Chapter 9
"I'm Not Allowed to Tell You": What Does It Mean to Be a Problem Based Learning Tutor?

Lori Prodan

Introduction

You are an experienced elementary teacher and teacher educator who will be taking on the role of Problem Based Learning Tutor in the coming year. You will be working with a group of thirteen Preservice Teachers, meeting with them twice a week to help guide them through the cycle of learning through cases. It is now the third week of August and you're wondering how to transition to this new role. You will be working with experienced PBL Tutors who have offered their support and advice, but you are still wondering how to face the students on that first day understanding so little about how PBL actually works and about what you are actually supposed to be doing. What aspects of being a tutor will be consistent with your understanding of being an instructor? What aspects will be different? How will you adapt to the new role?

This was the *case* as I lived it. The issues that arise in the transition between instructor and PBL tutor are multifaceted and come to the heart of what it means to be an educator. As a teacher in an elementary school and as an instructor in a traditional teacher education cohort, the role of instructor/teacher is linked to the curriculum guidelines, supported by prescribed texts, a syllabus, and other external structures. When one becomes a tutor, most of this apparatus of teaching is stripped away. What is left are the students, the cases, and the case cycle. Hendry et al. (1999) calls tutor performance a "key function" of the success of a PBL program (p. 366): a tutor in PBL functions as a moderator of student learning. The role of the tutor, therefore, is as a custodian of the group process (Neame 1984) rather than a source of knowledge. For an instructor who used to work in traditional courses within a teacher education program, where the instructor is seen as holding expert knowledge, the switch to the role of a tutor in a PBL cohort can be a complicated and destabilizing journey.

L. Prodan (✉)
Vancouver School District 39, Vancouver, BC, Canada
e-mail: lori.prodan@ubc.ca

© Springer International Publishing Switzerland 2016

M. Filipenko, J. Naslund (eds.), *Problem-Based Learning in Teacher Education*,
DOI 10.1007/978-3-319-02003-7_9

Walsh (2005) writes:

> The switch from disseminator of information to facilitator of learning can be challenging for those new to tutoring. Those unfamiliar with the PBL process often express uncertainty about the function of the tutor. How directive should the tutor be within the group? What are the necessary facilitation skills for effective group functioning? (p. 10)

This chapter outlines *my case* in adapting to the transition from instructor to tutor and specifically the questions I posed about my own practice and role as a teacher educator throughout the experience. At the end of my first year as tutor, 11 of the students in my tutorial group volunteered to speak with me about their experience with PBL and about how they saw the role of the tutor and the tutorial sessions. Throughout the chapter their important insights and perspectives will be compared and contrasted with my own. Amador et al. (2006) describes problem based learning as moving through a series of questions as one works through a case: What do I know? What do I need to know? How will I learn it? Thinking about the transition between instructor and PBL tutor as a case, what are then are the issues?

Issue One: What Background Knowledge and Experience Do I Bring to the Role of a Problem Based Learning Tutor?

I initially welcomed the opportunity to work with the problem based learning approach because I thought it more effectively embodied my own understanding of the role of an elementary teacher. I came to the university as an adjunct professor after having taught kindergarten to grade five, primarily in schools that had been designated "inner city" due to the high level of various social and economic needs of the students. Partly as a response to teaching in this inspiring and challenging environment, I have come to see the role of teacher as inherently multidimensional and highly complex. The discrete courses that make up traditional teacher education programs do not fit with this reality. As a teacher, I do not think about educational psychology at one point in the day, curriculum and pedagogy at another point, nor do I switch between being a math teacher and being a language arts teacher any more than I think about teaching English as an additional language as an add-on to a lesson plan. An effective elementary teacher thinks about all these things at once. The discrete nature of traditional course work can limit preservice teachers' understanding of how the various aspects of a teacher's role must constantly work together. The holistic nature of PBL, wherein preservice teachers are asked to think about the relationships between pedagogy and social justice, between mathematics and place-based learning, and between special needs education and language arts *on the very first day*, is more in keeping with the thinking they will necessarily do as teachers. Rather than spend an academic year gathering puzzle pieces and then frantically putting them together during the teaching practicum, I was intrigued by the idea that I could help PBL preservice teachers see the whole puzzle at once.

