

Chapter 3

Dispositions for Inquiry

Jo-Anne Naslund and Lori Prodan

Introduction

A shared belief among many scholars and educators is that teachers need to be “inquirers into professional practice”. A teacher needs to have the capacity to consider the effects of their teaching on student learning and to question their own teaching routines, practices and assumptions (Reid 2010). Current conversations about teacher learning and stories of teacher inquiry reveal that *dispositions*, a set of attitudes or a particular stance towards the world, incline professionals to improve their practice (Halbert et al. 2013). Furthermore, the development of social learning networks enables and supports dispositions for inquiry (Brown and Thomas 2008). One question of importance for teacher educators is how to create a “culture of inquiry” and systematically support preservice teachers as they develop these dispositions.

To begin this discussion, we consider research literature about inquiry and dispositions for teaching. As well, we include several findings from a UBC research study of the PBL cohort conducted over 2 years (2012–2013). In the final part of the chapter, Lori Prodan, a PBL tutor, adds to the discussion by means of her reflections on the learning journey she and her tutorial group have been on together. This multi-voiced narrative heightens our understanding of inquiry, especially as embodied in a PBL cohort and how PBL engenders within beginning teachers a clear personal and professional investment in inquiry.

Dispositions for inquiry are an essential “mindset” in learning to become a teacher. When preservice teachers commit to being part of a “culture of inquiry”,

J. Naslund (✉)

Education Library, University of British Columbia, Vancouver, BC, Canada

e-mail: joanne.naslund@ubc.ca

L. Prodan

Vancouver School District 39, Vancouver, BC, Canada

e-mail: lori.prodan@ubc.ca

their developing professionalism quite naturally gravitates to focus on the impact of teaching on student learning. Within the PBL cohort, both tutors and resource specialists work hard to create such a culture of inquiry. Their primary goal is to strengthen preservice teachers' professional discernment, collegiality and wise judgement (Coulter et al. 2007). By examining those dispositions for inquiry in problem based learning, our discussion invites conversations from other teacher educators, especially from those wanting to find out more about the role of inquiry and dispositions in learning to teach.

Inquiry in Problem Based Learning Teacher Education

A central tenet of PBL is “enacting inquiry”, deepening understandings of teaching and learning within specific contexts. Beginning with the work of John Dewey, inquiry can be described as “learning”. When teachers engage in inquiry, through the process of questioning and reflective practice, they become alert “students of education”. According to Dewey, three dispositions are requisite for reflective action. These include: *open mindedness*, the active desire to listen and give full consideration to different perspectives and alternate possibilities; *responsibility*, the ability and commitment to carefully take into account personal, academic and social consequences of actions; and *wholeheartedness*, a willingness to examine one's assumptions, beliefs and results of actions critically with the intention of learning something new (1933).

Since Dewey, there have been many discussions about inquiry that demonstrate how profound, personal and complex it is (Farrell 2004; Goodman 1984; Cochran-Smith and Lytle 1993; Schon 1983; Zeichner and Liston 1987). Inquiry is not just something a person does nor is it just a technical activity or series of steps. In so many ways, inquiry is a “way of being” and consists of an array of dispositions.

So how is inquiry instrumental in learning to teach? As preservice teachers consider classroom situations presented in their cases, they ask questions, search for evidence and apply several modes of reasoning to synthesise their information and communicate their augmented knowledge. Through their Socratic dialogues about possible reasons for teacher and student actions, they begin to examine theories of teaching and learning in relationship to classroom practices (Friesen 2008; Jordan et al. 2003; Reid & O'Donoghue 2004). They begin to acquire “teaching knowledge” that is applied during their one day a week field experiences and during their practice teaching.

Inquiry provokes “professional meaning making”. When a teacher acquires “the knowledge, skills and disposition to theorise systematically and rigorously about practice in different learning contexts and take appropriate action on the basis of the outcomes of enquiry”, they demonstrate professional competence (Reid and O'Donoghue 2004 p. 569). Such teaching knowledge mediated within a theoretically framed workplace offers a way for teachers to engage in lifelong learning. They improve their practice by solving instructional problems and also by

becoming reflective practitioners with a willingness to engage in open dialogues with trusted colleagues (Giovannelli 2003; Kincheloe 2003; Klette and Carlsten 2012; Naslund and Pennington 2011; Reid & O’Donoghue 2004; Schon 1983; Yinger 1986).

An important aspect of the PBL cohort is that inquiry forms the fundamental core of the program. The process of inquiry is the curriculum, and as the process of inquiry recurs over and over again, it becomes a habit of mind – a professional behaviour. Inquiry in PBL is unlike any employed within other elementary cohorts in the UBC teacher education program. Inquiry is not just a part of one project or a focus for a series of three inquiry seminars. Rather, inquiry is pivotal and plays a powerful role in learning to become a teacher. Therefore, the attributes of a successful inquirer – those dispositions for inquiry – become of critical interest to teacher educators. One needs to learn about how these dispositions and knowledge apply to effective teaching behaviours in the classroom (Giovannelli 2003).

