

Canadian Journal of Learning and Technology / La revue canadienne de l'apprentissage et de la technologie, V31(3) Fall / automne, 2005

Canadian Journal of Learning and Technology

Volume 31(3) Fall / automne 2005

Deepening Understanding of Inquiry Teaching and Learning with E-Portfolios in a Teacher Preparation Program

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Abstract

Abstract: This paper describes the first stages of a project focusing on the use of preservice-teacher-generated e-Portfolios as a means of documenting and assessing inquiry-based teaching and learning. The project is designed to explore ways in which preservice teacher-created e-Portfolios can be used to (1) document how inquiry lives in practice, and (2) help university instructors and practitioners in the field assess the knowledge, skills, and attributes of preservice teachers who are participating in an inquiry based teacher preparation program.

Résumé: L'article décrit les premières étapes d'un projet mettant l'accent sur l'utilisation de portfolios électroniques générés par les enseignants stagiaires pour documenter et évaluer l'enseignement et l'apprentissage axés sur le questionnement. Le projet est conçu pour examiner les façons dont les portfolios électroniques créés par les enseignants stagiaires peuvent être utilisés pour 1) documenter comment le questionnement de produit en pratique, et 2) aider les professeurs des universités et les spécialistes à évaluer les connaissances, les aptitudes et les caractéristiques des enseignants stagiaires qui participent à un programme de préparation des enseignants axé sur le questionnement.

Introduction

A widely adopted belief driving teacher preparation is that teachers' increased knowledge will shape and improve practice resulting in better-educated students (Darling-Hammond, 1998; Shulman, 1986). Such policy assumes connections between high levels of preparation, high quality teaching, and high quality student learning. It also assumes the converse, in which teachers are blamed for poor learning performance (Robinson, 1995). There is an assumed connection between what teachers know and do, and what students know and do (Brophy & Good, 1986; Clark & Peterson, 1986; Darling-Hammond, 1998; Day, 1999; Good & Brophy, 2000). There are also studies that suggest that what teachers learn about classroom activities is important to student achievement (Darling-Hammond, 1998).

Increased attention in the educational research community has centered on alternative assessments that can encourage authentic learning. As Eisner (1999) put it: "Our educational aspirations have been influenced by the fact that our children will inhabit a world requiring far more complex and subtle forms of thinking than children needed three or four decades ago" (p.658). Professional teacher organizations in the United States have begun to include this critical element of teaching—assessment—in professional teaching standards. "Quality assessment ... hinges on the process of setting up conditions so that the classroom, the school, the community become centers of inquiry where students, teachers and other members of the community investigate their own learning, both individually and collaboratively" (NCTE, 1994, p.7).

In this article, we present a teacher preparation program in Canada that attempts to take seriously research findings on teaching, learning, and assessment in its program design. This paper describes a first stage of the development in using preservice-teacher-generated e-portfolios as a means to document and assess inquiry-based teaching and learning.

E-Portfolio Project in the Faculty of Education at the University of Calgary

The Master of Teaching (MT) Program at the University of Calgary is grounded in the principles of learner-focused, field-oriented, and inquiry-based teaching and learning. In 2005, a pilot project was initiated to explore the question of how we might best demonstrate and assess inquiry-based learning, particularly in field experience sites. The overarching purpose of the initiative is to make visible and intentional those principles on