Having taught and been a faculty advisor in the regular program for 1 year at the same institution where I became a PBL tutor, as well as for 2 years in an education program at the Awassa College of Teacher Education in Southern Ethiopia, I had some familiarity with the traditional structures of course work, syllabi, assigned readings, and assignments. In addition to the holistic nature of PBL, the concept of working with only 13 students throughout two terms appealed to my deeply held beliefs about the importance of caring communities in education. As an instructor in the traditional model, creating safe environments in which all preservice teachers could engage in the risk taking necessary for true learning had proven to be very challenging as I generally worked with a group of 36 with whom I spent 4 hour a week. I felt frustrated by my inability to get to know each of them in meaningful ways and was therefore only very superficially able, if at all, to respond to their individual learning needs. Furthermore, a syllabus that must be published and distributed before one meets the preservice teachers seems to make any attempts at *student-centered* learning minimal at best.

Issue Two: Establishing Trust

Clearly I came to PBL predisposed to value many of its core tenets. As Pourshafie and Murray-Harvey (2013) note:

> [F]or teacher educators, the appeal of this approach lies in the potential of PBL pedagogy to meet desired learning outcomes for preservice teachers to become self-directed learners who are competent problem-solvers, able to work effectively with others and to reflect on their own practice. (p 1690)

And yet, the role of tutor remained unclear to me. If I wasn't instructing my preservice teachers, what was I supposed to be doing with them? There was a conundrum for me: On the one hand, it seemed that the role of tutor, as opposed to instructor, required me to withhold my knowledge and experience as a teacher educator; on the other hand, the role of tutor within the PBL model was completely outside my area of experience and knowledge. I felt at once too knowledgeable and too ignorant. I had too much content knowledge and experience and no process knowledge or experience, leading me to two central questions: to what extent would I be able to withhold my knowledge and experience from my preservice teachers? How could I guide them through the two-week case cycle when I lacked that very experience as a teacher or as a learner myself?

Much has been written about preservice teachers' initial response to being in a PBL program, often focusing on their sense of frustration and disorientation (Silén, 2004; Amador et al. 2006; Neville 1999; Hung et al. 2003). When asked to think back to their feelings during their first few weeks in the program, my own preservice teachers responded with words like "unsettling" and "frustrating" and reported feeling "confused," "apprehensive," "a little skeptical," "worried if I was doing it right," "perturbed by it," and not being "a happy camper." One recalled thinking, "Oh, what did I

get myself into? I'm responsible for all of my learning. And that's what it was, it felt like a big responsibility." As a new tutor, I also felt unsettled, confused, certainly frustrated at times, and, in spite of the alignment between the PBL pedagogy and my own educational beliefs, somewhat skeptical. It is one thing to believe in student-centered, constructivist learning but be constrained by the institutional requirements of a standard syllabus, assigned readings, and assignments with assessment criteria which must be set before one has even met the students. When these constraints were largely, although not wholly, as I will discuss later, removed, and the learners are indeed in control of their own learning, it was destabilizing.

Deborah Britzman (2003) explains that the story of learning to teach is inherently contradictory because:

> [T]eaching and learning have multiple and conflicting meanings that shift with our lived lives, with the theories produced and encountered, with the deep convictions and desires brought to and created in education, with the practices we negotiate, and with the identities we construct. (p. 32)

In some ways I had constructed an identity for myself as a teacher educator invested in student-centered learning when it was safe to do so because I was unable to fully practice it. Now, as a PBL tutor I had to trust my preservice teachers, trust their ability to pose the right questions and to organize their own learning – in short, to be enough. Pourshafie and Murray-Harvey (2013) research into PBL in a teacher education program suggesting "that the complex skills of 'holding back' and 'creating space' are particularly challenging as they also rely on the facilitator's attitude, characterized by trust in students to direct their own learning" (p. 176). At the outset, the case cycle that the preservice teachers would be going through seemed less robust to me than regular course work. Perhaps because the preservice teachers were given minimal guidance on what a research package should contain, it resulted in the quality of the first packages varying broadly. Some seemed very superficial and disorganized, while others were more thorough. I had many moments of panic, certain that they would not in fact be able to learn the skills and content knowledge necessary to become competent teachers by the end of the year. In PBL, the need for trust is explicit and valued. As Amador et al. (2006) note, "we need to trust that our planning, our problems, and our procedures will facilitate preservice teacher learning with only a little direction and encouragement from us" (p. 93).

