E-Portfolios in Teacher Education: The UNBC Experience

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This paper presents the preliminary findings from the University of Northern British Columbia's e-portfolio project, entitled the Digital Record of Student Success (DRSS). The e-portfolio requires that the Education Program students provide artifacts of their learning related to the British Columbia College of Teachers' 13 standards for professional educators. The project will be outlined and sample in-progress e-portfolios will be described. The paper will conclude with a description of the successes and challenges of the DRSS.

Introduction

Following the 1993 Teaching Profession Act and the subsequent 2003 Teaching Profession Amendment Act (BC Ministry of Education, 2003), the University of Northern British Columbia (UNBC), along with all Education programs in the province, provided Attainment of Standards Reports (ASRs) to the British Columbia College of Teachers (BCCT). These reports outlined the criteria on which teacher candidates would be recommended for certification.

Trinity Western University and Malaspina University-College agreed to be the first institutions to submit their ASRs to the BC College of Teachers (Kitchenham, 2006; Kitchenham & O'Neill, 2006). Shortly after, the remaining institutions submitted their respective Attainment of Standards Reports.

In an innovative move, the University of Northern British Columbia's School of Education concentrated on the BCCT Standards 1 to 10 as evaluation criteria for recommending their teacher candidates for certification (BCCT, 2004). In 2006, the students were required to create an electronic portfolio that outlined each standard, provided one to three artifacts, and included a rationale for each artifact. In 2007, UNBC's Attainment of Standards Report was approved by the British Columbia College of Teachers.

The E-Portfolio Process

As part of their requirements for EDUCATION 431

(Educational Technology), elementary and secondary students were required to complete an electronic portfolio which served as a precursor to the Digital Record of Student Success (DRSS). The e-portfolio used the 13 BCCT standards for professional educators (BCCT, 2004) as the basis for its structure; however, for the purpose of discussion and homepage layout, the standards were grouped into three broad themes: professional qualities, background knowledge, and capacity to teach (see Table 1).

The students provided one to three artifacts that demonstrated their meeting a particular standard. As well, using critical reflection and critical self-reflection, the students wrote a strong rationale that showed how the artifact exemplified the standard. In this way, the students could not merely state that the artifact worked well because it was a good

match but rather had to deconstruct the artifact and discuss its elements which meet the criteria inherent in the standard. They also realized that the number of standards subsumed within a certain theme did not equal the largest number of artifacts. To wit, professional qualities included seven of the 13 standards; however, capacity to teach represented the largest number of artifacts and the most robust arguments as that theme dealt directly with their teaching abilities and experiences.

Using Barrett's (2000) warning that "a portfolio without standards or goals is just a multimedia presentation, or a fancy electronic résumé, or a digital scrapbook," the researcher outlined the myriad e-portfolio definitions which included "a digitized collection of artifacts, including demonstrations, resources, and accomplishments that represent an individual,

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Table 1

Professional educator theme and corresponding BCCT standard

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Theme	BCCT Standard	
Professional Qualities	1	Professional educators value and care for all children, acting at all times in the best interests of children.
	2	Professional educators demonstrate an understanding of the role of parents and the home in the life of students.
	9	Professional educators act as ethical educational leaders.
	10	Professional educators engage in life-long learning.
	11	Professional educators have a responsibility to students.
	12	Professional educators have a responsibility to parents and the public.
	13	Professional educators have a responsibility to the profession.
Background Knowledge	3	Professional educators have a broad knowledge base as well as an in-depth understanding about the subject areas they teach.
	4	Professional educators are knowledgeable about Canada and the world.
	5	Professional educators are knowledgeable about BC's education system.
	6	Professional educators understand children's growth and development.
Capacity to Teach	7	Professional educators implement effective teaching practices.
	8	Professional educators apply principles of assessment, evaluation, and reporting.

group, community, organization, or institution. This collection can be comprised of text-based, graphic, or multimedia elements archived on a website or on other electronic media such as CD-ROM or DVD" (Lorenzo & Ittelson, 2005), "an organized collection of artifacts or individual, tangible products that verify a teacher's professional growth" (O'Bannon & Puckett, 2007, p. 78); "a collection of authentic and diverse evidence, drawn from a larger archive, that represents what a person or organization has learned over time, on which the person or organization has reflected, designed for presentation to one or more audiences for a particular rhetorical purpose" (Grant, Rees Jones, & Ward, 2004); "a goal-driven, organized collection of artifacts that demonstrate a person's expansion of knowledge and skills over time" (Kilbane & Milman, 2003, p. 4), and "personalized, web-based collections of work, responses to work, and reflections that are used to demonstrate key skills and accomplishments for a variety of contexts and time periods" (UBCOLT, 2004). Ultimately, the researcher presented this definition: over a specific set of time, a digitized collection of artifacts that demonstrate satisfactory achievement of a specific set of criteria for mastery accompanied by critical reflection and critical self-reflection on how the artifact meets the criteria.

