Research – Literature Review and Proposal

Communities of Practice, Reflection and Electronic Portfolios in a Faculty of Education

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Teaching is a complex act. Learning how to teach requires that the implicit become explicit. Tacit knowledge needs to be articulated. Faculties of education (FoEd) around the world shape student's journeys of discovery using a teaching portfolio, created in paper form or electronically. Portfolios are tools to illuminate the process of transformation from student to teacher, from the periphery into knowledgeable member of the teaching community. Reflection is ubiquitous within portfolios. Communities of practice (CoP) show promise in providing contexts for meaningful learning. I propose that creating a community where teacher-candidates can reflect deeply on elements within an electronic portfolio is an effective way to provide deep learning about the craft of teaching. I further propose that, with the socially constructed nature of learning in community, levels of reflection will show increased engagement and critical thought.

Key understandings about electronic learning portfolios, reflection and communities of practice are examined. Definitions of concepts and theoretical foundations are explored. Applicable research is scrutinized. A research plan is presented and a conclusion to the investigation is reached. Research studies interweaving reflection using electronic portfolios supported in communities of practice in teacher education are challenging to find. The research review is limited to post 2005. Information from earlier dates is included as it relates to theoretical foundations or the development and understanding of concepts,.

Definitions and Theoretical Perspectives

Electronic Portfolios

Lee Shulman's definition of portfolios is useful.

> "A teaching portfolio is the structured documentary history of a (carefully selected) set of coached or mentored accomplishments substantiated by samples of student work and

> fully realized only through reflective writing, deliberation, and serious conversation." (Lyons, 1998, p. 3)

Electronic portfolios (EPs), also called web-folios, net-folios or e-folios (Adamy & Milman, 2009), are digitized containers "capable of storing visual and auditory content including text, images, video and sound." (Abrami and Barrett, 2005). This definition encompasses digital media including "graphics, hypermedia programs, database, spreadsheet, video, and word processing" (Adamy & Milman, 2009, p.viii). Recent developments in social media, such as blogs, wikis, twitter and Facebook (Barrett, 2011a); Chuang, 2010; Killeavy & Moloney, 2010), and mobile technologies (Barrett, 2011b); Kennedy, 2011) are being incorporated into electronic portfolios.

Defining the purpose for EPs is controversial, challenging, and essential (Barrett & Carney, 2005; Siemans, 2004, Strudler & Wetzel, 2011). The implementation, development and process for creating EPs are determined by purpose and design (Barrett & Carney, 2005; Adamy & Milman, 2009; Siemans, 2004; Strudler & Wetzel, 2005). Sherman (2006) outlines eleven roles for EPs including artifact creation, goal setting, practice with purpose, examples and non-examples, assessment, reflection, communication, instructional planning and management, learner organization, interdisciplinary teaching and learning, and historical records or stories as role models. These roles are echoed in other research endeavors (Abrami & Barrett, 2005; Barrett & Garrett, 2009; Berrill & Addison, 2010; Granberg, 2010; Lyons, 1998; Milman & Kilbane, 2005; Reese & Levy, 2009; Strudler & Wetzel, 2005).

Theoretically, EPs "rest on a continuum from more objectivist to more subjectivist philosophical approaches" (Strudler & Wetzel, 2011, p.162). Objectivists rest on observable, measurable, established skills that can be assessed while subjectivists move toward

constructivism that relies on reflection (Strudler & Wetzel, 2011). The primary focus for this research proposal is grounded in theories of social constructivism and reflective practices to transform learning for pre-service teachers.

Reflection

Reflection, a core skill in EP development, is derived from the Latin word *reflectere,* meaning "to look back" (Valli, 1997). Carol Rodgers shares John Dewey's definition of reflection as the action of "reconstruction and reorganization of experience which adds to the meaning of experience" (Rodgers, 2002, p. 848). According to Dewey, "reflection is a complex, rigorous, intellectual, and emotional enterprise that takes time to do well" (Rodgers, 2002, p. 844). Dewey's four criteria for reflection – meaning making, systematic and disciplined thought, interaction with others, and attitudes valuing growth in self and others, are essential components of reflective practice (Rodgers, 2002). Since sharing broadens experience, reflection within community provides the benefits of affirmation, new viewpoints, and supportive inquiry (Rodgers, 2002).