So, I had to trust the preservice teachers. Interestingly for several of my preservice teachers, responding near the end of their academic year, they viewed my role as one of creating trust among the group. As one said, "I think you played a really big role in getting us bonding and comfortable with each other in order to have these huge discussions and deep discussions" (2013). Walsh (2005) puts "climate setting – creating a safe, conducive environment for self-directed learning" (p. 11) first on the list of tasks for the PBL tutor. Hendry et al. (1999) contend that the "fundamental role of the tutor is to promote a relaxed atmosphere and allow discussion to proceed" (p. 367). I would argue that an atmosphere conducive to learning and shifts in core beliefs is not simply a "relaxed" one, but rather one in which each learner feels respected, safe, and listened to. From the outset of the year, I saw this as a challenging and important part of my role. When asked about the role of the

tutor, one preservice teacher noted, "people have come with all different experiences and so finding a balance…to kind of have everybody: Okay, we're all learning this together, [the tutor has] to know how to manage all the personalities and people" (2013). A third agreed, adding the tutor "brought us together…at the start of the year I wasn't someone who would speak, but [the tutor] made it so comfortable for me to express myself" (2013). As a tutor who is also a learner, I worked to build a community of safety and trust that was necessarily reciprocal. While this was essentially what I had believed education to be about, in the PBL program, I had to go farther, to trust more, to more consciously build trust. In many ways, the whole year's learning for each of my preservice teachers depended on this community trust in a manner that is much more explicit and obvious than in the regular program.

Issue Three: Tutor as Expert

While not an expert in the academic research sense, I came to the role of a PBL tutor with years of elementary teaching and as an experienced teacher educator. I was therefore relatively comfortable with the idea of answering preservice teachers' questions about various aspects of teaching and learning. What was I to do with this expertise as a tutor? I have a clear memory of my very first tutorial, introducing *case one*. The preservice teachers, as noted above, were nervous, anxious, and uncertain about the process. I was as well. After we had read through the case silently, I then asked them to find a partner and discuss what they had noticed. When I felt the discussion wane in the room, I asked the partners to join with another set of two, forming groups of four, and compare what they had discovered about the case. We then came together as a group. One preservice teacher raised her hand and posed a question about the case. It was an interesting question, relevant and rich with potential for exploration. In response, I blurted out, "I'm not allowed to tell you." In my first half hour as a PBL tutor, I had panicked. Fearful of the *PBL police* I suppose, I externalized my withholding of information and went no further. It was not an auspicious beginning. I was deeply uncomfortable withholding information. My instinct was to answer the question. I felt constrained by the PBL pedagogy and made that painfully obvious.

In their study of a PBL program in teacher education, Pourshafie and Murray-Harvey (2013) discuss the issue of tutor expertise:

> PBL tutoring demands a radical shift from teacher as the all-knowing subject content expert to a co-constructor of knowledge within a community of learners (Hmelo-Silver and Barrows 2006; Lekalakala-Mokgele 2010; Roberts 2010; Rotgans and Schmidt 2011). Assuming such a humble posture is not an immediately comfortable position (in power relationship terms) for many teachers and students alike in their early experience of PBL. (p. 170)

Other people have discussed the challenge tutors may face in giving up power to their students (Amador et al. 2006). Although I may have been dealing with these feelings unknowingly, the much more overt frustration I had was almost the opposite. I felt a certain dishonesty in observing my students pose questions that I had the

ability to help them with, but was choosing not to. I sensed frustration on their part, not that they felt I was powerless or unknowing, but that I had the power, through my experience to help them, but was choosing not to. The power to deny assistance, as one preservice teacher recalled 10 months later, "…here it was like, so what do you want to know? And I was like, I don't know, shouldn't you tell me? Shouldn't you tell me what I should know? That was my biggest doubt at the beginning. Am I really going to learn anything?" (2013) After a few case cycles of insisting that I could tell them nothing, I began to gradually provide guidance when I felt it warranted. I also learned to pose better questions in order to promote their learning from each other and to encourage them to deepen their own thinking, most often through questioning assumptions they had made. After seeing the preservice teachers go through a few case cycles, I could feel myself relaxing into the PBL pedagogy, believing in it more and therefore internalizing its tenets. Instead of always refusing to answer my preservice teachers' questions, while I most often responded with a question of my own, I did choose to answer some questions based on my own experiences.