The sources for the artifacts for the e-portfolios were found in Kilbane and Milman's (2003) five categories: 1) education and experience; 2) theory and beliefs; 3) curriculum, planning, and management; 4) student assessment; and 5) communication.

As well, the students were reminded that "the quality of the learning that results from the porfolio development process will be in direct proportion to the quality of the self-reflection on the work" (Barrett, 2000). All of the artifacts were represented as Word, PowerPoint, Excel, and Publisher documents, digital video and audio files, scanned images, and additional webpages.

On the technological side, the students began the course by learning how to create a single webpage using FrontPage 2003. The researcher used a guided practice approach so that the students copied what the researcher presented on the data projector screen at their laptops or desktop computers. Simultaneously, they were learning the skills and principles of good web design, which were reinforced throughout the four-month course. A remote control allowed the

FIGURE 1
Sample Standards Page
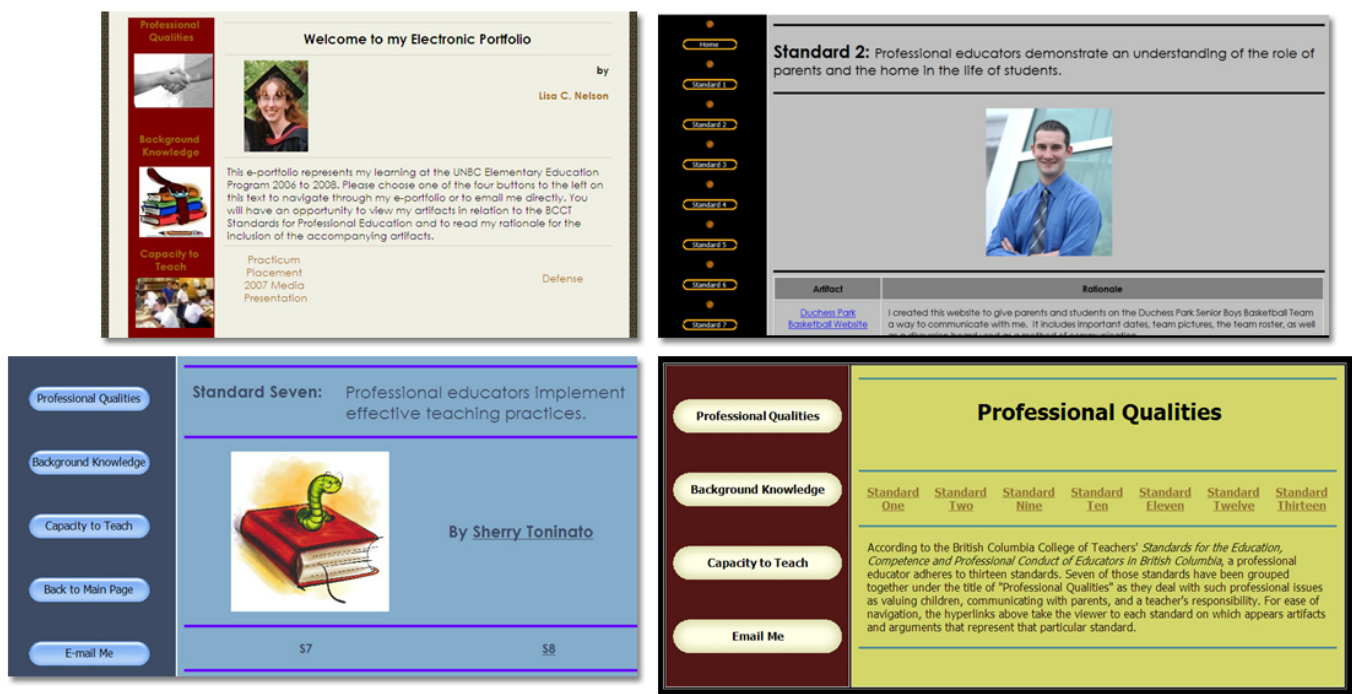
researcher to circulate so to ensure all students participated and to work with the slow comprehenders when the time was appropriate. In subsequent classes, the bare bones for the e-portfolio were created so that each ended up with an index page, three theme pages, and 13 standards pages. As the course progressed, the students began to fill in the empty spaces with artifacts and rationales to arrive at a solid electronic portfolio (Figure 1).

