

E-portfolio in teacher education: Pre-service teacher ownership of their learning and the Standards to be certified as teachers

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Abstract

This paper explains how the practice of developing an e-portfolio within a traditional teacher education program offers potential insights into how to renew existing programs. At the University of Victoria the inception of programmatic e-portfolios created an infrastructure that acknowledged the strength of a program developed over 91 years, but at the same time, through technology innovation, has started to inform the development of the program as students show where and what they have learned in the program and how they have become more aware of their own development as teachers. Adopting an action research approach to the e-portfolio development three intersecting phases of actions have been identified that reflect the evolution of the project, (1) Technological, (2) Pedagogical, and (3) Formalizing phases. Finally, three main areas have been noted on current reflections about the e-portfolio practice: (1) resistance to use of technology; (2) staff support and expertise; and (3) changing attitudes to e-portfolio. The report will conclude with reflections on how in teacher education students can be encouraged to take ownership for their learning as they take on the professional role of defining themselves as teachers and developing the teaching profession.

E-portfolio in teacher education: Student ownership of their learning and the BCCT Standards to be certified as teachers

Introduction

*I just wanted to let you know that I used my e-portfolio in a job interview!!!
After all our complaining it actually came in handy, and the superintendent loved it, and took a copy to show to other people who are interested in making electronic portfolios.*
(E-mail from graduated student teacher, Jan 2007)

This paper will suggest how electronic teaching portfolios (e-portfolios) can value students' reflective, active and deep learning while creating a process of program self-renewal. It has been noted that within a teacher education program e-portfolios offer the potential for a more deliberate and cumulative improvement of teacher education programs (Anderson & DeMeulle, 1998). In this paper we will describe how an evolving electronic portfolio process (using multi-media storage and retrieval of electronic learning evidence) has developed within our teacher education program. Adopting an action research process, this report will examine how an e-portfolio has developed over three years from a small pilot study to a program-wide innovation. The report will conclude with a summary of initial reflections on the project from the Faculty and staff involved. This report will offer data that starts to address the following question: "How has an e-portfolio practice developed within the University of Victoria (UVic) Elementary teacher education program?"

Portfolios have been identified as a tool for deep and durable learning, supportive of environments of reflection and collaboration; they are particularly effective for bringing about performance and learning-related change (Bork et al. (1997). A critical outcome of teaching portfolios is that they create the situation where students can become more self-confident about their practice. However, there is a real need to document the impact of e-portfolios on pre-service teacher development, as well as to use the e-portfolio as a vehicle for gaining insights on program renewal. Teacher educators have traditionally struggled with convincing students to work on their portfolios, competing against more traditional assessment demands and the habit of putting the portfolio together at the last minute (Dollase, 1996). We know that teaching e-portfolios encourage self-paced learning, student choice over what is valued, student self-evaluation, response to teacher feedback, and publication of students' work for a "real" audience (Young, 2002). Zeichner and Wray (2001) report that teaching e-portfolios encourage students to think more deeply about teaching and content, be more conscious of theories and assumptions that guide their practice and e-portfolios help them to develop a greater desire to engage in collaborative dialogues about their teaching.

Contextual Background: Standards and e-portfolio

In 2003 a group of Education Faculty members explored the possibility of implementing a teaching portfolio in a form of an electronic portfolio assessment process within the Elementary teacher education program, one that would be framed around a set of standards for professional certification into teaching. In 2004 the BCCT created a set of standards for certification into the teaching profession in BC. However, this set of standards was created with minimal consultation with the field and without the support of the BCTF union. University programs were directed to report on how they met the BCCT standards. The political climate at the time meant that it was uncertain as to whether the BCCT standards would be fully adopted as crediting the professional certification of teachers.

In 2004, the group successfully obtained a small internal grant focused on implementing an e-portfolio practice into one cohort of students entering the UVic regular elementary teacher education program (Temple *et al.*, 2004). Prior to that, support was obtained from the Teacher Education Council to proceed with implementing the e-portfolio. Conversations were held with instructors involved in the program. Based on the UVic Faculty of Education Vision and Mission Statement for Pre-Service Teacher Education, a set of Standards drawing from government accrediting bodies in Canada and Australia was developed and included into the program handbook (BCCT, 2004; COATS, 2004; VIT, 2004). These standards were called the UVic *Standards for Qualification as a Teacher*. From these Standards a matrix was created of courses in the program that allows students to enter evidence of assignments and field experience learning in an electronic form, creating a way of mapping the Standards being addressed in courses or field experience (see Appendix A). At the start of 2005 an html e-portfolio template was designed and piloted with the cohort of elementary students; subsequently this has been revised multiple times (see Appendix B).

The UVic standards encompass the BCCT expectations and “standards” for the education, competence and professional conduct of educators. The UVic standards required that students demonstrate knowledge, skills, and aptitudes in three broad areas:

1. Professional knowledge – referring to the type of knowledge a teacher is expected to know about subject-matter, child development, learner psychology, cultural understanding, curriculum documents and education systems, and professional understandings behind different approaches to teaching.
2. Professional practice – referring to personal experience of different practices associated with teaching such as planning, assessing learning, analysis of teaching experiences, creating productive and safe learning environments and the ability to create meaningful connections to within schools, community and home.
3. Professional commitment – referring to the professional attitude of teaching as a life-long career with ongoing connections to professional groups and organizations to develop teaching ability, sustained and worthwhile connections with peers and community members, and ongoing practice of teaching as an ethical practice.

It is important to note that three formal practicum experiences are embedded in the both Elementary Education regular program (5 year degree with last 3 years in Education) and post-degree program (16 month program); each practicum affords the faculty an opportunity to review the development of the student’ learning. The practicum experience is viewed as an opportunity for students to implement the learning that has been gained over the previous terms.

Additionally, some of the courses leading up to the practicum offer field experiences through which the students can gain an understanding of students’, teachers’, and schools’ needs, and enable them to critically reflect on school-based experiences, in order to make best use of their formal practicum experiences (Hopper and Sanford, 2004). Students who have not demonstrated the capability to engage effectively in the school setting are offered further opportunities to succeed before they progress in the program, thus ensuring the suitability of all of the pre-service students who complete the program.

The UVic “standards” are addressed in a range of experiences and approaches throughout the teacher education program, including courses, field experiences, formal practicum experiences, professional seminars, and inquiry-based culminating research projects. While UVic Faculty of Education recognizes the responsibility for enabling students to attain the required expectations or “standards” through programmatic experiences (coursework, field experience, seminars) it is also acknowledged that students have a wide-ranging set of prior and ongoing experiences that

enable them to become professional educators. The matrix also encourages students to recognize and reflect upon the importance of these additional experiences in their ongoing development as teachers.

Embedded in the UVic teacher education program are teaching seminar courses that focus on supporting and connecting students' learning in coursework and field experiences. The Standards matrix cross-references courses in the program by UVic Standards, allowing students to enter evidence of assignments and field experience learning in electronic form, creating a way of mapping the Standards being addressed in courses or field experience (see examples of matrix in Appendix C). For each piece of evidence, students complete a STARR framework (situation, task, action, response, reflection) that explains how the piece of evidence addresses the Standard being considered (see Appendix D for more detail on STARR).