Dispositions and Their Relationship to Professional Practice

The teacher education literature abounds with theoretical and philosophical discussions about dispositions for professional practice. Many programs focus primarily on teaching dispositions (Ruitenbergh 2011). The National Council for Accreditation of Teacher Education (NCATE), for example, “lists dispositions, in addition to knowledge and skills, among the requirements that student teachers should meet” (Ruitenbergh 2011, p. 41). So what is meant by dispositions? Are they the dispositions referred to by Dewey or something else? Is it possible to assess dispositions and if so, in what ways?

For many, the notion of dispositions is often vague lying between belief and action. According to Katz and Raths, a disposition is “an attributed characteristic of a teacher, one that summarizes the trend of a teacher’s actions in particular contexts” (1985, p. 301). This “emphasizes a teacher’s tendency to act in a certain way in certain professional contexts” (Ruitenbergh 2011, p 42). In the NCATE glossary, dispositions are defined as: “Professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as educators interact with students, families, colleagues, and communities. These positive behaviors support student learning and development” (2010). Ruitenbergh concludes that there are distinctions to be made between innate dispositions and professional dispositions (2011).

My thinking about professional dispositions was prompted by discussions that took place as part of our orientation to the UBC teacher education program. I began to think less about teacher skills and more about dispositions – that stance or likelihood an individual may engage in the act of questioning – and critically analyse theory and what it means for practice. Phelan talks about how coming together with others may allow us to turn back on ourselves in “order to reflect upon the very

ideas and values that ground the (im)possibility of our thought and action” (2007 p. 59–60). Professional dispositions for teaching move well beyond a set of technocratic skills. Framed by reflective practice, critical theory and an action research perspective, professional dispositions are intellectual by nature and involve discernment, caring and wise judgement (Coulter et al 2007).

Dispositions for Inquiry Research Project (2012–2013)

The goal of the *Dispositions for Inquiry Research Project (DIRP)* (2012–2013) was to learn more about “dispositions for inquiry” and, in particular, notions of inquiry held by preservice teachers, faculty and tutors within the PBL cohort at the University of British Columbia. I wanted to find out how dispositions and experiences of inquiry relate to teaching practice and a professional “way of being” (Reid & O’Donoghue 2004) and, finally, to learn what characterizes preservice teachers’ information-seeking behaviours, their critical use of resources and how they communicate and share their understandings.

The *Dispositions for Inquiry Research Project (DIRP)*, conducted over two academic years, included preservice teachers (33), three tutors and six resource persons (faculty) in the PBL cohort. All were surveyed to identify and explicate their notions of inquiry and its role in learning to become a teacher. Following the survey, individual interviews with ten PBL preservice teachers were recorded. As well, PBL tutors and resource persons (faculty) were interviewed identifying factors they considered critical for preservice teachers’ success. And lastly, the preservice teachers’ artefacts (case packages, presentations and e-folios) were analysed to determine some of the ways preservice teachers develop questions for inquiry, identify and critically use resources, represent/communicate their understandings and grow in their professional discernment and wise judgement.

The primary data sources for this study included a survey, transcriptions and coded analyses of audio interviews with preservice teachers, tutors and resource persons (faculty) and coded analyses of their artefacts. Throughout this chapter, the direct quotations of tutors, faculty and preservice teachers’ include minor changes in grammar that have been made to their conversational speech for purposes of textual clarity. The purposes of the interview questions were to determine:

1. Preservice teachers’ and faculty/tutors’ notions of inquiry
2. The ways preservice teachers and faculty/tutors identified and selected research resources
3. Their use of inquiry in practice (during their practicum or school visits)
4. How they represented and communicated their understandings
5. Any missing items that may have occurred in our discussion

Preservice Teachers: Their Notions of Inquiry and Dispositions for Inquiry

From interviews with preservice teachers, their notions of inquiry revealed many similarities to those reported in the literature. They defined inquiry as a very desirable stance necessary to become the best teacher possible. They made links between inquiry and teacher professionalism and viewed inquiry as important in preparing teachers to become “extended professionals” (Schulz and Mandzuk 2005; Stenhouse 1975). Inquiry involved questioning, being curious, having a sense of wonder, being self-directed, being motivated to learn, being open to new ideas, wanting to continuously learn and being comfortable with ambiguity.