which the MT Program was founded in such a way that all participants (preservice teachers, partner teachers, and faculty) can deepen their collective understanding and engage in on-going deliberations about what constitutes meaningful inquiry-based teaching and learning. The vehicle for demonstrating learning will be electronic portfolios. While on paper it seems a relatively straight forward task to design an inquiry-based teacher education program, the implementation of such a program, and a deeper grounding of inquiry-based practices by faculty members, student teachers, and in field experience sites, can prove to be much more challenging. For example, to understand teaching as oriented to fostering students' inquiries makes sense theoretically. But in practice, it is often difficult for instructors to either let go of more traditional subject-centred or teacher-centred approaches, or if they do, to not fall into the role of just being a "facilitator." Perhaps the most difficult challenge in an inquiry-based program is that of the practice of assessment, including both the form and content of what is assessed. Traditionally, teacher candidates have been assessed on their demonstrated knowledge (e.g., through tests, papers or projects of various kinds) of curriculum, foundations of education, and educational psychology. Such knowledge is both presented and assessed in more or less finite ways, as representing the sum total of necessary background knowledge for teaching. Often separated from the assessment that is administered for university-based courses is that of field experiences—student teaching. Here, assessment has often taken the form of focusing on assumed, empirically-verified, discrete "skills" of teaching and pedagogy. What is often critically absent in such assessment of practice (in both university classes and field experiences) are several key elements—or perhaps more accurately, questions—of learning professional practice: 1) the process of how one learns in the first instance and what constitutes the experience of learning; 2) the necessary detours through texts and the questioning of the "self" that accompanies the development of self-understanding; and 3) the ability to understand substantive (e.g., subject) knowledge in relation to pedagogy (or perhaps more accurately, to understand what has to be taught inseparably from how one might teach it—or how students might learn it). As Dewey put it so well, "[the teacher] is not concerned with the subject matter as such, but with subject-matter as a related factor in a total and growing experience [of students]" (1902, p. 23). There are stubbornly held assumptions about teaching and learning that still exist in many teacher education programs. When referring to such programs as traditional, it would be more appropriate to put traditional in quotation marks—"traditional"—to indicate that what has evolved in teacher education is more a product of late modernism—the twentieth century—and not earlier pre-modern times. Shulman (2004) remarks, "knowledge in the medieval university was not something held abstractly, but instead as something that served one's professional practice in the world" (p. 195–196). Toulmin (1990) also has written extensively about how pre-modern forms of thought and practice were much more oriented by particular attention to time, space, and the local, rather than as universalized knowledge and procedures. The point is not that we would argue that we must return to medieval ways of thinking and doing, only to support the question that Donald Schon asked about professional practice, for example, "How is it that in the second half of the twentieth century we find in universities, embedded not only in men's minds but in the institutions themselves, a dominant view of professional knowledge as the application of scientific theory or technique to the instrumental problems of practice?" (Dunne, 1993, p. xv). This question of how we view practice is integral, as we are proposing in the project further elaborated below, to the question of assessment of teaching practice as it is learned and experienced in a teacher education program. Once we leave the language of subject matter and teaching techniques behind as discrete entities that can be easily quantified in evaluative terms, and once we accept that the rationality of learning to teach is less technique and method and more fundamentally inquiry-based, interpretive, associative, and concrete in nature, we are compelled to ask how such learning may be represented. The technical rational model of professional learning, to use Schon's term, means that learning

is already framed by the object to be attained, and assessment measures the degree of congruency with that object. But if we see teaching “as an engagement or a process” (Dunne, 1993, p. 5), assessment cannot be easily reduced to products of learning. We are then prompted to ask, as Dunne evocatively suggests, what “might be at work in the pedagogic situation which cannot simply be made the object of analysis but must rather be lived through—a kind of subsoil which nourishes the fruits of explicit purposes but which itself is not a fruit” (1993, p. 5). It is with these challenges in mind that a group of teachers/researchers at the University of Calgary have embarked on a project to inquire into how we might assess inquiry-based learning, focusing not only on the products of learning, in the technical sense, but also on what ought to be represented as professional learning.

Project Design

Through the E-Portfolio Project we will explore ways in which preservice teacher-created e-Portfolios can be used to (1) document how inquiry lives in practice, and (2) help university instructors and practitioners in the field assess the knowledge, skills, and attributes of preservice teachers who are participating in an inquiry based teacher preparation program.

By engaging a cadre of preservice teachers, faculty, and partner teachers in a process of designing appropriate tools for assessing inquiry based teaching and learning, we hope to encourage forms of learning, knowledge, and assessment that lead to

understanding

—what Varela (1999) refers to as “knowing-how” as well as “knowing-what” (pp. 17-19). We see e-Portfolios as a way to promote, extend, and assess the development of inquiry-based teaching and learning, and as a way to generate concrete evidence that our students are becoming thoughtful, rigorous, and reflective teaching professionals—what Dewey (1904) called disciplined “students of teaching” (p. 15). As educators we need to follow the same path—what deepens and extends our students’ practices will also strengthen our own. We believe that e-Portfolios can help us to sustain and enhance the quality of pedagogy for preservice teachers, university instructors, and practitioners in the field, which, following principles of sustainability will provide the MT Program with immediate as well as long term health.

In order to engage in inquiry and to assess it in meaningful, authentic ways, we need to develop the ability to ask good questions and develop a process by which we can document the responses to those questions in a manageable, sustainable, and meaningful portfolio (Black & Wiliam, 1998). This is consistent with Eisner’s (1998) notion that

- there is nothing so slippery as a thought...the process of externalization is a process for stabilization. Working with a form of representation provides the opportunity to stabilize what is ephemeral and fleeting. It gives students an opportunity to hold onto their thinking. (p. 27)

The work of Reggio Emilia educators suggests that we must help learners to find meaning in what they do, encounter, and experience. This meaning making involves “making connection, giving meaning to ... events, to ... fragments ... gathered over the course of many and varied experiences” (Giudici, Rinaldi, & Krechevsky, 2001, p. 79). Important to the act of meaning making is the documentation of a student’s learning path and process and the formation of rich, sustained relationships created through reflection upon the documentation. In this sense, the documentation process does not create a definitive end product but leads to a portfolio that is

open to continual reflection and re-examination. In describing the importance of documentation for reflective practice, Dahlberg, Moss and Pence (1999) note that it

enables us to see how we ourselves understand and ‘read’ what is going on in practice; with this as a base, it is easier to see that our own descriptions as pedagogues are constructed descriptions. Hence, they become researchable and open for discussion and change. (p. 147)

Consistent with Alberta Learning’s (2004) focus on inquiry-based teaching and learning, the construction of e-Portfolios will engage preservice teachers in “assessing the process as well as the product” (p. 73) of their inquiry into learning to teach.