When asked about the role of the tutor in terms of the program itself and of their own growth as learners, my preservice teachers provided considered and sometimes vivid descriptions. One said, "I feel like you kind of hinted at us where to go sometimes. You didn't directly tell us where to go but you were like, 'ah'!" Another felt emphatically that the tutor's expertise was very important, saying, "I don't think that an effective tutor would be someone who had no experience with education." A third used a metaphor to express her ideas:

> …If we went on a hike, you'd be at the back and then you'd kind of be watching out for us, so if we went too close to the edge, or if we were kind of like on the edge, you would guide us back in, and you would motivate us to keep going, but not so much leading us, but you would kind of be at the back.

While I felt more comfortable with the role I had created as *tutor* being someone who occasionally answers questions and does provide guiding opinions from time to time, I did wonder if I was simply manipulating the PBL pedagogy to suit my own interests, to replicate what I knew and was comfortable with. Was I unintentionally turning *tutor* into i*nstructor*? A preservice teacher also questioned this: "You knew what some of those big ideas that we needed to be looking at and you hinted at us sometimes and we needed that…I wonder, if that was pure PBL then or not?" (2013). Perhaps the idealized notion of PBL, the preservice teachers as a band of independent knowledge creators is something both this student and I were objecting to, both through words and actions. However, PBL pedagogy does not call for an educational free-for-all wherein the learners are set free on the Internet and in the library to research what they like. As Savery (2006) notes in an overview of PBL:

> [T]he reality is that learners who are new to PBL require significant instructional scaffolding to support the development of problem-solving skills, self-directed learning skills, and teamwork/collaboration skills to a level of self-sufficiency where the scaffolds can be removed. (p. 15)

Taking the concept of the tutor as someone who helps provide instructional scaffolding when required, providing direction and even answering questions does not seem removed from the pedagogical approach, but rather an integral part of it.

Issue Four: Tutor as Facilitator

Many discussions of the role of tutor highlight the facilitation aspect of the function (Savery 2006; Amador et al. 2006; Savin-Baden and Wilkie 2004; Walsh 2005; Hmelo-Silver and Barrows 2006). Before the term started, my job was most often described to me as someone who leads discussions. I could picture myself sitting around a circular table, calling on various preservice teachers to speak, responding to what they had said, and moving on to the next preservice teacher. In some respects, this is what a tutorial session might have looked like to an outside observer. We did sit in a roughly circular arrangement, one person at a time spoke, and most often I was the person who determined who would speak. Rather than facilitation, however, which conjures up ideas of helping a group arrive at a common decision, I came to see my role as more disruptive. Within the boundaries of a trusting community of learners, I sought to disrupt the preservice teachers’ assumptions, to encourage them to disagree with each other. The group’s discussion often opened with a simple consensus about a seemingly straightforward aspect of education, and I actively tried to elicit dissent, multiple perspectives and ways of thinking that challenged assumptions. In describing the ideal tutor, Mayo et al. (1995) reject the term facilitator, in favor of activator, explaining, “to facilitate is to help, to make something easy or easier … In contrast, the activator *causes* students to engage in activity” (p. 127). While I would argue that I couldn’t *cause* students to do anything, I do think that I attempted to engage them in critique and dissent rather than facilitate consensus.

In the interests of allowing the preservice teachers to own the process as much as possible, after the first two case cycles, I experimented with asking a preservice teacher to volunteer to lead the discussion. This seemed consistent with the PBL aims of student-centered learning, as well as with the program’s goals of helping create active, professional teachers. However, after watching this play out during two or three tutorial sessions, I became aware of two things: the first being that what I had been doing was clearly not “facilitation” as one would do in a meeting – that is, to simply call on the next speaker and move through a list of agenda items – and the second being that running a PBL discussion seemed to require skills that most of my preservice teachers simply didn’t yet have. Indeed, it doesn’t seem reasonable to expect that they would, particularly when simultaneously being engaged in the learning process the case required. In their study of PBL facilitation, based on careful observation and analysis of two tutorial sessions, Hmelo-Silver and Barrows (2006) conclude that an expert facilitator employs a variety of strategies, often switching between them in rapid succession:

> Barrows [the tutor] used modeling, scaffolding and fading progressively as the students grew more responsible for their own learning and began questioning each other. He modeled the questions students should be asking themselves until they appropriated these questioning strategies themselves. (p. 37)