In its most basic form, the preservice teachers defined inquiry as questioning “that internal guide that urges you to find out more and that whole piece of wanting to learn ... for myself when you are guided by a question when you want to know or solve a question or problem at hand and then that leads you to knowing” (Preservice Teacher (PST) 1, p. 1.2–1.3). It can be defined as “an educational itch that you have a compulsion to scratch. I guess practically speaking it is some sort of gap in your knowledge, or skill set or social sphere or relationships, some gap that is not limited to just information it could be a relationship or it can be some skill you need to do something you can’t. Inquiry is filling that gap” (PST2 p. 1.6). “It’s a lot about questioning and asking the right questions. From the teachers’ point of view it’s allowing the questions to return from the students. It is back and forth really with the teacher and the students exploring together” (PST3, p. 1.11). “Inquiry for me is questioning or critical thinking ... people who engage in inquiry they tend to be a lot more inquisitive or like questioning. I think to be good at inquiry learning or critical thinking you have to be able to come up with a basic understanding of a concept and then question everything you know. Or everything you think you know, every statement you come up with, goes deeper into it and figure out how you know it’s true” (PST4, p. 1.17–1.18).

Many defined inquiry as having the opportunity to create your own learning experiences “not wanting to have things necessarily spoon fed to you. You like to create your own structure of learning and then you’ll find your area of interest and you’ll go after it” (PST1, p. 1.1.). Several suggested that inquiry as part of their PBL program was nothing like their post-secondary undergraduate education where they may have excelled at textbook reading and the “traditional approach” to learning. “When I went out into the real working world, I think I was shocked by the reality of undefined project goals or expectations. You can’t necessarily always have the nice little box if this is what you do then you’ll be recognized. This really shaped how I began to approach thinking and problem solving” (PST1, p. 1.2–1.3). “I think you have to be an active learner because you can always just ask questions but you don’t always need to necessarily take the initiative to find out. ... So finding out for yourself is very important” (PST5, p. 1.10). “I would describe it as a way where you take responsibility for your own learning and even though we are all in the same cohort not all of us are learning the same things because we are finding our own sources and discovering something about each thing we are studying” (PST6, p. 1.12).

Faculty and Tutors: Their Notions of Inquiry and Dispositions for Inquiry

Compared to the preservice teachers, the definitions of inquiry and dispositions explicated by faculty and tutors were more divergent, complex and contextualised according to their teaching experiences and perspectives as teacher educators. Their definitions of inquiry expanded upon the idea of questioning and curiosity to include ideas about “not holding too firm to ideas and assumptions” and “being open to other perspectives” (Faculty1, 2012).

Inquiry was defined as “an activism”, “wanting to know other perspectives” and engaging with other people, “challenging ideas” (Faculty (F) 2, 2012). It meant “anti-dogma”, “being skeptical in a good way”, “not being lazy” (F3, 2012) and having the ability to “challenge your own identity” (F1, 2012). The process of inquiry was described as “an open ended way of learning” and included the “whole aspect of reflectiveness” and “becoming quite good reflective thinkers” (Tutor (T) 1, 2012). It meant having the “willingness to admit you are wrong” and the ability to be flexible where “they need to be ready to go with those things that are coming at them that are unknown ... willing to take risks and sometimes not know ... giving it a name like PBL was great for me it was almost a confirmation and then taking it to another level with people in the education program” (T1, 2012).

Inquiry was described as asking “what am I going to do, what am I going to say, where am I going in order to justify this. When I am challenged about the advocacy of my decisions, the inquiry is looking into the best ideas I could use as tools to communicate with everyone in that educational community” (T2, 2012). “There are a set of attitudes that give life to inquiry” and when you inquire into things it brings things back to “life for yourself” (T2, 2012). Schooling is “an ongoing process” and to be on the “cutting edge of the conversation, be involved in the conversation we all have a need to engage at that level in our profession, we want to know our challenges, possible “outcomes, next steps to do better” (T1, 2012). “I really go back to that point that inquiry implies, we don’t know” and the “end point of the inquiry for me is knowing what I am going to do” (T2, 2012).

Enhancing Dispositions: Some Pedagogical Approaches

“The end point of the inquiry for me is knowing what I am going to do” (T2, 2012). Wise judgement and informed professional discernment are the ultimate goals of PBL. Of real import is what Foucault would term as “problematization” which means approaching all givens as questions and as a consequence enacting a specific work of thought (Healey 2001). Through inquiry, preservice teachers learn to become teachers. They learn to find out and recognise that as an individual, they are situated, interpreted and prejudiced. By exposing preservice teachers to this type of

thinking and reflection, their professional dispositions can be awakened so that they embrace and value learning and discovering answers for themselves.

There are a variety of pedagogical approaches that facilitate inquiry and enhance dispositions for inquiry. These are intentional approaches. They focus on trust building, diverse instructional groupings, transferred leadership and shared teaching roles.

One important approach in PBL is to establish an ethos or culture of inquiry. PBL preservice teachers participate as members of a community of learners. Each tutorial group is unique; however, common to all is a code of conduct endorsed by all tutors where preservice teachers are expected to work together, respect and help each other and recognise each other's differences. This environment of trust has been recognised as important in the development of a culture of inquiry.