Theoretical framework: Teacher knowledge and situated learning

The development of teacher knowledge is critical in the enhancement of student learning in schools. Teacher knowledge is more than skills; it develops from the complex inter-action of teacher, learner, content and context. As Munby et al. (2001) note, teacher knowledge involves strategies, content, and understanding of how teachers' knowledge develops, and the extent to which teachers' understand their own knowledge development. Research on teacher knowledge has tended to focus on the teacher as an object to be researched, as a complex tool that had to be understood and taught to others. As suggested by Fenstermacher (1994), the "critical objective of teacher knowledge research is *not* for researchers to know what teachers know but for teachers to know what they know...for teachers to be knowers of the known" (p. 50). Typically in teacher education programs students learn strategies, content and theories on learning, but they rarely study their own learning; they do not think about their own thinking outside of a course, they tend to complete course assignments and move on. Too often students complain that courses seem to be taught in isolation to other courses, that types of "reflective" assignments such as journaling are repeated in course after course. As Goodlad (1990) has noted about teacher education courses, it often seems that each instructor "rush[es] to cram it all in into the limited time available" as if their course was the only course and appearing "to abort the emergence of sustained inquiry and reflection" (p. 256).

In teacher education literature, as noted by Schön (1987), Fenstermacher (1994), Munby et al (2001), and others, we need an epistemology of teacher knowledge that acknowledges both practical and formal knowledge as we draw on both propositional understanding and practical reasoning within a context of knowing. E-portfolios create the cognitive space for students to study their own teacher development as they shape their own learning, as they learn to draw on formal knowledge for teaching within practical experiences that professionally refine their beliefs about teaching.

Critiques of teacher education programs include concerns of fragmentation between courses, maintenance of a theory-practice divide, and use of research that does not connect to the "real world" of school (Cochran-Smith & Lytle, 1999; Munby et al., 2001). Innovation in teacher education programs are too often "nullified by the structural fragmentation and competing agendas that typify traditional programs of teacher education" (Wideen et al., 1998). E-portfolios can address these problems by creating a space for instructors to gain insights on the whole program and the space for students to delve deeply into the self, focusing on self as learner while at the same time attending to their children's needs as learners (Carter & Doyle, 1996; Grossman, 2005). Grading practices at university focus the teacher candidate on how to be a good student and get a high mark, rather than how the course experience has helped them

develop as teachers. The e-portfolio will value students' personal experience, encouraging them to develop their own theories on learning as they develop their teacher knowledge.

Theoretically, our e-portfolio project draws on social constructivist notions of learning, in particular situated learning (Dewey, 1910; Lave & Wenger, 1991; Wertsch, 1985). In this way meaning is constructed by the learner, working with others in systematically and progressively developed learning experiences. The study is framed by an action research approach to program renewal (Cochran-Smith & Lytle, 1999). Drawing on Kemmis and McTaggart's (1988) traditional notions of action research, a group of researchers within a community came together with a commitment to systematically examine, understand and address a common issue. In this project the focus of the group was on how an e-portfolio process could support and enrich the practice of the elementary teacher education program. As a group we believed that situated learning, connected to formal knowledge taught within a teacher education program, needs to be fundamentally valued within our teacher education program and that technology could offer an infrastructure to value such learning. To value situated learning we need to assess more than the acquiring of information; we must create an effective means to document and analyze students' legitimate engagement in the complex interplay of persons, activity, ideas as they shift from student identity to teacher identity while participating in school communities and university courses. The e-portfolio encourages students to capture learning in multi-media ways including image, video, audio and text, and to connect program learning experiences to UVic standards and program offerings.

Action research cycles for developing an e-portfolio infrastructure

The e-portfolio group of three Faculty members and one instructor expanded to include technology computer services support staff from the curriculum library and computer labs, the field experience co-ordinator and the information technology course instructor. In addition, one Faculty member became the teacher education program co-ordinator, a position that allowed her to directly support the implementation of the e-portfolio into the teacher education program. This group met on a regular basis to support the e-portfolio practice that was developing. Data was generated at meetings from members of this group. Notes on group members' perceptions and minutes from meetings were taken, key events recorded, plans followed up on with observations and reflections from group members and data was collected as the need arose. Analysis was conducted by one researcher re-reading the data, noting recurring topics and issues then mapping the progress of these over the three year period. A summary report was circulated to the group members who then added, edited and critiqued the ideas expressed. Below is an overview of three phases that characterized the development of the action research cycles of plan, act, observe, reflect, then re-plan and so on. It should be noted that these phases overlap and are ongoing, each one taking precedence at any one time as situations and needs arose. In the final section of the paper we present the prominent themes that presently characterize the study of the development of an e-portfolio practice into our teacher education program.

Technological phase of action

As is noted in Appendix G, a survey of the elementary students revealed their very low confidence and ability with computer skills, especially in relation to creating and developing a website. In addition, students perceived that they lacked access to web-editing software they could use. The first plan of action for the group in 2005 was to address the lack of computer skills for the majority for the students. The students did not get the Information Technology course until their fourth year in the regular Elementary program or their second term in the PDP program. To enable the students to develop an e-portfolio, an e-portfolio template was created and a series of computer workshops were set up for each seminar class and additional drop in

session created where students could go to get individualized assistance. Microsoft Frontpage software was selected for the web-editing role because of the perceived ease of use and availability in the computer labs on campus. However, later in 2005 a free software package known as NVU became available and this was adopted as a web-page editor because it was free and available on both PC and Macs. A graduate student was hired from the internal research grant for drop-in sessions, working with the students for over 30 hours during the Spring 2005 term.

During the spring term of 2005 each cohort of students in the EDUC 200 course received a 90 min workshop with three additional workshops scheduled outside of class. From these actions the following observations became apparent. Seminar instructors were reluctant to give up time in the seminar for the e-portfolio, feeling their courses, some of which were integrated in schools, could not afford to give up time for students to be in the computer lab. However, the seminar leaders did take on the responsibility of checking that the students had entered at least three artifacts and a home page by the end of the term. Due to limited opportunities to view the students' e-portfolios on the computer, they were asked to submit paper copies of each of their artifacts for the seminar leaders and practicum coordinator to view. The completion of the three artifacts was achieved to some degree, but not by all students, and the checking was not consistent across all sections of the seminar. The students' progress was again checked when the students returned in Sept 2005, and those who had not successfully completed the minimum standard were given additional assistance to get caught up.

The need for storage space resulted in the development in the Spring of 2005 a secure server space for each student. This secure server allowed students to access their e-portfolios from home via a secure Virtual Private Network logon or on campus computers via their network ID. Each student's e-portfolio could be viewed by course instructors. Only the student had access to edit and update their own e-portfolio.

The website template, though easy to use, was difficult to edit and had a complex file structure. Students complained bitterly about having to do the e-portfolio, saying that it was yet another job to do on top of an overly packed program. Some students were taking 3 upper level credit courses and 4 education courses. However, other students embraced the idea of the e-portfolio, seeing it as offering a better way to value their learning and they started to use images and videos as a means to document their understanding. Some added evidence from their practicum experience after the term was completed. And one student even created an on-line tutorial on how to develop the e-portfolio (see Mindy's e-portfolio guide <http://www.educ.UVic.ca/eportfolio/>).

In the Summer of 2005, the e-portfolio idea was introduced to the new cohort of Post Degree Program students. One student from this group offered to create an alternative framework incorporating the official University template. From this design and in consultation with students and e-portfolio workshop leaders, the e-portfolio template was then further re-designed in a new simpler format and built using Dreamweaver software and piloted by some of the students. In this current framework the focus of the e-portfolio shifted from entering artifacts by courses each term to an overview of courses by standards based on the matrix structure described earlier (see Appendix C). A hybrid version of the new e-portfolio combined with the old e-portfolio was created so that students could update their old e-portfolio drawing on the new features of the re-designed portfolio.