We used an action research model that initially required the students to broadly consider which artifacts to place in their e-portfolios. Beginning in the first semester of their two-year program, the students collected as many artifacts as possible and stored them in electronic or hardcopy formats. Next, they began to assign priority to the artifacts so they either placed them tentatively with a standard (in the form of a Word folder) or discarded them for eventual rejection or possible re-assignment. In the subsequent stage of the model, the students created the actual "shell" of the e-portfolio in the form of separate unframed or framed webpages. At this point, the

Figure 2
Sample Rationale

Standard Seven: Professional educators implement effective teaching practices.

Artifact	Rationale
Diagram of the Classroom Schematics	This artifact demonstrates that I create an environment that supports learning for all. It incorporates elements of a cooperative learning environment, an environment which is beneficial to students who may have a learning disorder as well as potential and specific strategies to improve classroom management. This will be rationalized below due to the following reasons: Cooperative Education: The first reason which supports my artifact for developing a learning environment for all is that my classroom layout emphasizes cooperative learning by the proximity students will be near each other. Having the students close to each other creates an atmosphere where classmates are able to help each other learn, this technique is not as effective in individual seating assignments. Each group of students will consist of four seats in which they have the ability to work together. In the Slavin method of cooperative learning, an arrangement like this allows for the students to engage in competitive classroom events, creating educational teams which promote healthy competition. The arrangement of seats around the periphery creates an area where the students can focus their attention to the front of the classroom but can easily be modified when it involves group work. Also with this arrangement, students can quickly and easily create groups to prevent time wasted during transition periods. If students need individualized structure, the students are able to relocate to one of the areas of the periphery. It is quite easy to displace students who are becoming management concerns. Having a class structure like this also allows, especially in the younger grades, for students to develop socializing skills in a structured environment. Students are given more chances with face-to-face encounters among their peers for the development of academic inquiry as shown in Sharan's methodology in cooperative learning. Accommodations to Learning Disorders: The next reason why this classroom design supports learning for all is due to accommodations it makes to students who may have a learning disorder. For students with ADHD like symptoms, there is enough room at the back of the classroom for the students to be able to move around and "release" some of that built up energy. The "buffer zone" is located at the back of the class so when students are moving about, they are not going to take as much attention away from me compared to if the student was confined to a particular space. With the focus being at the front of the room may be able to prevent overstimulation of students who are trying to concentrate on a task at hand.

Figure 2 (Continued)
Sample Rationale

Standard Seven: Professional educators implement effective teaching practices.

Artifact	Rationale
	The teacher will be able to provide the students with a central focal point in the classroom with the positioning of the teacher's desk. Giving the students, who exhibit reading comprehension difficulties, the ability to clarify and verbalize ideas to other peers diminishes the amount of stress that particular student may exhibit. Diminishing stressful situations in students is a proactive approach for preventing management issues. This arrangement also allows for the students who have seeing and/or hearing impairment issues to seek a location of the classroom which is optimal for their own learning development. They have the ability to sit at the front of the classroom near the blackboard if they have problems seeing or if they have hearing deficiencies in one ear, they will be able to position themselves so they would be able to hear myself.
Diagram of the Classroom Schematics	Classroom Management: The final reason why this layout promotes a healthy learning environment is its ability to prevent some management issues. Students are placed in groups of no more than four to prevent "riders" and off-task behaviours. It has been shown that groups larger than four become less productive and in my experiences I have seen familiar issues. The students may be in close proximity to each other but are somewhat separated from one and other to prevent physical contact. This can be shown by moving the students who would be in the aisle ways and to the periphery of the group. There will be no two students in the aisles, back-to-back to prevent students from harassing one and other. When the lesson involves a laboratory component, the students will be expected to move the desks to the middle of the classroom to prevent students from breaking equipment by walking in the aisle. Students will be given a direction to move outside of the pushed in desks in the classroom in order to acquire their materials, a clockwise or counterclockwise fashion of one-way traffic flow. With the teacher's desk being located at the center of the classroom, management techniques such as proximity works more effectively than if the desk was isolated to a corner of the classroom. Having the classroom's attention away from the door allows students to walk in quietly if they are late to class and the students will have an easier time maintaining their attention to the task at hand.

students digitized their artifacts to be incorporated into the main e-portfolio website. After a great deal of time and thought, the students presented their arguments for the appropriate artifacts, matched with the specific standard. The actual writing amount, 300 to 800 words for each rationale, was minimal but the time to reflect and reject took time to ensure that their arguments were well crafted (Figure 2).