In addition, tutors employ a Socratic method to provoke thoughtful dialogue. Again an atmosphere of trust is essential, as open discussions are critical. All questions are welcomed and valued. Careful listening is enacted. They are obligated to listen and to hear out opinions and ideas that may be different than their own. During the deep reading of the cases, preservice teachers consider a wide variety of perspectives and feel safe to share their own perspectives. The underlying rules for discussion display civility and respect when conversing with their peers, faculty, tutors and librarians.

Similarly, in their schools, the creation of a safe and caring learning environment for preservice teachers, school and faculty advisors and students is important. The school should be a place where preservice teachers and school advisors may talk openly about their teaching – questioning their actions and reflecting on their practices. Within this workplace, the environment could be described as one where your colleagues are inclusive and tolerant and one that is pervaded by a good and friendly atmosphere. It is constructive, productive and supportive and one where preservice teachers can “ask whatever and whenever” (Klette & Carlsten 2012, p. 76).

Further to that, sharing and collaboration are valued, encouraged and practised in PBL. As preservice teachers create their research packages and even when preparing for their triple jump assessments, they may collaborate and work together. This is encouraged. As they undertake a case, they share their work as the bibliographies and research packages are posted online as part of the course management system.

Grouping for instruction is another pedagogical approach that's intentional and results in preservice teachers having as many opportunities as possible to work collaboratively, as a large tutorial group, in pairs, threes and individually. For specialised workshops and time spent with their resource persons, the preservice teachers come together as a large cohort.

The case cycle reinforces and results in repeated opportunities to practise inquiry over the course of the year. After ten cases, preservice teachers have established routines, research strategies and acquired habits of the mind that should strengthen their growth towards collegiality, professional discernment and wise judgement. By identifying reasons for actions and examining the theory behind their practices as exemplified in their initial bibliographies and subsequent research packages, they

become more proficient at analysing situations and from that know how to find out about the underlying issues.

Such practical problem solving though also involves critical theory. By questioning, being alert to other perspectives and possibilities, they have a chance to consider their identity as teachers. They begin to understand their positions of privilege and issues of equity and social justice. The tutors guide the preservice teachers to clarify meaning, identify issues/problems and expand on what seem to be dilemmas/puzzles emerging from the cases. Each week they develop inquiry questions that emerge from each case. These are not scripted but are intended to cover major learning outcomes.

For each case, preservice teachers draw upon and locate research. They post their initial research bibliographies and final research packages and present their research packages with a partner, to their tutorial group. At the conclusion of the case, the preservice teachers prepare an individual synthesis of the case, selecting a format of their choice. Ultimately, they make a decision about their resources and research and present a stance or their take of the issue. They make a presentation and create a research package, but ultimately, they create a personal synthesis that is only submitted to their tutorial instructor. In this synthesis, they make an informed decision about the case.

Examples from the case analyses of the preservice teachers' artefacts – their bibliographies and research packages, from Case I, Case 3 and Case 8 – demonstrate that preservice teachers are capable of asking a wide range of important questions of practise. All of their questions evolve from the deep reading of the case as well as from their own desire to learn more. It was quite clear that their questions related well to teaching practice. The issues were very relevant and once explored more fully, they would provide many opportunities to learn a great deal that could be applied within a school setting.

As the preservice teachers search for information, they find evidence relevant to the question. The preservice teachers displayed resourcefulness and scholarly approaches to their investigations as well as balanced bias, accuracy, currency and a mix of theoretical versus practical works. They located at least fifteen resources for each case, and these included primarily journal articles, ministry resources, books and websites. They displayed proficiency in locating relevant contextualised evidence.

The initial questions for inquiry that arose out of the careful reading of Case I included the following:

Questions for Inquiry for Case I (2012)

- How do we build a caring classroom community?
- How do we effectively establish and maintain community?
- Insights into understanding diversity in the classroom.
- How do we deal with respect and diversity?
- What is early learning and the primary program?

(continued)

How do young children learn?
 What is an effective teacher? A rationale for teaching
 To play or not to play?
 Play – how do we get children excited about learning?
 What does literacy and numeracy look like?
 How does early childhood development affect the classroom environment
 including play-based learning?

After completing their initial explorations of all the questions posed, the tutorial group narrowed down their investigations. Working in pairs, they researched and then presented their research packages to the group. Just to give you a flavour, the following are examples of research packages for Case I.