During the Fall of 2005, as the new e-portfolio was adopted, on-line guides for completing the e-portfolio were developed by the Computer Users Head technician and developed further with visual guides over 2006. The library Computer Users staff member offered ongoing support

for e-portfolio development from the curriculum library, allowing students to drop in and solve computer problems with their e-portfolios. Both these ongoing supports supplemented the e-portfolio workshops that were offered in the seminar classes and were led by the Computer Users staff and one Faculty member. As students took the IT course, the need for computer support became less, but there was still ongoing demand right through 2006 as students struggled to master the webpage editing software. On reflection, this lack of ability with computers reflected a programmatic issue where the IT course was only allotted 24 hours of contact (36 hours is the norm) and happened in the middle of the students' programs rather in a beginning term. In subsequent revisions to the elementary program the e-portfolio group made the strong case to increase the IT time and to implement the IT course in the first term of the program to allow students to develop the skills to create their own e-portfolios.

Pedagogical phase of action

This phase refers to the implementation of the e-portfolio as a reflective tool in order to help students develop as teachers. Through 2005 and 2006 the e-portfolio was taught to program course instructors through professional development workshops where instructors were encouraged to start to integrate the e-portfolio standards into their course objectives. These workshops were scheduled the week before term started and widely advertised. The sessions were well attended by most of the seminar leaders, however only two sessional instructors and two Faculty members were able to attend. Largely, the e-portfolio initiative was not seen as connected to the work being done by Faculty and instructors in the program

Initially, it was observed that seminar leaders saw this as an imposed initiative. As one instructor was noted as saying, this is "somebody else's research project we are doing." Even one of the research team who taught a seminar class in year 3 of the program found himself resistant to adding e-portfolio sessions. The e-portfolio sessions forced him to change a course structure that had worked well in the past. Initially, the e-portfolio was squeezed into courses as add-on sessions in the computer labs led by Computer Users technicians. Here students were instructed on how to put assignments and practicum experiences into their e-portfolios.

The discomfort with the technology for seminar leaders resulted in several strategies for coping. One was to ignore the e-portfolio, other than when computer lab time was scheduled, another strategy was to carry on developing a hard copy portfolio instead of the electronic version, and a third strategy was to start learning how to use a computer in order to understand the e-portfolio development. The resistance to technology can be tracked back to the generation of seminar leaders. Most were retired teachers who had not used computers within their practice as teachers and some had continued working at the university without using an e-mail account. Technology was threatening because relying on it meant that seminar instructors perceived, understandably, that they were put in situations where they could not help their students. However, as the term progressed two seminar instructors (retired teachers) went out and purchased new computers to professionally develop themselves with technology so that they could start to access the e-portfolios from home.

It was mandated by the teacher education program Director that the seminar courses take responsibility for checking that students were putting artifacts into their e-portfolios. Each term a simple form indicating the number of artifacts to be entered into the portfolio was circulated and seminar instructors were directed to only give credit for students in their courses if they had entered the required number of artifacts and supporting reflective comments. This strategy was possible in seminar classes because they were credit/non-credit. However, seminar leaders were initially concerned by this directive. Each term as the workshops were led by the Computer Technicians, the seminar leaders came to realize that they did not have to learn the technology,

just guide students in how to enter artifacts and to enable them to better reflect on their learning through the artifacts.

Led by the field-experience co-ordinator, seminar instructors developed a conferencing process of meeting with students and discussing their selection of artifacts, the learning demonstrated through each of the artifacts, and the potential areas to examine. Gradually, the seminar leaders started to draw on the STARR model to help students to reflect on their learning across the program in relation to the standards. As the seminar leaders encouraged students to personalize and own their e-portfolios (see Appendix B) they started to feel comfortable with the e-portfolio practice and started to embrace the e-portfolio process as part of their teaching practice. By 2006 the seminar leaders made time in their courses for students to prepare their STARR artifacts before going to the lab, enabling students to identify significant artifacts, pair up with another student to share and edit, and then to share in a large group. The fundamental shift in attitude to the e-portfolio came at the end of the Fall term in 2006 when the first cohort of 57 PDP students completed their practicum and completed an exit interview in preparation for the next phase of their careers, i.e., applying for a job (see Appendix E for exit interview protocol).

The exit interviews were a resounding success. Each student was interviewed by a panel consisting of one Faculty member, a seminar leader and a sessional instructor. In the seminar classes the students were given the exit interview protocol and given guidance on how to prepare for the interview, how to dress and how to assert themselves in a professional situation (eye contact, handshake, etc). Many of the seminar leaders were retired principals or vice-principals who had been involved in district interviews for teacher candidates. This prior experience added more authenticity to the interview. As shown in Appendix F, the interviews were conducted with a computer set-up with easy access to the on-line e-portfolio. Students responded to questions telling stories from their experience, showing student material and linking to resources in their e-portfolio that showed how they had addressed the question. For example, one student, when asked to describe how he incorporated the Ministry of Education's Principles of Learning into his teaching practices, responded with an example of how he had got the students to write a haiku on Autumn using words they had brainstormed as class, then using leaves to create a pastel drawing, combining the students' artwork with the Haiku. Finally, working in groups he and the class developed a peer assessment process based on criteria developed in class to improve the haiku. His example captured the idea of learning that was active, allowed for a variety of levels and was both individual and group involvement. This and many other examples from different pre-service teaches such as salmon dissecting, drum-making, creating videos with their pupils, game making, creative dance, etc, showed a real celebration of thoughtful and exciting lessons being developed in schools and linked back to ideas taught in courses. Each student was acknowledged by the interviewing panel as being a credit to the program. The interviewers left the interviews excited by what they heard and inspired by the experiences shared by the students. The students, all dressed formally, came out of the interviews feeling like teachers. As one student commented when she was given a letter acknowledging her completion of the program, "Is this it...I am so happy. I cannot believe I have actually done it...I'm a teacher, well almost. I need to go out and celebrate."

The pedagogy of the e-portfolio practice was one of re-constructing learning across courses, experiences and personal beliefs. In the past when many of students returned to the campus their attitude was that they had had enough and just wanted to leave. However, when this group of students came back to the university they were treated like teachers, they were acknowledged as

having acquired teacher knowledge, as having learned how to be a teacher. The interviews seemed to mark their entry into the profession.

Formalizing e-portfolio practice phase of action

Initially, the e-portfolio practice relied heavily on volunteer support. Due to students' low ability with technology, ongoing support was needed to assist them. Over the two years of implementing the e-portfolio, one of the single greatest achievements was to educate every elementary student on how to edit and link their e-portfolio using a web-page editor. Working as a computer support team, the two Computer Users Technicians and one Faculty member with technological skills taught, assisted and problem-solved with every student how to develop their portfolios, upload onto a server, scan documents, convert files and link in images and video clips. In 2005 the computer support team did three e-portfolio workshops, through 2006 with multiple years starting or continuing the e-portfolio, they did 26 sessions with six drop-in sessions also supplied by a graduate student. By the end of the Spring of 2007 term, the computer support team will have done an additional 20 sessions. All these sessions are additional to normal workload and represent a significant commitment from those involved. For the Computer Users technicians this initiative created a space for them to realize their primary goal to develop the use of technology in the faculty. However, this commitment is not sustainable. In the recent revisions to the elementary program the need for technology skills, well known in previous reviews of program, came to the fore and the Information Technology (IT) course was upgraded from 24 hours to 36 hours of contact and was placed in the first term of the elementary programs. It is hoped this will minimize the need for e-portfolio workshops and allow students to take more complete ownership of their e-portfolio as they learn to work with html coding.