Donald Schön proposed the notions of reflection-in-action, thinking while doing, and reflection-on-action, looking back after acting. These intertwined constructs expand the 'repertoire' of teaching (Smith, 2009) and add to understandings of the ubiquitous concept of reflection. Types of reflection can include technical, in & on action, deliberate, personal and critical (Valli, 1997). Implications of socio-constructivist theory on the design of technology to scaffold reflection, since this impacts EPs, outline four features – process displays, process prompts, process models, and reflective social discourse (Lin, Hmelo, Kinzer & Secules, 1999).

Communities of Practice

E. Wenger defines communities of practice (CoP) as "groups of people who share a concern or a passion for something they do and learn how to do better as they interact regularly" (Wenger, 2012a, p.1). It involves three crucial characteristics of domain, community and practice, and is viewed as learning in social contexts (Wenger, 2012b). It is grounded in social learning theory and displays characteristics such as "complex relationships, self organization, dynamic boundaries, ongoing negotiation of identity and cultural meaning" (Wenger, 2012b, p.1). The concept involves people as core group or peripheral members, has a common cultural or historical heritage, has a cycle of re-creation and maintenance, and is interdependent (Barab & Duffy, 1998; Wenger, 2012a). The concept of CoP for students in a FoEd, learning on the periphery of teaching communities, holds promise for enhancing learning as they move into full membership within the educational community.

Research Review

Eight research articles are reviewed for relevant strategies, techniques and insights for this research proposal. Four studies examine EPs with strategies linked to reflection, one examines a CoP within a teaching cohort model, one relates to reflection within a CoP and two connect portfolios to CoP. Each study will be described, issues examined and insights explained. Applications to this research proposal are considered.

Although there are extensive research studies relating EPs to teaching and learning within a FoEd, (Adamy & Milman, 2009; Barrett & Garrett, 2009; Carney, 2006; Granberg, 2010; Milman & Kilbane, 2005; Strudler & Wetzel, 2011), to reflective practice within EPs (Anthony,

2008; Johnson, Mims, & Doyle-Nichols 2006; Mansvelder-Longayroux, Beijaard, Verloop, 2007; Orland-Barak, 2005; Sulzen, 2011) and to CoP (Niesz, 2010; Tillema & van der Westhuizen, 2006), I found little merging of these topics into one research focus.

Reflection and Electronic Portfolios in Teacher Education

Beck & Bear (2009) investigated teacher's reflective practice with 207 Master of Arts program students, over an unspecified time period. Portfolio samples, separated into disparate participant groups, were examined using an electronic portfolio assessment tool. Answers to 34 self-reported, five-point, Likert-type scale questions were examined and divided into five dimensions of reflection – general, assessment, planning to assessment links, student work, and collaboration. Mean scores indicated portfolios provide a significantly high level of contribution to professional development, but total numbers were not disclosed. Although differences were attributed to portfolio formats (formative-teaching and assessment-summative), I feel the sampling technique seriously impacted these results. The conclusion sheds insight into portfolio development toward formative, reflective, authentic purposes.

Lai & Calandra (2010) used mixed methods to study the impacts of computer-based scaffolding on online, reflective journal writing for 65 pre-service teachers, 92% being white females. Over an unspecified time span, written reflections about critical incidents during field experiences were collected and analyzed using a four-level rubric, segmented into routine, technical, dialogic and transformative. Computer randomization assigned participants to three research groups. Results show that participants in treatment groups consistently scored higher on rubric measures and wrote significantly longer reflections, indicating that computer-based scaffolds improve reflective practices. Although results are based on a one-time, brief exposure

with a small participant sample, the method used to support online reflective journal writing and the leveled rubric provide examples for developing reflection skills within EPs.

Oner & Adadan (2011) applied the Fuller & Brown model for reflective practice to examine the effects of web-based portfolios on levels and types of reflective skills in 19 pre-service science teachers at a university in Turkey. This mixed methods research analyzes data from web-portfolio entries, peer feedback statements, video recorded lesson/reflection and an open-ended questionnaire. Triangulation of data and inter-rater reliability measures were reported. Despite issues with sampling and differences in teaching contexts for reflective tasks, the results indicate findings of improvements in type and quantity of reflections. Participants reported positive impacts in organization, time efficiency, work sharing, and communication due to the EP format, and increased quality of reflections due to peer feedback and writing for an audience. These results present benefits to online interactions using an explicitly stated model for quality of reflections.

Kitchenham & Chasteauneuf's (2009) three-year study, applying Mezirow's taxonomy of reflective thinking, provides a framework to examine reflection related to teaching practices within EPs. This mixed methods research examines artifacts and reflective statements within EPs from teacher-candidates at the University of Northern British Columbia. Frequency counts of responses were examined in six reflective categories, using coding and homogeneity analysis. The researchers concluded that Mezirow's taxonomy is an effective tool when evaluating reflective practices demonstrated in EPs within a CoP structure.