Research Packages for Case I – One Tutorial Group (2012)

Research Package 1: Shape of the Day – Building a Caring Classroom Community. Table of Contents: Community of Caring Learners; Defining a Caring Classroom Community; Fundamental Skills of a Community Member; How to Foster a Learning Community; Social and Emotional Development; Social and Emotional Learning; Play and Social Responsibility; Building a Classroom Environment; How Teachers Can Create a Respectful Environment; Rules and Routines; Extrinsic Versus Intrinsic Rewards; Community Building Activity; Communication with Families; Why Family Communication Is Important; Activities that Promote Prosocial Skills and a Sense of Community; Glossary and Annotated Bibliography

Research Package 2: Insight into Understanding Diversity in the Classroom. Table of Contents: Diversity; Inclusive Classrooms: Cultural Diversity; Ethics and Responsibility; Approach to Race; Language; Gender; Socioeconomic Status; Why Foster Multicultural Knowledge; The Multicultural Classroom; Questions; Glossary and Bibliography.

Research Package 3: Early Learning.

Table of Contents: What Does an Early Learner Look Like?; How Can Early Education Meet an Early Learner's Needs? What Is Developmentally Appropriate Practice? What Is Constructivism?; Piaget's Cognitive Development Theory; Vygotsky's Sociocultural Theory; Comparison Between Piaget's and Vygotsky's Theories; Additional Developmental Theories; Are Theories of Child Development Relevant to Full-Day Kindergarten? The Primary Program; An Introduction to the Primary Program; Three Goals of Education; Three Principles of Learning; Five Areas of Development Philosophy of the Primary Program; K-1 Literacy

(continued)

and Numeracy; Literacy Primary Program's View of Literacy; Prescribed Learning Outcomes for Literacy; Numeracy; Primary Program's View of Numeracy; Prescribed Learning Outcomes Numeracy; Glossary; Annotated Bibliography.

Research Package 4: What Is an Effective Teacher?

Table of Contents: What Is an Effective Teacher: Definitions, Behaviours and Characteristics; BCCT Standards; Prime Minister's Award; Planning, Class and Time Management; Assessment; Working with Others; Knowledge of BC Curriculum K-1; How to Maintain Balance; Glossary; Bibliography.

Research Package 5: Play or Not to Play.

Table of Contents: Play and the BC Ministry of Education: Primary Program; Gr. K Curriculum (PLOs); Overview of Play; History of Play; Models of Play Programs; To Play or Not to Play: Understanding the Movement Towards Didactic Approach; The Information Age; Brain Development and Closing the Achievement Gap; What Is Play (Definition); Types of Play; Why Is Play Important: The Role of Play in the Contemporary Child; Play in the Early Primary Classroom; Glossary; Annotated Bibliography.

As a consequence of developing these cases, responding to their peers and then providing a synthesis to their tutor, the preservice teachers develop and acquire some dispositions for inquiry while at the same time deepening their understandings of teaching.

One Tutorial's Learning Journey Through PBL: Lori Prodan

I am not a teacher: only a fellow traveler of whom you asked the way. I pointed ahead – ahead of myself as well as you. George Bernard Shaw

As a tutor with a disposition towards many of the central tenants of the (PBL) pedagogy – student-centered approach, communities of trust and the value of inquiry – I nonetheless held a high degree of scepticism at the beginning of my first year as a PBL tutor. How could preservice teachers develop understandings for teaching without any textbooks at all? No required readings? Could novices to the teaching profession really learn all that much from each other? How will they know what they don't know?

I wanted to know, how did they see PBL? What lasting benefits, if any, did they take away from learning through this pedagogy? In many ways, these questions are difficult to answer immediately upon graduation. The lasting value of a teacher education program, the depth of the learning, change and development, is more knowable after one has been teaching for some years, when one has a better sense of one's own voice as a teacher.

Nonetheless, at the completion of the one year program, preservice teachers' understanding of their own experience with PBL offers valuable insights into the way in which the pedagogy itself informs their practice and their view of themselves as teachers. Towards the end of the academic year, following the long practicum, I asked my preservice teachers if they would like to speak with me about PBL and their experience in it. Eleven out of thirteen volunteered to talk with me and spoke at length about the role of the tutor as well as about their experiences with PBL more generally and about how they viewed this pedagogical approach. In many cases, their depth of investment in and commitment to PBL pedagogy was unexpected and inspiring. Several themes surfaced, which led me to think that there was additional value in learning to teach through inquiry-based pedagogy. The issues of what content was or was not learned (or retained) aside what became clear was that the *process* of learning to teach through problem based learning helped develop the qualities one might want to see most in a teacher: dispositions towards inquiry, collegiality, an openness to complexity, holistic thinking and a sense of agency as a professional.

Not surprisingly, given their immersion in problem based learning for 11 months, inquiry itself emerged as an enduring value for the preservice teachers. As one succinctly commented, "And I think that's how I grew as a teacher in this program, because there were no answers". The emphasis on inquiry was a new concept for most of the preservice teachers and one that many felt they wanted to take into their own teaching practice; in some cases, a few were even able to implement during the extended practicum. Speaking about education in general, one noted: "How I thought about it was the opposite of my experience during my undergrad. In my undergrad I got lectured to every class. And [in PBL] it was all dependent on what we want to know".