Framing the e-portfolio practice has also been a critical element in setting students up to see the process as useful and necessary. Initially, in 2005 students were told they could see themselves as either "guinea-pigs or pioneers"; that this was an innovation that would be developed through trial and error and their support. Many of the students involved in their e-portfolio development came to see themselves as pioneers of innovative and important practice, however a vocal minority kept complaining despite the efforts to support their learning. Consistent and caring counseling by the field experience co-ordinator calmed the complaints of the few. The goal was to create a process for linking learning across courses, to allow students to study their own growth as teachers, and to create a systematic account of how each student and the program addressed the provincial standards for certification as teachers. Most students embraced this idea whole-heartedly, but for others this was seen as an inconvenience, something to avoid if possible. It became critical to send out a consistent message to students to help set-up the e-portfolio purpose and to reinforce that you could only graduate if the e-portfolio was completed. This resulted in each cohort of students who entered the program receiving a program orientation that addressed the e-portfolio and the provincial professional standards. In addition, the Director and the elementary program co-ordinator visited the first seminar classes that students took in the program to frame the e-portfolio practice, reinforce it had to be done and answer questions. It has been noticeable that each term these briefing meetings get less problematic with students becoming keen and interested in developing their e-portfolios, often commenting on how excited they are to begin the process for themselves.

Summary of reflections on project

Three main areas have been noted in the reflection of the findings from the project: (1) resistance to use of technology; (2) staff support; and (3) attitude to e-portfolio.

(1) Resistance to use of technology: Initially students' fear of using computers beyond word-processing and e-mailing, perceived lack of time and lack of instructor comfort, led to very vocal

and angry resistance to the e-portfolio. However, with repeated computer orientations (see Appendix G), peer support and consistent leadership, students started to see the potential and took pride in their work. As they used the e-portfolio, they have included artifacts such as narratives statement of teaching goals and philosophies, lesson and unit plans, samples of pupil work, supervising teachers' notes, journal excerpts, photographs, video and audio clips, action research projects and pupil assessments. Though challenging to develop, students have included STARR captions analyzing each artifact to explain why it was selected and how it meets program standards. Students have been encouraged to use these analytical explanations to examine their own learning and refine their theories for practice. However, we still need to work on helping many of them to work through the struggle of separating evidence from artifacts, to make meaningful sense of the artifacts as representations of their learning in relation to certifying provincial and program standards. This is for many of them such a new and unfamiliar experience, it will take time to create the culture and models to inspire every pre-service teacher to take ownership of their own learning and recognize their own continued growth as teachers. However, initial evidence is very promising, with many students indicating a new-found appreciation for the program they have experienced.

(2) Staff support: technology support staff and field experience co-ordinators have embraced and made the e-portfolio a priority within their working day. The technology staff led and facilitated e-portfolio workshops and drop in sessions (see Appendix G). They have helped refine the e-portfolio framework, have created on-line tutorials and maintained website support (see e-portfolio website <http://www.educ.UVic.ca/Eportfolio/>). In short, they have sustained an on-going e-portfolio process that could not be created by faculty or instructors. In addition, the field experience coordinator has led, encouraged and insisted that seminar instructors become comfortable with the use of the technology and has supported the re-design of seminar classes to fundamentally incorporate the e-portfolio into classes.

(3) Attitude toward e-portfolio development: initially, faculty largely ignored the e-portfolio and many students either delayed completing the e-portfolio or simply included artifacts with minimal reflection. However, the ongoing and sustained support caused several students to create model e-portfolios that they shared with pride and confidence (for example, see Appendix F of video and presentation of graduating e-portfolios interviews). As one pre-service teacher, a qualified psychologist who had decided to become a teacher, stated at the December, 2006 Faculty of Education meeting,

Completing my portfolio allowed me to realize how much I have learned from many of the people sitting here and how many different things many of my colleagues had learned at the same time. This has been a very worthwhile program...thank you.

The attitude of passive resistance was also evident from students in the program. In the current program they often complained of too much work, of too many demands from the sometimes seven courses in one term. With ongoing support, this resistance has gradually been replaced by an awareness of the potential for the e-portfolio to represent a new way of valuing learning. Initially, students framed the e-portfolio as a vehicle for getting a job, using it to show at an interview. However, over time the reflective process of creating an e-portfolio has allowed students to realize that the e-portfolio represents a way of understanding their teaching knowledge, has become a form of mindtool for their sense of confidence as teacher, for realize the teacher knowledge they have gained from multiple sources. At the graduating interviews in December 2006 it was evident that the e-portfolio became a form of celebration for what the students had already achieved as teachers in their two-month practicum experience. The students

presented themselves professionally, coherently and had concrete evidence to show how they had attained the provincial and program standards. Most of the students referred directly to their e-portfolios during the interviews and it was evident to the interviewers that they became more animated and focused as they explained artifacts presented through the electronic medium.

Conclusion

To further develop the e-portfolio practice we need to create a more systematic way of tracking pre-service teacher progress and making sure that the program is meeting their requirements as a group and as individuals. Already plans have been made to integrate the web-based e-portfolio with a database allowing continued monitoring of students progress with the e-portfolio and how artifacts are being created based on learning experiences in courses and practicum placement (see mock up in Appendix I). In addition, it would be useful to identify the learning opportunities that students find most applicable to the standards. To do this we need to involve course instructors in a more coherent and integral way into the portfolio development process, and to integrate a database system with the e-portfolio matrix allowing program coordinators to map pre-service teacher progress and note which learning experiences are put in the e-portfolio. Such a system would also highlight standards that the program does not address effectively, allowing fine tuning of course requirements and expectations.

It is obvious from the exit interviews that the e-portfolios create a platform that help students can become more self-confident about their practice as teachers. This may have been the case before the e-portfolio process was introduced, however, importantly the e-portfolio allowed students to be confident about their practice with strong links made back to the courses they had taken in the program not just to the experiences they had had in schools on their practicum. These connections disrupt the normalizing notions in teacher preparation, as noted by Munby et al., (2001) and many others, where student teachers' perceive that they learn everything useful on their practicum implying that most of their teacher preparation courses are not as valuable. The e-portfolio structures, over time, facilitated students making meaningful connections across courses in regards to the standards for certification as a teacher. As advocated by Schön (1987), Fenstermacher (1994), Munby et al (2001) we feel that these connections encourage students to articulate their teacher knowledge as both practical and formal as they learn how to draw on both propositional understanding and practical reasoning within a context of knowing.

As noted by Zeichner and Wray's (2001) review on teaching portfolios, the initial evidence on the e-portfolio practice shows that the student teachers thought more deeply about teaching and content and became more conscious of theories and assumptions that guided their practice. It was noted recently at UVic when the Calgary provincial teacher recruitment officer interviewed graduating students from UVic program all six were offered positions at the interview. The recruiting officer was very complimentary about the students saying that he was particularly impressed by their reflective comments. As he stated "They were thoughtful, especially around philosophy. They really get the big picture." The officer has made plans to return later in the year to interview the next graduating cohort. In addition, as noted by Zeichner and Wray (2001) the e-portfolio encouraged students to share insights they had gained from experience and suggest to each other artifacts they could use for different standards. This implies that e-portfolios help student teachers to develop a greater desire to engage in collaborative dialogues about their teaching.

A critical characteristic of the E-portfolio practice at UVic is that it has evolved over time; initially, with one cohort of students and then to the whole elementary program. This gradual evolution allowed technological problems, instructor insecurities, student techno-phobia and general program overload, to be addressed practically and thoughtfully with ongoing

consultation. With program revisions, student support and faculty awareness the e-portfolio practice is set to develop further as it creates a space for instructors to gain insights on the whole program and for students to examine their own development over time as they learn to attend to the needs of the learners in their classrooms. Already the e-portfolio exit interviews have promoted, as highly valued, students' personal experience and their articulation of their own theories on learning to teach. Such valuing shifts the course grade from a position of importance for defining students' status at the university and creates a new space to value teacher knowledge, for students to become teachers who know what they know and know how they know it (Fenstermacher, 1994). The e-portfolio could offer the catalyst to move away from graded courses focused on mastering a body of knowledge, to credit/non-credit courses focused on professional learning, on inquiry and on in-depth personal development as a teacher.