We envision that the e-Portfolios will become a site of inquiry and dialogue for a triadic relationship between preservice teachers, university faculty, and partner teachers. As we explore the possibilities of assessing inquiry-based learning through the use of technology, we strengthen our ability to formatively assess preservice teachers’ learning in the MT Program, and to enrich the discourse among faculty in the MT Program, preservice teachers, and classroom teachers around inquiry-based teaching and learning and around ‘teaching for understanding with technology’ (Wiske, Franz, & Breit, 2005). Alberta’s Commission on Learning Recommendation 65 (2003, p. 110) states that teacher preparation programs should conduct research into conditions and practices that prepare preservice teachers to integrate technology effectively into teaching and learning. We believe that the E-Portfolio Project within the MT Program is consistent with this aim.

Our initial research questions focus on the following:

- How can the use of e-Portfolios assist in the documentation of inquiry-based teaching and learning?
- How can e-Portfolios help university instructors and practitioners in the field assess the knowledge, skills, and attributes of preservice teachers who are participating in an inquiry based teacher preparation program?
- How can e-Portfolios help preservice teachers better understand their growth and development as the “disciplined students of teaching” suggested by Dewey?
- How does technology enable documentation practices that would otherwise be impossible?
- What hardware, software, and professional development opportunities will best support the use of e-Portfolios within the context of the MT program?

In essence, the project consists of four

interconnected

recursive elements that constitute the major activities of this project:

- Development of a process by which an understanding of inquiry-based teaching and learning can be documented through e-Portfolios;
- Development of an understanding of how the documentation process can occasion preservice teacher learning;
- Development of an understanding of how technology can support the documentation process; and

- Development of an understanding of how the learning embedded within that form of documentation can be assessed.

Action research, defined as “a collaborative approach to inquiry or investigation that provides people with the means to take systematic action” (Stringer, 1999, p.17), is ideally suited to our project. Framing our project as action research requires systematic and carefully planned inquiry oriented to improving and understanding practices, ongoing research and evaluation, rigorous collection of evidence, and a reflective and recursive re-evaluation of action steps. Not least, action research is oriented to building good communication and understandings within and among communities of practice. In the tradition of action research, we will engage in a “constant process of observation, reflection and action” (Stringer, 1999, p. 19). This will require participants to be in a continual spiralling process of action, analysis, and re-action so we will continually revisit the initial guiding research questions and explore other emerging themes throughout the project.

Sustaining Learning

The project will begin with a pilot group of 36 student teacher participants. However, sustainability of this project rests in our ability to scale this initiative across the entire MT Program and therefore in the ability of the initial participants to become change agents for informed practice. For us, sustainability means that we intend to provide immediate nourishment to the pilot participant groups—student teachers, partner teachers, and university instructors—as well as long term health for the teacher preparation program. Following intense collaboration among these primary stakeholders, carried out through the infrastructure of the Master of Teaching Program in the form of this pilot project, it is our intention to scale this initiative across the entire MT Program in a sustainable manner. We believe this will allow us to address holistically the issues of assessment, documentation, data storage and management, portfolio evaluation, and other elements critical to inquiry and assessment that may arise.

This initiative offers opportunities for professional development (i) in preparation of preservice teachers to integrate technology in various learning contexts; (ii) as a model for practicing teachers for the integration of technology as an assessment approach; and (iii) support for faculty members as they strengthen their capacity to integrate technology in their practice.

In the first component of professional development the three groups (preservice teachers, partner teachers, and faculty) will learn to document inquiry-based teaching and learning and design prototype portfolios. A further component of

professional development concerns the specific skills required to engage in the documentation process. Research suggests that sustained and just in time professional development activities that are aligned with relevant and specific tasks help support the integration of technology into individuals' actual practices (Vrasidas & Glass, 2004). Therefore, we are also engaged in the development of support tools to help participants construct elements for their e-Portfolios.

Findings from this project will be shared within the MT Program and with the partner schools and we are committed to exploring avenues for additional collaboration with the partner schools as they increase their work in inquiry. We see the potential for this project to be a catalyst for other projects that focus on innovative methods of assessment for inquiry-based teaching and learning.