While I am not at all an expert facilitator, I was using many of these strategies while leading tutorial discussions in ways that my students, acting as “guest facilitators,”

were unable to do. Rather than allowing the discussion to suffer, I took back control of this aspect of the group process. As with answering and posing questions, it would seem that I became less student centered in doing so. However, I would argue that student-centered learning involves not simply letting preservice teachers explore but also means responding to their learning needs in ways that further their journey. Commenting on the tutorial discussions, one recalled, “I think it still worked in the end and we were able to learn from one another and learn what are these different views. So you were a facilitator” (2013).

Issue Five: Tutor as Evaluator

As a PBL tutor, I was a discussion leader, engaged in disrupting assumptions, a facilitator of community building, and an experienced member of the larger professional community my preservice teachers sought to join. I was also an evaluator of student progress. Throughout the program, including during my students’ school-based practica, I assessed and evaluated the preservice teachers’ skills and knowledge. As an instructor, the evaluative aspect of my role was clear, explicit, and a large focus of my energies. In the pass/fail program, the criteria and learning outcomes for student assignments are provided, along with deadlines. I then decide if the preservice teachers’ submissions meet or do not meet the set criteria and provide written feedback. Although even as an instructor the evaluative process is itself much more messy than what I’ve described here, I found the evaluative aspect of PBL tutor to be very complex. I provided written and oral feedback based on specific criteria at each phase of the case cycle – annotated bibliography (after three case cycles, I stopped providing this feedback), research packages, presentations, and synthesis. All of this feedback was privately given to the relevant student authors. Thus, there was a continual one-way stream of assessment and pass/fail evaluation from me as tutor to the students. The sheer volume of feedback per student as well as its cyclical nature was very different from being an instructor. Additionally, there was and is an intimacy to the tutorials and the community we had created which sometimes emotionally complicated my feedback. Furthermore, within PBL pedagogy, the tutor is clearly *not* an authority. Indeed, Mayo et al. (1995) state that “the tutor must surrender the seat of authority” (126) and that “tutors must become partners in the PBL group without losing their identity” (129). As one shifts from the “sage on the stage to the guide on the side,” what becomes of the powers of assessment and evaluation? Can one be a partner in inquiry with someone one has the power to deny progress in the program?

The term *tutor* itself seems to minimize the evaluative aspect of the role. Instead of *instructor* or *teacher*, terms that are imbued with conceptions of evaluation and often gate-keeping, the title *tutor* connotes a more familiar, supportive role. It traditionally refers to a one-on-one situation wherein a student is receiving extra support. Many years earlier, as a graduate student, I had been a tutorial assistant, working under the supervision of a professor. As it seemed like a reversion to a younger, less experienced and knowledgeable version of myself, I was reluctant to take on this job

title once again. So in many ways, the title of *tutor* did not sit comfortably with me. Indeed, throughout my first year as a PBL tutor, I rarely used the term. Yet in our PBL program, as in others, tutors have considerable power in whether or how the students proceed through the program. At the end of the list of tasks for a PBL tutor, Walsh (2005) includes “evaluating learning outcomes – include formative feedback as well as summative evaluation” (p. 11). Rather than making the power dynamic explicit, as it is with the instructor/student relationship, the term *tutor* and some functions of the role seem to obscure or camouflage the tutor’s power.

In terms of providing feedback, I found the cyclical nature of the cases to be a very satisfying structure. In the traditional program, preservice teachers completed each type of assignment, such as an autobiography or a group presentation once in the course. The feedback I provide is then not going to be used to help improve that specific product or process in the future. With PBL, I felt that my feedback might be used in future responses: that is, constructive feedback on a particular case synthesis might be used by the preservice teacher in the writing of the next case synthesis. However, when I asked my preservice teachers an open-ended question about how they viewed the role of the tutor, in their extensive and considered responses, no one mentioned anything about feedback, assessment, or evaluation. For whatever reasons, this aspect of the role was not central to their conception of tutor.

Synthesis

As I continue to make the transition from instructor to PBL tutor, I return to Amodar’s (2006) three questions:

- What do I know?
- What do I need to know?
- How will I learn it?

To pose these questions in the past tense:

What did I think I knew?