It is critical in teacher education that we acknowledge and understand the development of teacher knowledge. We believe that the e-portfolio, as a cross-program initiative, will help us to better understand pre-service teacher development as teachers as it creates an infrastructure to connect pedagogical practices across courses and course assignments. The e-portfolio practice allows improved and informed perceptions of the program, offering richer and new insight on students' learning as well as allowing ongoing insights on pre-service teacher reflections in and on our program. In March the initial cohort of students who started three years ago with the e-portfolio will be graduating. We plan to interview a range of students from this group and the PDP group who graduated in December to gain insights on their understanding and experiences with the e-portfolio. Findings from these interviews will be analyzed and used as part of the action research process to further develop the e-portfolio practice within our program. In a time of increasing government dictates on teacher education, we need to offer evidence of students' teacher knowledge that invites their commitment, voice and understanding. The e-portfolio offers a way to invite students to do this as they gain the confidence to take ownership of teacher education standards.

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Appendix A

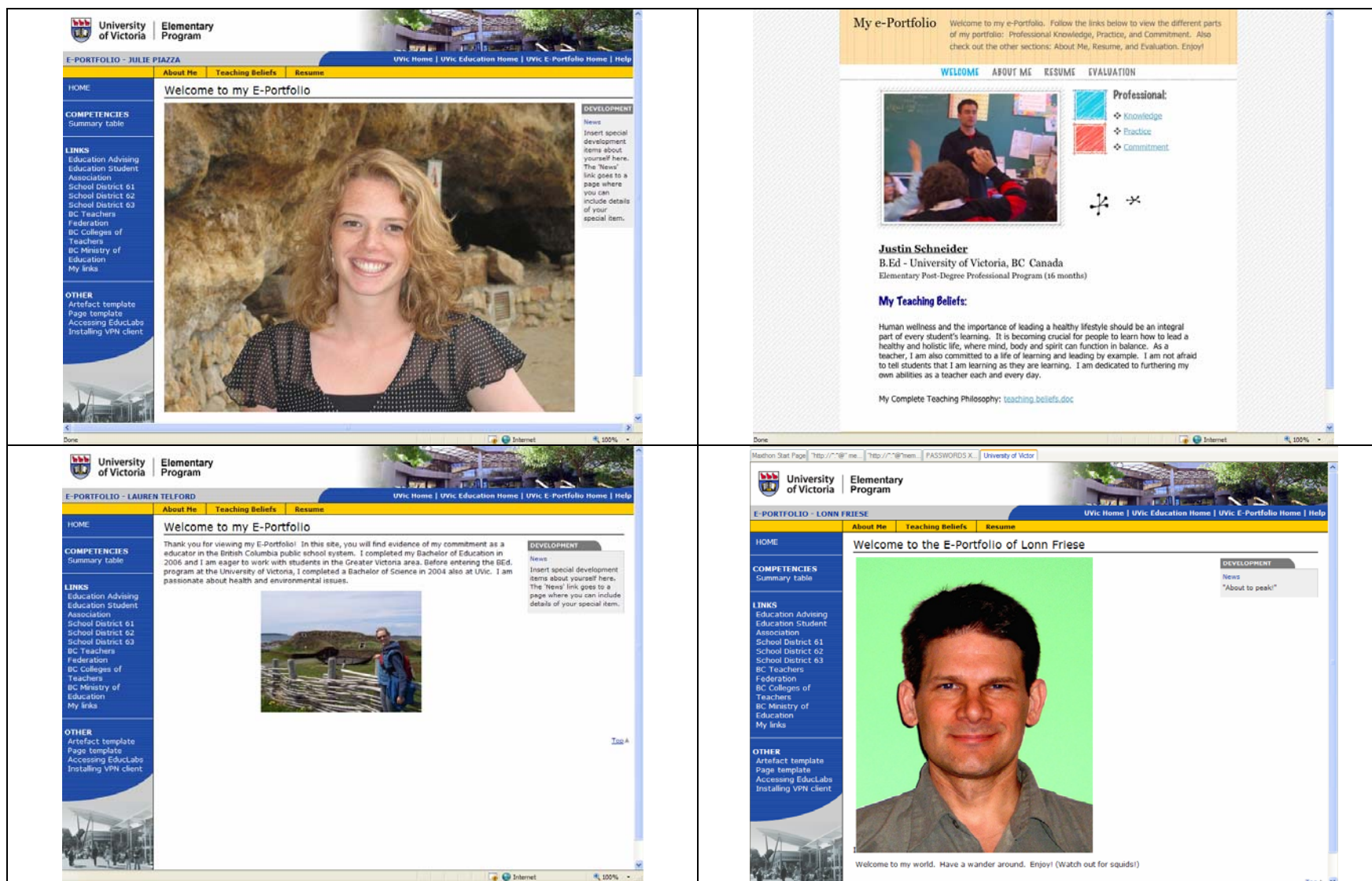
UVic "Standards for Qualification as a teacher"

Teachers should demonstrate...

Knowledge - K	1. a broad knowledge base as well as in-depth understanding about subject areas they teach
	2. knowledge about educational system (local and national) and appropriate curriculum documents
	3. knowledge of child development and contextual influences, i.e., cultural, physical, social, psychological
	4. knowledge of many approaches to teaching and learning including Aboriginal pedagogy and perspectives
	5. knowledge about a range of teaching strategies, resources, and technologies to engage students in effective learning
Practice - P	1. planning and assessment for effective learning
	2. systematic analysis of teaching experiences drawing on contextual variables and personal reflection
	3. the ability to create and maintain safe and challenging learning environments
	4. strategies and aptitude to establish and maintain partnerships among school, home, and community, and within their own schools
Commitment-C	1. reflection on and evaluation of their teaching interactions in order to improve their professional knowledge and practice
	2. the capacity to share ideas with colleagues, within professional organizations and wider community
	3. their understanding and acknowledgment in practice of the legislated and ethical frameworks within which they work

Example samples of front pages to student teachers e-portfolios

Appendix C



Examples of student teachers summary tables with icons to linking to artifacts of learning in relation to standards

University of Victoria | Elementary Program

E-PORTFOLIO - FIRST LAST

HOME | About Me | Teaching Beliefs | Resume

COMPETENCIES Summary table

SOURCE	KNOWLEDGE					PRACTICE				COMMITMENTS		
	K1	K2	K3	K4	K5	P1	P2	P3	P4	C1	C2	C3
Previous courses												
Previous life experiences												
ED-D 301												
EDCI 302												
PE 304												
EDCI 306												
ED-P 200												
EDCI 303												
EDCI 305												

Professional Practice

Teachers plan and assess for effective learning

7. ASSESSMENT | 8. APPLICATION | 9. SAFE & CHALLENGING | 10. PARTNERSHIPS

Professional:

- Knowledge
- Practice
- Commitment

Home

Student Self-Evaluation (see self evaluation example.JPG)

Situation: As part of my practicum at Journey Middle School, our grade six class participated in a Readers Theatre unit. This photo shows one of the group's presentations, and the link is an sample of one student's self-evaluation.

Task: My task was to plan an assessment tool that would result in effective learning of my students.

