” or “*I don’t think I have done anything that demonstrates using student assessment for forward planning*”. Yet, when these types of statements and teaching practice were discussed, the preservice teachers were encouraged and then able to identify that what they had planned or implemented actually did form clear evidence of professional knowledge informing professional practice. The process brought their pedagogical decision-making into the light so it could be identified using the meta-language of the profession. A supportive learning community within which preservice teachers could be guided, particularly during their practicum placements in locations

distanced from university, was critical to developing this higher quality reflection (Masvelder-Longayroux et al., 2007; Orland-Barak & Kremer-Hayton, 2001; Wray, 2007).

A good portion of the questions and discussions focused on the technical and practical elements of mounting an ePortfolio. Some of the students' questions could be answered immediately but others required the project team to 'play' with Weebly themselves or ask for ICT advice to try to work out solutions. The ePortfolios submitted demonstrated that many of the technical issues were resolved as the students themselves engaged in the task; student problem-solving and improvising with the technology enabled the content of their ePortfolios to be successfully, and often very creatively, displayed.

**Technicalities in Long Distance Communication**

The use of Skype to conduct these conversations and discussions was not entirely successful. The weakness, like most other video communication programs, was its reliance on broadband connections that in rural and remote areas often lack sufficient or continuous signal strength. This resulted in conversations reduced to 'audio only' and frequent dropouts. Furthermore, group Skype sessions of more than two people required an upgraded version of Skype that was not free and although the decision was made partway through the project to install Skype Premium™ at the project's expense, this tool did not ultimately fit our selection criteria for useful ICT tools. Privacy was also raised as an issue for several Indigenous preservice teachers who were reluctant to participate from home because they did not feel comfortable talking to university lecturers or other students when their home or room or family (who sometimes interrupted) were also 'on view'. Telephone conferencing was sometimes more efficient and less frustrating and did not rely on strong, continuous broadband connections. However, phone conferencing reduced the non-verbal communication that can be enormously helpful to such a process.

**Work Samples – the ePortfolios**

Two videoconferences between preservice teacher dyads later in the year (strategy #3) enabled a sharing of 21 submitted ePortfolios and a discussion of what had been learned throughout the process. The ePortfolios demonstrated the following attributes:

1. All ePortfolios were clearly designed and consisted of structured web pages
2. Explanations of artefacts were generally coherent and linked well to standards
3. Annotations were provided in the hyperlinked or embedded artefacts using Microsoft Word reviewing tools (Fig. 1)

Visual Arts LESSON ONE: Landscapes Modified for Student with Cerebral Palsy	
<b>Rationale</b>	The purpose of this Visual Arts lesson is to familiarise Stage One with a deeper understanding and appreciation of arts. The children will explore different aspects of visual arts concepts while they explore different textures associated with art. <b>The child with Cerebral Palsy (CP) will develop their gross motor skills.</b>
<b>Resources</b>	<ul style="list-style-type: none"> <li>● coloured pencils, lead pencils, crayons, textas, paint in small pots or egg cartons, landscape colours, blue, green, yellow, brown, orange and white</li> <li>● <b>Easel for student with CP, Large three sided pencils for CP student</b></li> <li>● <b>Outlined copy of the artwork, Large sized paintbrushes</b></li> </ul>
<b>Teaching / Learning Strategies</b>	<p><b>Introduction:</b></p> <ul style="list-style-type: none"> <li>● As a whole class have the students seated on the mat. <b>CP student will have a chair.</b></li> <li>● <b>Provide the CP student with playdoh or a stress ball to loosen the muscles in their hands to prepare their muscles for the intricate work of painting and drawing.</b></li> <li>● Read the book <i>A Year on our Farm</i> by Penny Matthews and discuss the illustrations.</li> <li>● Look at page 80 from <i>Artwise</i>, and show the children the different landscapes.</li> <li>● Talk about seasons and what colours we can expect to see at the different seasons.</li> <li>● Introduce the term landscape and explain to the children that it is a drawing of nature.</li> </ul>
<b>Body:</b>	<ul style="list-style-type: none"> <li>● <b>Student will have an easel to work with to provide a better angle for their drawing.</b></li> <li>● <b>CP student is to have access to the larger pencils and be reassured they do not feel pressured in providing an accurate copy.</b></li> <li>● <b>CP student will have an outlined drawing of the artwork where they will fill in as much detail as they feel necessary. Accept an abstract piece of work from CP student</b></li> </ul>

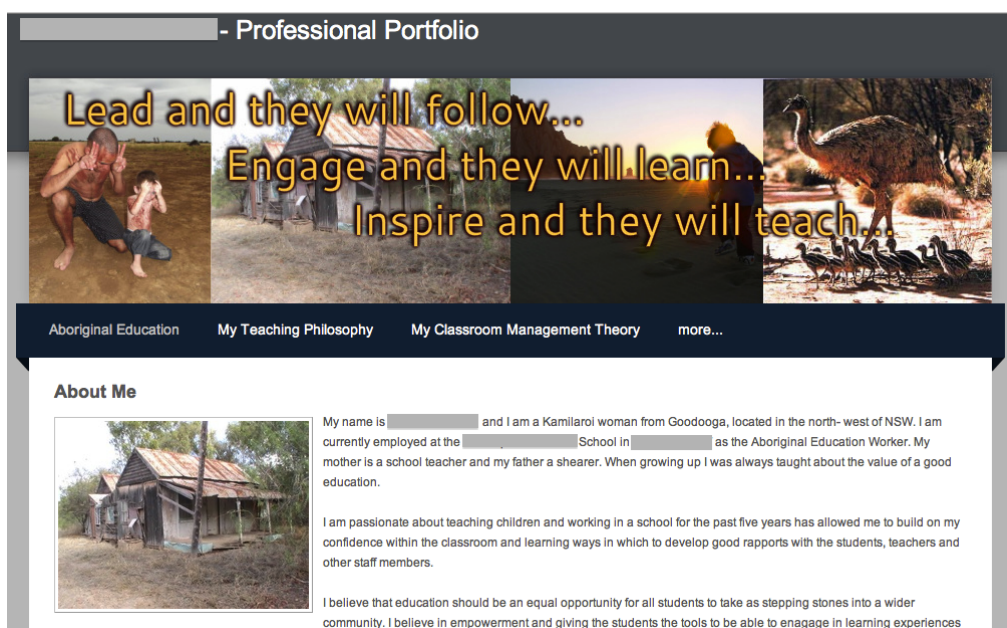
**2.1.5**  
Demonstrate knowledge and understanding of specific strategies for teaching:  
-Students with Special Education Needs