I thought I knew very little about the PBL process. I thought that being a tutor meant that I could not answer questions and not provide advice or guidance. I thought my role was primarily to facilitate discussion and make sure everyone was an active participant. I did know very little about the PBL process, but was able to use what I did know about questioning, group dynamics, creating trusting communities, and providing feedback from my other teaching experiences to guide me through the process.

What did I need to know?

An explanation of the terminology of PBL would have been very helpful. Perhaps because it is a pedagogy founded on principles of constructivism where there are no assigned readings, I found it difficult to learn the language of PBL. The specific use

of terms within the PBL community – case, tutor, and synthesis, to name a few – had the effect of making me feel like an outsider rather than a participant until I had been through many case cycles.

How did I learn it?

I learned primarily from my students. I listened to their struggles, observed their progress, and came to believe more strongly in the method we were using together. Of course I learned a great deal from my colleagues who usually answered my many questions but occasionally responded with another question in the PBL way.

I began the year by acting as though being a tutor was a radical departure from being an instructor, when in many ways it wasn't. I still used my expertise and experience, and I still responded to student needs to the best of my abilities. Over the course of the year, I became more and more myself as PBL tutor. Teaching is a continual becoming; one is always in the process of constructing an identity. My identity as PBL tutor continues to feel tentative and emergent.

References

Amador, J. A., Miles, L., & Peters, C. B. (2006). *The practice of problem-based learning: A guide to implementing PBL in the college classroom*. Bolton: Anker Publishing Company, Inc.

Britzman, D. P. (2003). *Practice makes practice: A critical study of learning to teach*. Albany: State University of New York Press.

Hendry, G. D., Frommer, M., & Walker, R. A. (1999). Constructivism and problem-based learning. *Journal of Further and Higher Education, 23*(3), 369–371.

Hmelo-Silver, C. E., & Barrows, H. S. (2006). Goals and strategies of a problem-based learning facilitator. *Interdisciplinary Journal of Problem-Based Learning, 1*(1), 21–39.

Hung, W., Bailey, J. H., & Jonassen, D. H. (2003). Exploring the tensions of problem- based learning: Insights from research. *New Directions in Teaching and Learning, 95*, 13–24.

Mayo, W. P., Donnelly, M. B., & Schwartz, R. W. (1995). Characteristics of the ideal problem-based learning tutor in clinical medicine. *Evaluation & the Health Professions, 18*(2), 124–136. doi:10.1177/016327879501800202.

Neame, R. L. B. (1984). Problem-centred learning in medical education: The role of context in the development of process skills. In H. G. Schmidt & M. L. de Volder (Eds.), *Tutorials in problem-based learning: A new direction in teaching the health professions* (pp. 33–47). Assen/Maastricht: van Gorcum.

Neville, A. J. (1999). The problem-based learning tutor: Teacher? Facilitator? Evaluator? *Medical Teacher, 21*(4), 393–401. doi:10.1080/01421599979338.

Pourshafie, T., & Murray-Harvey, R. (2013). Facilitating problem- based learning in teacher education: Getting the challenge right. *Journal of Education for Teaching: International Research and Pedagogy, 39*(2), 169–180.

Roberts, G. W. (2010). *Creative tuition: The experience of tutors in problem based learning*. Unpublished dissertation. Retrieved from http://search.proquest.com.ezproxy.library.ubc.ca/docview/899759850?accountid=14656

Rotgans, J. I., & Schmidt, H. G. (2011). Cognitive engagement in the problem-based learning classroom. *Advances in Health Sciences Education, 16*(4), 465–479. doi:10.1007/s10459-011-9272-9.

Savery, J. R. (2006). Overview of problem-based learning: Definitions and distinctions. *Interdisciplinary Journal of Problem-based Learning, 1*(1), 9–20.

Savin-Baden, M., & Wilkie, K. (2004). *Challenging research in problem-based learning*. New York: Open University Press.

Silén, C. (2004). Chapter 11: Does problem-based learning make students 'go meta'?. In M. Savin-Baden, K. Wilkie, & Society for Research into Higher Education (Eds.), *Challenging research in problem-based learning*. New York/Maidenhead: Society for Research into Higher Education & Open University Press.

Walsh, A. (2005) *The tutor in PBL: A novice's guide*. Hamilton: McMaster University. http://fhs.mcmaster.ca/facdev/documents/tutorPBL.pdf