Action: I developed a self-evaluation for my students where each individual could reflect upon his/her own experience in the group, and how the group responded to the task of creating a script, rehearsing, and finally performing for the rest of the class.

Result: My students wrote thoughtful and insightful responses, that seemed completely genuine in honesty. Students wrote of their own target areas for improvement, as well as the group's.

Reflection: This was truly a valuable assessment tool in my teaching practice - one that

University of Victoria | Elementary Program

E-PORTFOLIO - JULIE PIAZZA

HOME | About Me | Teaching Beliefs | Resume

COMPETENCIES Summary table

SOURCE	KNOWLEDGE					PRACTICE				COMMITMENTS		
	K1	K2	K3	K4	K5	P1	P2	P3	P4	C1	C2	C3
Previous courses												
Previous life experiences												
ED-D 301												
EDCI 302												
PE 304												
EDCI 306												
ED-P 200												
EDCI 303												
EDCI 305												
EDCI 307												
ED-P 300												

University of Victoria | Elementary Program

E-PORTFOLIO - FIRST LAST

HOME | About Me | Teaching Beliefs | Resume

COMPETENCIES Summary table

SOURCE	KNOWLEDGE					PRACTICE				COMMITMENTS		
	K1	K2	K3	K4	K5	P1	P2	P3	P4	C1	C2	C3
Previous courses												
Previous life experiences												
ED-D 301												
EDCI 302												
PE 304												
EDCI 306												
ED-P 200												
EDCI 303												
EDCI 305												
EDCI 307												
ED-P 300												

Appendix D

Using the STARR technique in your portfolio

For each artifact you include in your portfolio include a 'STARR' story. STARR is a technique, which assists you to place your experiences, behaviours, knowledge, skills and abilities in a context. You can use class work, assignments, fieldwork experiences, volunteer work, family life - anything really - as examples of your past behaviour. The acronym STARR relates to:

Situation: (S) Situation refers to the context of the learning episode. Describe with enough detail to make sense of action and reflection. Describe the specific situation. Set up your story.

Task: (T) Task refers to what the person decided to do in the situation. What was the task you were trying to accomplish? Tell who, what, when, where, and why (include only relevant details)

Action: (A) Action refers to what happened as completed the task. What did you do to solve the problem or meet the task?

Result: (R) Result refers to what the students did or when another person reviewed the work. Specify results. What happened?

Reflection: (R) Reflection refers to what the person learned from the experience connecting back to theory or what they believed would happen. Link the capability you were demonstrating in this example to broader goal of becoming a teacher.

Such reflection may include:

- ◆ in-depth insight and self-knowledge
- ◆ an explanation of how do you understand yourself in relation to the capability
- ◆ what the selected artefacts reveal your understanding
- ◆ What does each artefact says about your growing capability
- ◆ Your personal knowing and transformation, values,
- ◆ The development of your identity as a teacher and immersion in the teaching community

Appendix D

STARR example

Situation: As part of the PE 304 Physical Education for General Classroom Teachers course I was required to teach four lessons of dance at Tom Sawyer Elementary School.

Task: As well as teaching dance content, I was experimenting with different styles of teaching. This photograph was taken during a Grade 2 creative dance class where my role was to facilitate divergent responses from a student to the challenge of creating a fair ride with our bodies.

Action: To facilitate production of divergent responses from the student I taught via invitation, asking the student to "...describe different rides we might see at the fair" and then I invited the student to show various ways our bodies could move to be like the fair ride". After experimenting with the different "rides" the student chose the one she liked the best, and we refined and practiced that movement pattern.

Result: All of the ideas for our roller coaster came from the student; and I was very pleased that I was able to provide open-ended questions to prompt the responses without being directive.

Reflection: I wasn't really sure how a divergent approach would work with Grade 2 students, but it was fantastic. There were no two 'rides' in the class that were the same and it was clear students were using their imaginations. The divergent approach really seemed to allow the students to own the dance; and no student seemed to feel intimidated by doing dance. I feel confident that I could use divergent styles in my teaching of dance, as well as other areas of the curriculum.

(See J. Briggs for more insights on STARR model and learning
<http://www.learningandteaching.info/learning/index.htm>)

Exit Interview Protocol

Questions developed by Kathy Sanford, Luanne Krawetz and Seminar leaders

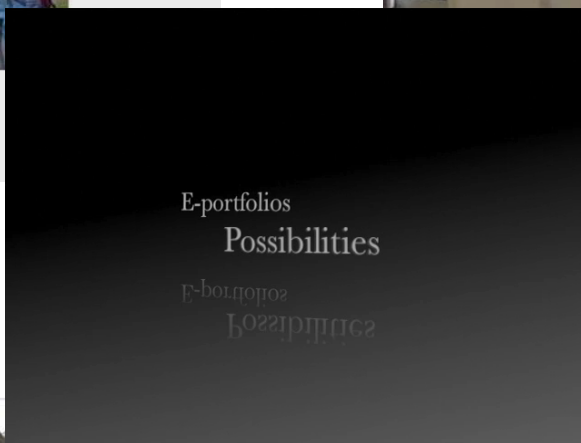
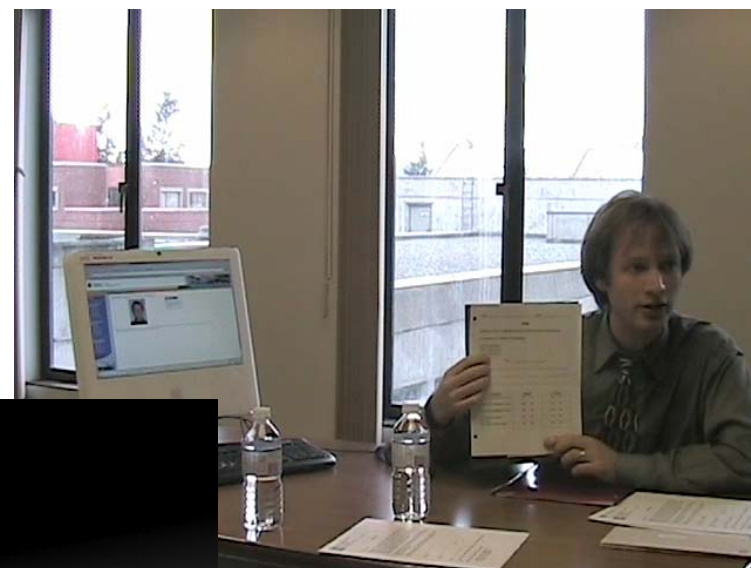
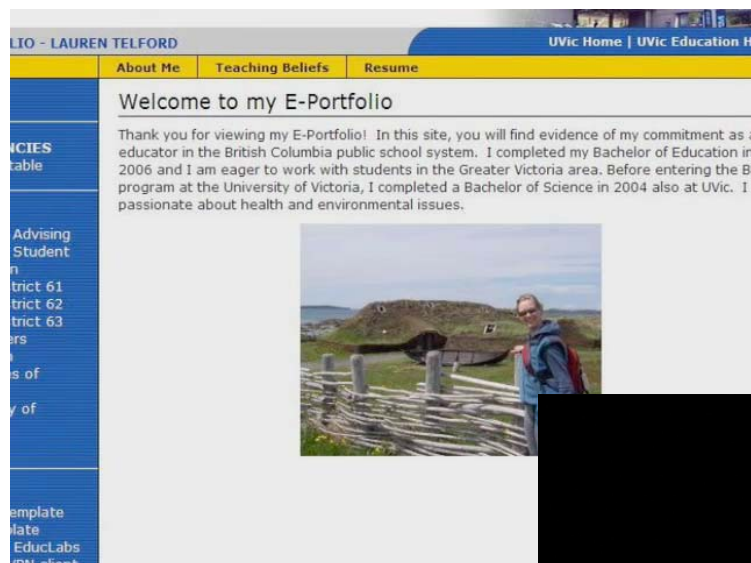
Students: ATTEMPT TO RESPOND TO THE FOLLOWING QUESTIONS USING EVIDENCE FROM YOUR E-PORTFOLIO

1. What are your areas of strength/expertise? How are these helpful in enabling you to work effectively with children in the classroom?
2. Describe how you incorporate the Ministry of Education's Principles of Learning into your teaching practices.
3. Describe your approach/expectations for classroom management in your classroom.
4. Describe a particularly effective assessment strategy you have used and identify how it has helped students enhance their learning.
5. Describe one of the most challenging times you had in your practicum, and how you adapted your practice to better suit the needs of the children.
6. What was one of the most significant things you learned throughout your program that will influence your further professional thinking and practice?