Another preservice teacher went on to do a short practicum at an elementary school which focuses on inquiry-based teaching. The parallels between [her] own learning and her students' were interesting:

They [the teachers at this school] ask questions and they ask the students to ask questions and then they get the students to answer their own questions. So it was kind of this really interesting experience where I was in September. They're learning how to ask and answer their own questions. And they're in Grade Three!

Another preservice teacher implemented an inquiry-based approach to science during the extended practicum and noticed an important distinction between her own experiences as an adult working with inquiry-based pedagogy and how her intermediate students engaged in inquiry:

Learning how to use PBL is a big process. It takes a long, long time...and I had a chance to go to a workshop where adults were teaching other adults to use inquiry based learning and

I can see how for adults it can be really difficult. It's a difficult thing to grasp and to think about and to actually use it...And comparing that to my kids, they kind of just went with it. Like it wasn't a big deal to them. They were just like, 'oh, ok'. And they were really engaged with it because they got to learn what they wanted to learn about and honestly... I was so proud of them, and I was so amazed at what they came up with and they were owning their own learning.

In addition to being inquiry based, the PBL program is highly collaborative. Preservice teachers work with different partners for each case cycle to complete two major assignments of the cycle – the research package and the presentation. In addition, they are continually learning from and directly teaching each other in order to complete individual synthesis at the end of the case cycle. Positive social dependency is created and, according to these preservice teachers, valued.

Several preservice teachers commented on the shared responsibility of the case cycle as being highly motivating. As one put it: "It wasn't just about teaching my group of K/1/2 [children] for this year, I was also responsible for teaching my peers about things on a bi-weekly basis". Another honestly reflected about the value of greater sense of accountability with this type of learning: "you always have a group of people...who we are kind of accountable to. During your undergrad you go to lectures if you want to, you study if you want to, you write your paper last minute, but here it's so dependent on each other".

With the cohesiveness of team work comes a feeling of responsibility, which prefigures in important ways what it is to work as part of an elementary school staff. While evaluating the preservice teachers on practicum, I noticed that they worked highly collaboratively in two of the schools in which many were placed. Instead of a sense of competition, they worked together, openly sharing resources and ideas and in many cases actively seeking out opportunities to team teach.

Before I began working as a PBL tutor, someone described the approach as being a good one for independently minded learners, people who were self-directed and self-motivated. Thinking about how PBL actually works and listening to the preservice teachers' reflections, in many ways, I think the opposite may be true. PBL engenders a spirit of cooperation and teamwork, which is so vital to a successful elementary school. One preservice teacher recalled:

I think a big shift in my thinking was from a traditional sort of individualistic [perspective] – you're getting grades for yourself and you're just working for yourself and not necessarily hiding things from others, but it's always a competition to get grades and so that shift of all of a sudden of not having grades and always working with a group of people or always having a partner to work on something with and shifting and having that support was such a good change. It's weird at first though because all of a sudden you are a team and you're learning together.

Several preservice teachers commented on their colleagues as being of great value in the program and in their own development as teachers. For example:

There's a lot of smart people and it's nice to hear different perspectives because you always learn. 'Oh, I didn't think about that that way' or 'I don't know if I would do that in that situation'. It's really nice to have that collaborative effect and everyone's so different and

they've all got their own experiences. They can all bring something to the table. So I think it's a really neat opportunity to be able to do that and share.

Another noted that the program depends on group rather than independent work, saying, "It's very dependent on others. And I think that a lot of what we learned is through each other".

With so much emphasis on preservice teachers learning from and through each other, the danger is that the wrong things are learned or that something important is left out. Returning to my initial hesitation with the lack of textbooks and required readings, the question is how will the preservice teachers – complete novices to the field of education – know what they don't know? How will they have the context to understand the information they find or to pose the most important questions?

For one preservice teacher, even near the end of a year of PBL work, this remained a concern and a limitation of this pedagogical approach. Speaking about the overwhelming amount of information about education, she reflected:

What should I be spending my time on? Sometimes I feel I did miss out on some really important writers and theories because I didn't have an expert to guide me in that direction....I guess I'm on the fence with PBL. I can see some of the benefits of it, but I can also see where it's lacking...I feel that there can be some direct teaching ...when you have someone who has got knowledge and expertise, passing that on, I'm not opposed to that, and I don't think that's a bad thing.