Cuddapah & Clayton (2011) used field notes, discussion and observational data, and Wenger's CoP framework in their examination of the importance of interactivity and impacts of "legitimate peripheral participation" (Cuddapah & Clayton, 2011, p. 62) within a beginning

teacher program. Novice teachers volunteered to attend after-school cohort meetings to discuss issues and topics relating to their work in the classroom. The cohort of 10 women and 2 men met for 16 two-hour sessions. Issues noted by the researcher included cohort selection methods, cohort stability, and framework application. Results, examined through the lens of practice, meaning, identity, and community, indicated three findings relating to interactivity, community and peripheral participation (Cuddapah & Clayton, 2011). Despite challenges in methodology and data analysis, this study provides insights into application of a cohort structure within a CoP, as this is the current class structure in the FoEd in which this research will be conducted.

Fund (2010) explored how cycles of feedback, structured within CoP, impact teacher-candidate's growth in professional, personal and social development. Coding was done on written reflections, portfolio reflections, feedback from peers or instructors, and meta-reflections (reflections on reflections). Data analysis identified changes over time in quality of feedback and reflections. Identifying participant orientations (willing donor, willing receiver) and maturity intervals (being 'ripe' for developmental change) provide insights into individual considerations for success of feedback loops within CoP. Results indicate that length and level of reflection increase over time within "co-reflective, collaborative discourse environments" (Fund, 2010, p. 695). Although the small sample size and limited questionnaire length limit validity and reliability, insights gained in awareness of timing, effective feedback techniques and maturity are important considerations.

Berrill & Addison (2010) investigated perceptions of the impact teaching portfolios on teaching identity and acquired repertoire of teaching practice. The study, limited by being part of a larger program review, focused on responses to three open and closed type questions. Survey questionnaires, mailed to 1372 graduates, spanned five years of the FoEd program. Responses

generated a representational group based on gender, division taught and year of graduation. Through grounded data analysis and descriptive statistics, the researchers conclude that educators at the FoEd need to link portfolio categories to "repertoires of the teaching profession" (Berrill & Addison, 2010, p. 1184). Despite established portfolio structures and frameworks, Berrill and Addison conclude that reframing portfolio expectations with clear purpose and explicitly articulated design and content elements, to represent a 'repertoire' of skills, would clarify pre-service teacher's perceptions of portfolios (Berrill & Addison, 2010).

Susan Wray (2007) conducted a qualitative study with nine volunteers in the professional development school (PDS) of the FoEd in a large, Midwestern university, to examine "the collective generation of meaning around the portfolio development process" (Wray, 2007, p. 1143). Requirement of EPs in the specialized PDS program impacted the results. Data included meeting transcripts, individual interviews, a pre-inventory questionnaire and researcher logs. Analysis followed a recursive process to identify two themes – "connecting theory and practice and the dialogic process" (Wray, 2007, p. 1144). Results indicate that participants attach individual meaning and collaboration to generate portfolio items, enhance public sharing and understanding, and individually and collectively address challenges, uncertainty and frustrations. Despite the limited generalizability of this study, the CoP structures and dialogic processes provide insights for sharing and reflection, refine beliefs and assumptions, and integrate professional experiences.

Linking to the Research Proposal

"Setting an example is not the main means of influencing another; it is the only means." (Albert Einstein, in Sherman, 2006, p. 13) Insights from the examples outlined in the previous

research endeavors influence the structure of this research proposal. Reflective journaling bound to authentic practice (Beck & Bear, 2009), scaffolding structures (Lai & Calandra, 2010), explicit reflective frameworks, categories and rubrics (Kitchenham & Chasteauneuf, 2009; Oner & Adadan, 2011) and cycles of effective peer feedback (Oner & Adadan, 2011; Fund, 2010) show potential research structures. Factors impacting reflection in EPs within a CoP include participant orientations and zones of proximal readiness (Fund, 2010), cohort and community structure (Cuddapah & Clayton, 2011; Wray, 2007), explicit articulation of purpose and design and examining repertoires of skills (Berrill & Addison, 2010), and established dialogic processes (Wray, 2007).

George Siemans states "The paths that create knowledge run through valleys of learning. We often equate knowledge acquisition or creation with formal learning. But we find knowledge in many ways: informal learning, experimentation, dialogue, thinking, and reflection." (Siemans, 2006, p. 38) This research sets out to examine how the complex act of learning how to teach can be supported through the hills and valleys of teacher education programs within formal and informal communities of practice. Using reflection within electronic portfolios to personalize teacher-candidate's learning, the pathway through the hills and valleys will become a visible, supported, authentic journey.