*****25 minutes has been allocated to each interview. 15 minutes will be used for questioning and 5 minutes for a debriefing session. The extra 5 minutes will be used to keep us on schedule.***

*****Each interviewing room will have a computer available for the students to use to demonstrate their e-portfolio if they choose.***

Video clip of sample interviews from exit interviews can be viewed at <http://www.educ.uvic.ca/Eportfolio/>



Appendix G

Background History and recent developments of the Elementary Teacher Preparation E-Portfolio

Before Fall 2004

Obtained Elementary Council support to proceed with Program-Wide Electronic Portfolio Learning and Teaching grant

Conversations held with PE, Music and LA instructors about infusing e-portfolio elements into their courses

Created the “University of Victoria, Teacher Education program, Standards for Competence and Professional Conduct” from the BC College of Teacher Standards, Alberta Standards, and Victoria (Aust) Standards

“University of Victoria, Teacher Education program, Standards for Competence and Professional Conduct” incorporated into 3rd Year Elementary Course Booklet

Fall term 2004

E-Portfolio template designed

Study survey of IT and Career Skills

Conversations with 200 instructors and further discussions with PE, Music and LA course instructors

Decided that based on survey results PC software was most applicable; therefore chose to use FrontPage

Acquired 10 licenses for FrontPage via COUS??

Discussed integration of Learning Commons and E-Portfolio project

Based on survey results that suggested low levels of Web page skills, decided to create an e-portfolio structure for the students to initially use as a place to put things. With the thought that later in the program students will move toward creating an e-portfolio of their own or at least being able to personalize the existing structure.

Spring term 2005

Additional survey of 3rd year regulars

E-portfolio space on Willow server

Students to create one portfolio element in PE, Music and LA courses, therefore a total of 3 portfolio items included

Students present portfolio in 200

Training session in lab. during 200 time for all 3rd years (1 group missed) – 3 sessions

Portfolio download instruction sheet created

Support provided by graduate student

Met with server administrator to discuss space and permissions issues

Summer 2005

Separate section on server created that will give students continuity of access over their time at UVic, will also allow instructors to grade within a portfolio, will monitor file size

Involved Perry from learning commons and John as new instructor of 406 in development of portfolio

Decided on expansion of elements to include i.e. 10 (5 per term) portfolio entries to be made by 4th years

Decided to include the new cohort in the project, including PDPPs.

Training for instructors

Decided that EDUC 200, 300, and 400 will be the Home for the electronic portfolio

Recent Developments

Fall 2005

Luanne Krawetz as field experience and seminar co-ordinator given responsibility for developing e-portfolio into program.

E-Portfolio workshop on **Monday, August 29th, 1:00 - 2:30 in BEC 180**, was arranged for all instructors and staff who are interested in learning more about the Elementary Education Programme E-Portfolio and how it can be used to support students' learning and the assignments they complete in all of your courses. All 3rd year students began their portfolios last year, and this year will be continuing in their 4th year. As well, all PDPP students will be introduced to the electronic portfolio template this year and begin to construct their own.

Monday 29th August: Elementary Education Programme Instructors' Meeting. Discussion included e-portfolio frameworks/standards. Luanne Krawetz talked about e-portfolio. Tim Pelton described 2 example assignments that he will be using in Math Education – comic and storyboard. John Bergorey offered to help instructors with the technology component of their assignments.

September 2005-- E-portfolio is now a required element of all of our Seminars from 3rd year B.Ed and 1st year PDPP. Still using the original platform developed by Tim Hopper.

E-Portfolio presentation by Tim Hopper and Perry Plewes during two day orientation for PDPP. E-portfolio PDPP student teacher handout was created by Tim Hopper. Since then Perry Plewes working with Al Curry from learning commons has developed visual tutorials on line. Mindy Van Rheen, one of our B. Ed student teachers created a manual that would assist her peers and support the e-portfolio (see e-portfolio website – 3 sessions <http://www.educ.uvic.ca/Eportfolio/>).

Some Faculty/Instructors are beginning to code course assignments in relation to Standards offered by the BCCT.

October 2005—Kathy Sanford, Tim Hopper, Vivienne Temple, Brad Temple, John Begoray applied for SSHRC grant and receive a 4 A rating in April 2006 resulting in a \$1000.00 grant to resubmit in October 2006.

November 18th, 2005—Mindy Van Rheen with Vivienne and Kathy presented on the E-portfolio for the teaching learning center.

January 26th—PDPP's in the lab with Tim Hopper/Perry Plewes leading, Al Curry in support. John Begoray came to assist. – 3 sessions

January 28th—Dr. Sanford/Luanne Krawetz addressed all 90 ED-P 200 student teachers about the e-portfolio requirements – 3 class sessions

February 5th—revisions done to the e-portfolio standards by Kathy Sanford and the group

February 15th—matrix introduced for the first time. Created by Tim Hopper. Brad Temple in conjunction with the group created a new matrix. At this time, Perry Plewes created the links to versions of the e-portfolio and tutorials at: www.educ.uvic.ca/ePortfolio

Nick Stabler, a first year PDPP student teacher, creates a PDPP specific platform and shares it with his peers.

March 9th—Brad Temple creates the version 6 which combines Nick Stabler's version

Three different versions running congruently: Original, PDPP by Nick Stabler and a matrix version.---YIKES!!!!

March—All Ed-P 200 student teachers had e-portfolio workshops in the lab with Tim Hopper, Al Curry, Perry Plewes and each completed a front page and an artifact. We had access to 10 front page licenses. Perry Plewes download NVU as an additional web editor so our student teachers could work on their e-portfolio from home. – 3 sessions

7 additional computers were added to the Learning Commons (DELL Pc's) for student access.

Current Academic Year

Meetings

July 16th, 2006@12:30 pm

E-Portfolio Meeting D116

Kathy, Luanne

July 12th, 2006@1:00 pm

E-Portfolio Meeting A341

Kathy, Luanne, Vivienne, Tim

August 15th, 2006@12:30 pm

On-Line Cohort Meeting HSD A170

Julie Davis, Kathy, Luanne, Perry

August 17th, 2006@12:30 pm

PDPP and Internship Cohort Meeting D110

Kathy, Luanne

Perry and Tim as technical support – 1 session

August 31st, 2006@9:00--1:00 pm

Seminar Leaders/Instructors E-Portfolio session D288

Kathy, Luanne

Perry, Al and Tim as technical support – 3 sessions

November 24th, 2006

E-Portfolio Presentation in Cranbrook for instructors and students
College of the Rockies
Perry Plewes as technical support – 1 session

Orientation Meetings to e-portfolio for students

September 6th, 2006@9:00 am to 4:00pm
Year 4 and PDPP E-portfolio session BEC 180
Luanne, Kathy
Perry and Al as technical support – 2 sessions

For B. Eds., Dr. Hopper created a fourth hybrid which allowed the student teachers to combine the original with the matrix version.