As a tutor, this remains the only significant source of scepticism I have with the PBL approach or with inquiry-based learning more generally. If the person posing the questions doesn't understand the context of the field of inquiry, or the history of debate in that field, is she properly equipped to pose the questions or recognise the "correct" answers amid the mountains of information and opinions readily available? However, perhaps the benefits of the struggle to ask the questions, to feel this powerful sense of agency over one's learning, are vital to the development of teachers who must be continually be posing questions about their students, often based on very little information or context. Using a colourful metaphor, one preservice teacher reminds me, that although her colleagues began as complete novices in the education field, they were not in any way *just* novices:

I have a picture in my mind that in a traditional school, they give you the ingredients and the recipe and they expect you to come up with something and everyone's got to taste the same, look the same because they gave you the recipe, but for then for us, you gave us the ingredients but we were also allowed to bring in our own ingredients, maybe our background, our own expertise in some areas, languages, different cultures, different beliefs, and then you just taught us how to chop and then simmer and all, and we all came up with different foods at the end at it all tastes different...That's how I see PBL.

An often heard complaint for many preservice teachers is the lack of relevance of the course work or on-campus work. Many openly consider the work at the university to be secondary to the "real work" of the school-based practicum. Perhaps because of the narrative, holistic structure of the cases, the PBL preservice teachers did not report such a split. In fact, when asked about PBL pedagogy in general,

many wanted to discuss the connection they felt was inherent in the course work and their own emerging teaching practice developing in the schools. One preservice teacher explained it thus:

One other aspect of PBL is the case studies, so I really liked that aspect of it because it's kind of like a mesh of real life with UBC education. I don't think that any other cohort gets that.

I think that they learn situation by situation almost and for us it's a mesh of everything. Like social justice is always in there. It's always ELL and some sort of different learner and there's always these different components within one situation. And that's what happens in teaching. That is what a real classroom looks like and a real student looks like and so I liked that aspect of it. We were able to learn not only about assessment and visuals and first language and learning and all of that, but we were also learning about how there is so much that happens in the classroom. And how to give and take and find what you believe in...I like that because it's not just school.

Preservice teachers were excited by the links they could identify between their practicum classrooms and the case studies. In the words of one, "it just seemed more like reality than a lot of my other schooling did". I posed the question, "if you were to describe PBL to someone now, what you say PBL is?" One preservice teacher, noting that she now considers herself an advocate for PBL, echoes this sense of "reality": "the thing that I stress when I talk to people is that practicality and the experience that you get through diving into these cases and just figuring out what the problems are or how you can go about them". Another echoed this idea, saying of PBL, "it made practical sense. I've never been in school where it was really applicable". The links between theory and practice, between on-campus and in-school learning, were readily apparent to the preservice teachers as they worked through the eleven cases over the course of the academic year. As they created their own self-identities as teachers, from learners to teachers who also learn, they were continually reflecting on learning itself.

Perhaps the most important theme to emerge from the preservice teachers' conversations about PBL was the feeling that through inquiry-based learning, they had learned valuable things about the nature of learning itself. Apart from the external pedagogical theories, they were learning about learning from the fundamental act of posing questions. Comparing the experience to her first degree program, one preservice teacher reported, "...when you're given the thesis, when you're given that question, it's a lot easier. Finding the answer is easier than formulating the question". Another noted the reciprocal relationship between teaching and learning: "I see how multimodal this learning and teaching is because when we're learning, we're always learning but we're also always teaching each other. And each of us has different ways of perceiving things". A third considered questioning to be a thread throughout the program, noting, "I think through PBL the whole aspect of problem based learning, inquiry and asking questions and not making assumptions about what you think this person is learning, but just breaking it down...that was a huge, over-arching theme for me this year". Moving beyond teacher education itself, the process of posing questions and setting the direction for their learning, helped one preservice teacher gain, what she termed, "life skills":

Even besides the learning part, there's so many life skills that you learn in it [PBL]. I think we as adults learned in a way where it's more traditional, more standard but this is something that's so different. So it challenges us in ways to think differently, to do things differently, not necessarily good or bad, but you know what works for you, what doesn't work for you. I think in that aspect it's beneficial.

For one preservice teacher, the insights into learning itself were among the most valuable aspects of the program, saying PBL “taught me a lot too just about how I learn...looking back on it I think it was probably the most valuable way to learn was to figure out how you learn”. For another, a large lesson was in flexibility and adaptability, arguably two very important qualities for an elementary teacher. Speaking about how she adapted and changed as a learner through PBL, she stated: “So I think that's one of the big things that the program taught me was just how to go with it and breathe through whatever they happen to throw at you on whatever day it gets thrown”.

Conclusion

In our minds, the value of problem based learning lies in its role in fostering professional dispositions for inquiry that last a lifetime. Preservice teachers' learning about questions, flexibility, collegiality and the nature of learning itself, and themselves as learners and as teachers, will inform their lives as teachers, as agents engaging *their* students in meaningful, inspired learning. It is impossible to know if these insights are the result of a year in teacher education generally, a problem based learning program specifically or even of some other concurrent life experiences. When asked about the value of PBL, one preservice teacher aptly noted that “it would be nice for people to live two lives to make that comparison. I don't know. And even if I were to go through another teacher education program that was instruction based, it would be hard for me to say that”.