Research Proposal

Topic and Statement of Problem

Teachers tell stories, lots of stories. Stories are grounded in authentic teaching, personal experiences and incorporate lessons learned. Journaling and reflective writing capture those stories. Conducting this process within a dialogic, explicit, structured community of learners can

deepen and enhance the personalization of learning how to teach. This notion of community "refers to the development of a shared identity around a topic or set of challenges. It represents a collective intention – however tacit and distributed – to steward a domain of knowledge and to sustain learning about it." (Wenger, Trayner & deLaat, 2011, p. 9) Learning about teaching presents the domain and purpose for this joint venture.

"A desire to learn about a shared concern often motivates people to seek connections." (Wenger et al. 2011, p. 12) How communities of practice (CoP) focus on value-creation, through the use of reflection within an electronic portfolio will be explored. Wenger et al. state that in order to "assess and promote value creation through social learning it is necessary to consider two functions of personal and collective narratives" (p.16). A fluid, intertwining of individual and community learning, enhances individual learning within a social context. (Wenger et al., 2011, p. 13) The work of learning how to teach should take advantage of the affordances for learning found within CoP, "such as information flows, helpful linkages, joint problem solving, and knowledge creation" (Wenger et al., 2011, p. 9)

Wenger et al. (2011) suggest that the "idea is to leverage the complementarity between stories and indicators." (p. 37) By providing an explicit framework to examine the complex process of learning how to teach, Wenger et al. (2011) present a means for researchers to investigate complex constructs. This research proposal will introduce Wenger et al.'s framework, provide a statement of the problem to investigate, examine research procedures, stipulate limitations, and provide concluding statements.

Framework

Wenger et al. (2011) propose a framework consisting of five cycles of value creation:

immediate value -activities and interactions; potential value – knowledge capital; applied value – changes in practice; realized value – performance improvement; and reframing value – redefining success. This framework provides focusing questions, indicators, data gathering suggestions and links to value creation. Wenger et al. (2011) describes it as a value-creation story that adheres to formats for this genre. The story is interlaced among non-linear cycles. Cycle one begins with "a community or network activity-- such as a community meeting, a project, or the propagation of an inquiry through network links – and how productive it was". Cycle two showcases "a resource, such as a response to an inquiry, an idea, a piece of advice, a document, a procedure, a model, or a relationship which came out of the activity" Cycle three clarifies "how this resource was applied in the practice of the storyteller and with what effects." Cycle four links practice to outcome "such as a measure of performance in the organization or for a person". Cycle five involves "a reflection on the definition of success and new considerations to frame the expectations of value creation" (Wenger et al., 2011, p. 33). This framework will be applied to the investigative research into the complex story found in CoP within a FoEd when applying critical reflection within EPs.

Research procedures

Design, Rationale, Researcher Role

This research will follow a mixed-method design to capture data sources through the value-creation cycles (Wenger et al., 2011), since it best suits the multi-layered story that will result from the CoP reflective journey. Mezirow's taxonomy of critical reflection will be embedded into understandings of reflection (Kitchenham & Chasteauneuf, 2009, p. 233) within the value-creation cycles. This researcher will maintain the role of active participant observer to

allow for observation of actions, establishing explicit procedures and structures, and engagement in activities.

Site, Sample, Participants and Timeline

The site will be a mid-sized FoEd at a mid-sized university in north/central Ontario. Participants will include four FAs, in the role of experienced community members, and randomly selected volunteers in the role of peripheral community members. Randomly generated cohort classes, formed from the 300 teacher-candidates, are assigned to FAs. Volunteers will be solicited from each cohort of the participating FAs, from which five will be randomly selected to participate. Stratified sampling will be utilized as necessary to ensure a proportional, balanced sample group. (Gay, Mills, Airasian, 2012, p. 139).

This study will encompass two years, but students attend the FoEd for one year. Pre-research work will be completed prior to the end of August, active research done from September to April, followed by the post-research phase, including data analysis, report writing and presentation.