As Figure 2 demonstrates, the students delved deeply into their reasoning and ensured that they deconstructed each artifact used as evidence and related that artifact to the professional literature. In this example, the student used a schematic of his classroom to demonstrate that he had considered Slavin's and Sharan's work on cooperative learning, sound pedagogical principles for accommodating special needs children, and classroom management theories for positioning in and moving around the classroom setting.

Eventually, the last part of the model had the students share their e-portfolios with a partner and in small groups to make any final adjustments. Clearly, the whole action planning process was recursive rather than linear.

For the first two years of this project, the e-portfolios were evaluated on two separate levels.

On the first level, the students submitted partially-completed e-portfolios and were evaluated on their technology skills and knowledge of web design principles such as layout, hyperlink formats, graphic presentation, video and audio editting, and chosen media. On the second level and in another course, the completed e-portfolio standards were evaluated on the choice of artifacts for each standard and the rationales provided for why the artifact was chosen. The researcher was the sole evaluator for both levels and courses as the School of Education was not at the stage where selected faculty could assess the e-portfolios; however, faculty-wide evaluation is a goal within the next five years.

Challenges

The concept of electronic portfolios was new to the UNBC School of Education faculty and so it encountered two general challenges. The first related to what happened with the e-portfolio when the students were finished. The second challenge was persuading the faculty that the DRSS was a viable way of presenting the students for teacher certification recommendation to the BC College of Teachers.

As few faculty had any experience with e-portfolios and based on the researcher's past experience at another institution, he argued for two alternatives for hosting the e-portfolios. One alternative presented to the students was for them to file transfer the main folder to a CD-ROM and attach an autorun script so that the index page opened automatically when the disk was inserted into the computer. The second alternative was to demonstrate how the students could utilize the free storage capilities at Netscape, Google, and their own internet service providers. When they had used the maximum disk space at one server, they sent the viewer to another free-host so they ended up bouncing around the internet. Along a similar vein, some students opted to purchase their own domains. Regardless of the storage/host option, the students were extremely motivated to have their completed projects displayed as they found prospective employers saw the e-portfolios as an impressive demonstration of not only their technological prowess but also

the students' teaching qualifications.

Another inhibitor for the portfolio process and product was the notion of faculty acceptance. Few faculty were adept at constructing websites so they did not see the advantage to the format. As well, not many wanted to take the time to explain which BC College of Teachers standards were met in their individual courses even though the brief time to do so would help the students immensely to choose appropriate artifacts. In the first year of the study, approximately 20% of the faculty took the time to outline the standards and to date, over 40% are doing it. It is now mandated by the Chair to place the standards in all course outlines. Much work is yet to be done but some advancement is evident.

Conclusion

The e-portfolio study has been a success in three distinct areas: employment, acquisition of technology skills, and critical reflection.

First, more and more students report that their e-portfolios were major contributors to their being hired. They work hard on the e-portfolios and deserve all the recognition and glory for that work. In the words of one of the School of Education students: "One of the reasons I was hired was because the Principal and V[ice] principal were so impressed by my e-portfolio…. The portfolio was among the most valuable and practical things we learned at UNBC. [Tell your students that they should] finish your portfolio because in some cases it can make you stand out from other applicants" (personal communication, J. Hoffman, May 13, 2007). This endorsement demonstrates that the hiring personnel recognize the outstanding work of the students – a sentiment that has been echoed many times over.

Second, the students acquire valuable technology skills as they learn how to construct technology projects from the very basic elements of the technology. As the technology course progresses, their skills and confidence increases so that more and more students are infusing technology in their practice teaching. As well, the students are able to assist other teachers in their schools with technology and

use technology more frequently in their daily lives.

Last, the e-portfolio project has allowed the students ample opportunity to critically reflect on their learning within and without the university classroom. As the students present arguments for the inclusion of specific artifacts to support their BCCT standard, they become much more aware of the reasoning for many of their learning objects. Too often the students move through their Education courses or undergraduate degrees without really reflecting on what and why they learned the information in the courses. This e-portfolio project necessitated that they critically reflect and critically self-reflect on their choices.

The DRSS e-portfolio project has been a great deal of work for the students and for the researcher. The benefits have been outlined here and elsewhere in this paper and the work has been worthwhile for all parties. The School of Education has progressed in the presentation of student learning and this electronic portfolio will act as a defensible record of that presentation in the next few years.

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