As teacher educators, we are also unable to conclusively answer the question. We do know that we have learned immensely from these preservice teachers and remain inspired by their commitment to inquiry, to professional collaboration and to student-centered learning, as well as by their ability to articulate those commitments. Given that, it may be reasonable to conclude that PBL fosters the essential dispositions required for professional practice all the while recognising the complexity of teaching and learning.

References

- Brown, J. S., & Thomas, D. (2008).The power of dispositions. *Ubiquity*, (November 1). doi:[10.1145/472987.1472988](https://doi.org/10.1145/472987.1472988).
- Cochran-Smith, M., & Lytle, S. L. (1993). *Inside/outside: Teacher research and knowledge*. New York: Teachers College Press.

- Coulter, D., et al. (2007). A question of judgment: A response to “standards for the education, competence and professional conduct of educators in British Columbia.” *Educational Insights*, 11(3), 1–11.
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. New York: Heath.
- Farrell, T. S. C. (2004). *Reflective practice in action: 80 reflection breaks for busy teachers*. Thousand Oaks: Corwin Press.
- Friesen, S. (2008). *Effective teaching practices: A framework*. Toronto: Canadian Education Association.
- Giovannelli, M. (2003). Relationship between reflective disposition toward teaching and effective teaching. *The Journal of Educational Research*, 96(5), 293–309. doi:10.1080/00220670309597642.
- Goodman, J. (1984). Reflection and teacher education: A case study and theoretical analysis. *Interchange*, 15(3), 9–26. doi:10.1007/BF01807939.
- Halbert, J., Kaser, L., & British Columbia Principals’ and Vice-Principals’ Association. (2013). *Spirals of inquiry: For equity and quality*. Vancouver: BC Principals’ & Vice-Principals’ Association.
- Healey, P. (2001). A ‘limit attitude’: Foucault, autonomy, critique. *History of the Human Sciences*, 14(1), 49–68. doi:10.1177/095269510101400103.
- Jordan, E., Porath, M., & Bickerton, G. (2003). Problem-based learning as a research tool for teachers. In A. Clark & G. Erickson (Eds.), *Teacher inquiry: Living the research in everyday practice* (pp. 141–153). London: RoutledgeFalmer.
- Katz, L. G., & Raths, J. D. (1985). Dispositions as goals for teacher education. *Teaching and Teacher Education*, 1(4), 301–307. doi:10.1016/0742-051X(85)90018-6.
- Kincheloe, J. L. (2003). *Teachers as researchers: Qualitative inquiry as a path to empowerment*. New York: Routledge.
- Klette, K., & Carlsten, T. C. (2012). Knowledge in teacher learning: New professional challenges. In *Professional learning in the knowledge society* (pp. 69–84). Rotterdam: Sense Publishers. doi:10.1007/978-94-6091-994-7_4.
- Naslund, J., & Pennington, G. (2011). Enhancing volunteer youth sport coaching practices through intergenerational dialogue. *Journal of Coaching Education*, 4(3), 44–64.
- National Council for the Accreditation of Teacher Education. (2010). NCATE glossary. In *NCATE unit standards*. Retrieved March 1, 2014, from <http://www.ncate.org/Standards/UnitStandards/Glossary/tabid/477/Default.asp>
- Phelan, A. M. (2007). Enjoying their own margins: Narratives of innovation and inquiry in teacher education. In L. Farr-Darling, G. Erickson, & A. Clarke (Eds.), *Collective improvisation in a teacher education community* (pp. 51–63). Dordrecht: Springer.
- Reid, A., & O’Donoghue, M. (2004). Revisiting enquiry-based teacher education in neo-liberal times. *Teaching and Teacher Education*, 20(6), 559–570. doi:10.1016/j.tate.2004.06.002.
- Ruitenbergh, C. W. (2011). The trouble with dispositions: A critical examination of personal beliefs, professional commitments and actual conduct in teacher education. *Ethics and Education*, 6(1), 41–52. doi:10.1080/17449642.2011.587347.
- Schon, D. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schulz, R., & Mandzuk, D. (2005). Learning to teach, learning to inquire: A 3-year study of teacher candidates’ experiences. *Teaching and Teacher Education*, 21(3), 315–331. doi:10.1016/j.tate.2005.01.004.
- Stenhouse, L. (1975). *An introduction to curriculum research and development*. London: Heinemann.
- Yinger, R. J. (1986). Examining thought in action: A theoretical and methodological critique of research on interactive teaching. *Teaching and Teacher Education*, 2(3), 263–282. doi:10.1016/S0742-051X(86)80007-5.
- Zeichner, K. M., & Liston, D. P. (1987). Teaching student teachers to reflect. *Harvard Educational Review*, 57(1), 23–49.