This lesson was modified for a student with Cerebral Palsy. It demonstrates the knowledge required when integrating a special needs student within the class. To ensure the needs of all students are met planning has to incorporate all students different learning styles. This example shows the way a visual arts lesson was altered to accommodate all students.

Figure 1:

**Figure 1: Annotations on a lesson plan artefact demonstrating the catering of special educational needs**

4. The annotations on the artefacts and the justification of selection of artefacts used the meta- language of the teaching standards (Fig. 1)
5. The design and style of the ePortfolios ranged from simple and quite pleasing to sophisticated and highly personalised (Fig. 2)
6. Resourceful and innovative ICT skills were utilised to demonstrate breadth of standard evidence (e.g., a slide show of resources used in a unit of work)
7. Some students explored beyond what was required and saw potential for Weebly sites as a beginning teacher to demonstrate their professional profile.



**Figure 2: A personal yet professional home page**

Embedding PDFs® or Word documents into a Weebly page (rather than using hyperlinks) required the Pro version of Weebly that, like Skype, is not free. Weebly Pro could facilitate access to Scribd (a very useful software tool for embedding annotated word documents) and more multimedia opportunities. Although the project was able to fund Weebly Pro for the students not all of them (for various reasons) were able to access it. This was a pity and needed to be taken into account when assessing, as ePortfolios created by preservice teachers with access to Weebly Pro were at some advantage over those without.

Here are sample comments made by preservice teachers during the videoconferences that demonstrate their response to the digital portfolio task: “[I found the ePortfolio to be] a good way to share my career progress information”, “I shall continue my Weebly for my accreditation process. I will be linking this in my letter to future Principals” and “The ePortfolio can be used for much more than displaying my teaching philosophy and evidence for professional teaching standards. It can be used for interviews, transcripts and career progress”. These comments indicate the degree to which the preservice teachers were able to see the potential for their ePortfolio as a means of supporting their future professional activity – both in the performative sense of demonstrating capacity at interviews or in applications, and also in the developmental sense of structuring their career progress towards the higher teaching standards. It also demonstrates that the preservice teachers were confident in maintaining and adding to their ePortfolios as needed.

Furthermore, the degree of professional engagement that accrued in the sharing and discussion of the ePortfolios suggested that this learning strategy was of great value in

assisting preservice teachers to begin to take up their own professional identity and sense of self as a teacher. The level of excitement and some nervousness as the preservice teachers took turns in presenting their work was palpable but they experienced modest pleasure when preservice teachers and lecturers from the other universities commended their ePortfolios and made comments such as “*How did you do that? That’s amazing!*” [referring to the resource slide show mentioned above]. The value of sharing work in a supportive culture where appreciation for the tools and artefacts could be affirmed was immense. However, comments about the content were fewer in number. There could be a number of reasons for this but principally we conjecture that time taken to look at an overall presentation is far less demanding than time taken to read the explanations and rationales. In addition, we consider that it is unlikely peers would have felt comfortable commenting on the content of a preservice teacher’s work, and, of course, the ‘bells and whistles’ of ICT effects are infinitely more noticeable (Lopez-Fernandez & Rodriguez-Illera, 2009).

In the time since these preservice teachers have graduated, a few have taken the time to email lecturers (unsolicited) and explain how they have used their ePortfolios. Here is one such comment:

I took my laptop to my interview with a principal and showed him how my artefacts are evidence of the standards and he was really impressed. I think he was particularly impressed that I could create a site like that too.

## Conclusion

Overall, results drawn from the qualitatively analysed data suggest that use of ePortfolios enhanced critical ICT skills and pedagogical knowledge required by beginning teachers to demonstrate teacher competency. This finding confirms the work of Milman (2005) who asserted that digital teaching portfolios fostered confidence in professional and technological skills and that the advantages outweighed the challenges to creating digital teaching portfolios.

Difficulties with aligning university calendars and the [un]reliability of broadband connections at times made this project a challenge. However, findings suggest that using an ePortfolio with simple, accessible software such as Weebly and Microsoft Office is both effective and cost-friendly. Combined with communication tools for use with off-campus students, for example, video conferencing, phones and, where broadband access is strong, Skype, preservice teachers develop technical efficacy and skills; learn to recognise professional competency; and learn to articulate links to national teaching standards using appropriate meta-language, thus acquiring a sense of confidence and achievement at the start of their teaching career. Furthermore, small learning communities during or directly after practicum can be highly successful in enabling preservice teachers (whether from an Indigenous or a non-Indigenous background) to capably identify and demonstrate what they know and can do as professionals. The potential of the ePortfolio as an organic professional resume for use in applications for jobs and as an archival repository for artefacts of teaching has been an unintended but highly useful outcome, suggesting that the learning gained from such a task can have positive long-term benefits.

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