Data Collection, Materials and Management

Data will include field notes (written, recorded, digitally created) and running records of reflections (dialogues, journal writing, digital creations) stored and tagged by date, time, participant, format and location stored (written, personal electronic, web, cloud). CoP sessions will be recorded and transcribed. Participants will provide background information, learning preferences and interest inventories, and identify levels of comfort and expertise with technology, journal writing and teaching practice. A questionnaire, developed with focus group feedback, will be completed at the end of the study to examine attitudes and perceptions of reflective skills, portfolio processes and CoP issues or benefits. Individual interviews will be

conducted early in the study and again at mid-point, following the first placement experience. EP reviews will be conducted and reflective writing will be examined for content and length. Assessment rubrics will be gathered and inter-rater reliability of evaluations will be determined.

Digital items will be collected on a secure server within the FoEd department. Print materials, artifacts and backup electronic files will be secured in a locked cabinet in the FAs office. All personal materials will be returned to the participants at the conclusion of the investigation and deleted from all FoEd electronic storage spaces, unless otherwise determined through written permission from the participant.

Data Analysis and Trustworthiness Features

Using the value-creation story framework (Wenger et al., 2011), an unordered meta-matrix (Gay et al., 2012, p. 449) and a recursive process (Wray, 2007), data analysis will sort items into cycles, stories, themes, and categories. Validity will be gained through consideration of Guba's criteria of credibility, transferability, dependability and confirmability. This will be done by gathering data and contextual information widely and deeply, doing frequent check-ins with participants, establishing an audit trail, triangulation of data and conducting personal reflection and meta-reflections to reveal assumptions and biases. (Gay et al., 2012, p. 393). Inter-rater processes will ensure accurate data analysis.

Ethical Considerations

All research will be presented to the ethical review board for the university. Procedures and considerations will be reviewed with FoEd administration. Ethical standards will be reviewed with each participant through personal contact, permission forms and signed agreements. Pseudonyms (done anonymously) will be used for all online, electronic components and when completing data analysis by FAs. Protection of personal information for the duration

of the study will be maintained in secure locations within the FoEd. Researcher bias will be reviewed and reported.

Materials, Apparatus and Budget

Participants will utilize personal laptops or access desktop units at the FoEd. Reflection journal space will be provided, both electronic and paper. Use of either will depend on participant preference. Participants will determine and control EP artifact collection, passwords and access, established individually, but supported by the researcher and the FoEd technical support staff. Anchor charts, guidelines, frameworks, and rubrics created or used within the CoP relating to EPs, reflection, feedback, design, process or products will be co-created with FAs and teacher-candidates throughout the study. Meeting space at the FoEd will be allocated for ongoing, scheduled and open gatherings of the CoP. Budget considerations for time, personnel, and materials will be covered through grants, university research funding sources and the FoEd budget. A detailed budget plan will be developed.

Contribution and Limitations

Wenger et al. (2011) state "one indicator is merely suggestive and one story is anecdotal, but the cumulative effect of a set of indicators with a collection of related corroborating stories starts to provide robust evidence." (p. 38) Through collecting extensive evidence, applying Wenger's framework, asking guiding questions and applying the value-creation matrix, this research will provide an important contribution to current research on reflection in teacher education programs. Capturing the transformation from student to teacher, as showcased in an EP is a value-creation story for both individual members and the community involved in this endeavor.

Limitations of this research relate to location, population, time and expertise. Due to

location, the student population of the FoEd at this university site does not have a multicultural membership and the majority of students are young, female and Caucasian. Further research involving a multi-site plan is another option. This research proposal requires extensive time, yet the life cycle of a FoEd is short, intense and contains many demands on both students and FAs. Taking time to work on this research will be strategically carved from current timetables in order to be completed as planned. Some participants may drop out of the research in order to focus on the 'real work' of learning to teach. The technical expertise of participants may hinder the focus of the CoP on technical (how do I…) rather than adaptive (why do I….) reflective activities.

Conclusion

By answering the question 'How do communities of practice scaffold reflection for teacher candidates as evident in electronic portfolios?' this research will provide insight into action, communication, performance and accomplishment for teacher candidates and those who teach them. Reflection is a "defined way of thinking, it can be practiced, assessed, and perfected" (Rodgers, 2002). Combining reflection (creating personal professional stories with artifacts), communities (support and audience provide purpose and meaning for the stories) and electronic portfolios (tools and techniques to create engaging stories) fits with current theory and practices in teaching and learning. By combining reflection frameworks (Kitchenham & Chasteauneuf, 2009) within a value-creating CoP (Wenger et al., 2011) learners will become better teachers. Capturing moments in a teacher-candidate's journey provides an explicit repertoire of teaching as they move from periphery to mastery in the educational community. Critical reflection, in and on action and assumptions provide meaning to experience. EPs and reflection bring stories of individual journeys into the clarity and light of community.

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