September 12th, 2006@2:30 pm
Secondary Student Teachers E-Portfolio session Lam Auditorium
Luanne, Kathy, Tim

September 29th, 2006@11:30 am
ED-P 400 A's E-Portfolio Session HSD A160
Luanne, Kathy
Al Curry as technical support – 1 session

October 6th, 2006@11:30am
ED-P 400A + B's E-portfolio session BEC 160/170
Kathy, Luanne, Tim
Perry and Al as technical support – 1 sessions

October 12th, 2006@1:00 pm
ED-P 300B's E-portfolio session BEC 160
Michele Tanaka, Luanne
Tim and Al as technical support – 1 session

November 9th, 2006@1:00 pm
ED-P 300A's E-portfolio session D282
Downey/Browne--Luanne
Al Curry as technical support – 1 session

November 16th, 2006@1:00pm
ED-P 300B's E-portfolio session HSD A170
Walmsley/Murray--Luanne
Al Curry as technical support – 1 session

November 23rd, 2006@1:00pm
ED-P 300B's E-portfolio session BEC 170
Sanford/Tanaka--Luanne
Al Curry/Perry Plewes as technical support – 1 session

November 24th, 2006 @1:00-3:00 pm
Extra Session for PDPP's—drop in BEC 170
Al Curry as technical support – 1 session

December 1st, 2006 @1:00pm
ED-P 400A E-portfolio session HSD A170
Tim Hopper as technical support – 1 session

December 1st, 2006 @1:00-3:00 pm
Extra Session for PDPP's—drop in BEC 170
Al Curry as technical support – 1 session

First Graduating group of PDP exit interview using the E-portfolio

December 8th, 2006 from 8:30 to 2:20
Exit Interviews for 42 graduating PDPP student teachers.
Three rooms, 25 min interviews with online support from Perry and Al.
3 panelists in each room MacD223, MacA326, MacA439

ROOM—Mac A223	ROOM—Mac A 326	ROOM—Mac A439
8:30 – 11:25 AM Julie Davis Lori Downey Tim Hopper	8:30 – 11:25 AM Sandra Umpleby Ruthanne Tobin Bonnie Newman	8:30 – 11:25 AM Robert Wall Annelies Browne Vivienne Temple
11:25 – 2:20 pm Gary Walmsley Kathie Black Anne Knoke	11:25 – 2:20 pm Luanne Krawetz Sylvia Pantaleo Fern Perkins	11:25 – 2:20 pm Susan Underwood Wanda Hurren Val Murray

DECEMBER 15TH, 2006

ROOM—Mac A 326
8:30 – NOON Julie Davis Luanne Krawetz

See Appendix B for questions developed by Kathy Sanford, Luanne Krawetz and Seminar leaders

Video samples taken from 7 interviews. 4 min summary video created by Tim Hopper to show interview process – “E-portfolio potentials”

December 15th, 2006 from 8:30 to Noon
Exit Interview via telephone conference Mac A 341
Distance Student Teachers
One room with 2 panelists – Luanne Krawetz and Julie Davis.

Faculty Meeting Dec 15 Showcased E-portfolios from Kelsey Anderson (Regular Elementary) and Lonne Friese (PDP).

E-portfolio sessions in courses 2007

Date/Room/Time	Course	Instructors	Technical Support	Presenters	Confirmed?
January 3, 2007 MacD282 10:30-12:30	Ed-P 200 Introduction to E-Portfolio	Knoke/Madill	Perry Plewes	Luanne Krawetz Kathy Sanford	yes
January 11th, 2007 BEC 170 1:00-2:30	Ed-P 300	Perkins/Knoke	Al Curry	N/A	yes
January 11th, 2007 BEC 180 1:00-2:30	Ed-P 300	Davis/Newman	Perry Plewes	N/A	yes
January 12th, 2007 Mac D282 8:30-10:00	Ed-P 200 Introduction to E-Portfolio	Perkins/Browne	Perry Plewes Al Curry	Luanne Krawetz Kathy Sanford	yes
January 18th, 2007 BEC 180 1-2:30	Ed-P 300B	Murray/Walmsley	Al Curry	N/A	yes
January 18th, 2007 HSD A170 1-2:30	Ed-P 300B	Sanford/Tanaka	Perry Plewes	N/A	yes
January 23rd, 2007 BEC180 3:00-3:30	Ed-P 200 Introduction to E-Portfolio	Szabo/Jacobi	not needed	Luanne Krawetz Kathy Sanford	yes
February 1st, 2007 MacD282 1:00-2:30	Ed-P 300	Browne/Downey	Al Curry	N/A	yes
February 1st, 2007 BEC 170 1:00-2:30	Ed-P 300	Davis/Newman	Tim Hopper	N/A	yes
February 1st, 2007 BEC180 1:00-2:30	Ed-P 300	Perkins/Knoke	Perry Plewes	N/A	yes
February 14th, 2007 TBA 10:30-12:30	Ed-P 200	Madill/Knoke	Al Curry	N/A	
February 15th, 2007 MacD282	Ed-P 300B	Murray/Walmsley	Al Curry	N/A	yes

1:00-2:30					
February 16th, 2007 MacD282 8:30-10:30	Ed-P 200	Perkins/Browne	Al Curry	N/A	yes
February 27th, 2007 HSDA 170 1:00-3:30	Ed-P 200	Szabo/Jacobi	Perry Plewes Al Curry	N/A	yes
March 1st, 2007 MacD282 1:00-2:30	Ed-P 300	Browne/Downey	Al Curry	N/A	yes
March 1st, 2007 BEC 170 1:00-2:30	Ed-P 300	Davis/Newman	Tim Hopper	N/A	yes
March 1st, 2007 BEC180 1:00-2:30	Ed-P 300	Perkins/Knoke	Perry Plewes	N/A	yes
March 15th, 2007 BEC180 1:00-2:30	Ed-P 300B	Murray/Walmsley	Al Curry	N/A	yes
March 23rd, 2007 MacD282 8:30-10:30	Ed-P 200	Perkins/Browne	Al Curry	N/A	yes
March 27th, 2007 HSDA 170 1:00-3:30	Ed-P 200	Szabo/Jacobi	Perry Plewes Al Curry	N/A	yes
March 4th, 2007 TBA 10:30-12:30	Ed-P 200	Madill/Knoke	Al Curry	N/A	
			20 sessions		

Appendix H

Student Item Maintenance

Req:	URL	Description	Course	Date Added	O K
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Submit"/>	
K1	web.uvic.ca/~jbegoray/e-portfolio/mars/index.htm	Journey to Mars Interactive Java Applet	EDCI 360	2006-10-26	0
K1	web.uvic.ca/~jbegoray/e-portfolio/graphics/index.htm	Online Resource To Support Graphics Unit	EDCI 406	2006-10-25	0
K4	web.uvic.ca/~jbegoray/e-portfolio/humour/index.htm	Humorous Introduction to Computers	EDCI 406	2006-10-27	1

Administration

Frequency Report for all students in one cohort

	K1	K2	K3	K4	K5	P1	P2	P3	P4	C1	C2	C3
EDCI 234	2			6								7
EDCI 245		5							1			
EDCI 256			13				2				8	
EDCI 333	7	17	2		18				4		3	12
EDCI 345				4								
EDCI 356		5					8					
EDCI 444			4		11							
EDCI 456											5	
EDCI 466	3	14		6	16		6	11				
EDCI 477						15						