Conclusion

The preceding discussion about our proposed research demonstrates a commitment to return to the “rough ground” of inquiry, to put in Joseph Dunne’s (1993) words. By “rough ground” he refers to the complex and difficult terrain of teaching and learning, and how no technique, in and of itself, can ever fully account for the complex, relational qualities of the teaching and learning relationship, and what might emerge as products of learning. The rough ground, in this sense, refers to the uneven, messy, contingent, contested, and yet unnamed spaces that we necessarily have to plod and trip through, rather than simply glide over. Assessment, or the products of assessment, conceived in the abstract from sites of practice, and from the actions and reflections of participants, in our case, student teachers, teachers in schools, and university instructors, and researchers, cannot hope to account fully and richly for the processes and products of learning. In this sense, and in a very deep way, our interest in developing ways to assess inquiry-based teaching and learning practices is really about attending more fully to learning itself, and the way that it is manifested in practices. In other words, inquiry is also about understanding what it is we have learned, and how that can be brought to language in diverse and creative forms, and how we might responsibly account for those understandings. It is this fundamental relationship between inquiry, to what it is oriented, and how we might bring what is learned into understanding, including how we might understand assessment, that frames the purposes of our proposed study.

References

Alberta’s Commission on Learning. (2003). *Every child learns, every child succeeds: Report and recommendations*. Edmonton, AB: Alberta Learning.

Alberta Learning. (2004). *Focus on inquiry: A teacher’s guide to implementing inquiry-based learning*. Edmonton, AB: Alberta Learning Teaching Resources Branch.

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7–75.

Brophy, J.E., & Good, T.L. (1986). Teacher behavior and student achievement. In M.C. Wittrock (Ed.),

Handbook of research on teaching

(3rd ed., pp. 328–375). New York: Macmillan. Publishing Co.

Clark, C.M., & Peterson, P.L. (1986). Teachers' thought processes. In M.C. Wittrock (Ed.), *Handbook of research on teaching*. (3rd ed., pp. 255–296) New York: Macmillan Publishing Co.

Dahlberg, G., Moss, P., & Pence, A. (1999). *Beyond quality in early childhood education and care*. Philadelphia, PA: Falmer Press, Taylor & Francis.

Darling-Hammond, L. (1998). Teachers and teaching: Testing policy hypotheses from a national commission report. *Educational researcher*, 27(1) 5–15.

Day, C. (1999). *Developing teachers: The challenges of lifelong learning*. London: Falmer Press.

Dewey, J. (1902). *The child and the curriculum/the school and society*. Chicago: University of Chicago Press.

Dewey, J. (1904). The relation of theory to practice in education. In C.A. McMurray (Ed.), *The relation of theory to practice in the education of teachers* (Third yearbook of the National Society for the Scientific Study of Education, Part I, pp. 9–30). Chicago: The University of Chicago.

Dunne, J. (1993). *Back to the rough ground. Practical judgement and the lure of technique*. Notre Dame, IN: University of Notre Dame Press.

Eisner, E.M. (1999). The uses and limits of performance assessment. *Phi Delta Kappan*, 80(9), 658–661.

Eisner, E. (1998).

The kind of schools we need

. Portsmouth, NH: Heinemann.

Giudici, C., Rinaldi, C., & Krechevsky, M. (Eds.). (2001). *Making learning visible: Children as individual and group learners*. Cambridge, MA: Harvard Graduate School of Education; Reggio Emilia, Italy: Reggio Children.

Good, T., & Brophy, J. (2000). *Looking in classrooms*, 8th ed. New York: Longman

National Council of Teachers of English. (1994). *Standards for the assessment of reading and writing*. Urbana, IL: National Council of Teachers of English.

Robinson, B. (1995). Teaching teachers to change: The place of change theory in the technology education of teachers. *Journal of Technology and Teacher Education*, 3, 107–118.

Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14.

Shulman, L.S. (2004). Those who understand. Knowledge and growth in teaching. In *The wisdom of practice. Essays on teaching, learning, and learning to teach* (189-215). San Francisco: Jossey-Bass.

Stringer, E. (1999). *Action research: A handbook for practitioners* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Toulmin, S. (1990). *Cosmopolis. The hidden agenda of modernity*. Chicago: University of Chicago Press.

Varela, F. (1999). *Ethical know-how: Action, wisdom and cognition*. Stanford, CA: Stanford University Press.

Vrasidas, C., & Glass, G. (Eds.). (2004). *Online professional development for teachers*. Greenwich, CT: Information Age Publishing Inc.

Wiske, M.S., Franz, K.R., & Breit, L. (2005). *Teaching for understanding with technology*. San Francisco, CA: Jossey-Bass.

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ISSN: 1499-6685