Honors Thesis Proposal

for

Problem Based Learning and the Application to a Secondary Language Arts Curriculum

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Abstract
This paper explores the history, structure, and applications of Problem-Based Learning (PBL). While the articles and books read on the topic vary in opinions, they all agree that Problem-Based Learning is rooted in the Constructivist philosophies of Dewey, Thorndike and Piaget. The proponents of this approach to learning agree PBL helps develop critical thinking and problem solving skills in students. PBL has two counterparts that I have included information about: Project-Based, the approach PBL evolved from and the more traditional, Lecture Based Instruction (LBI). These different instructional methods have been defined and used to form comparisons about the benefits PBL is found to have. PBL has been applied to Math, Science, Medical, Engineering, Journalism and other various programs with some degree of success, however it is not widely used in a Language Arts curriculum. I plan to use the information I have learned along with other sources to structure a curriculum guide for 9th/10th grade literature program in a Language Arts curriculum. Using Common Core State Standards set to be adopted by Florida Schools in 2014, the curriculum guide will contain scenarios, lesson plans, and models of useful tools to be used during a PBL unit.
Problem Based Learning and its Application On A Secondary Language Arts Curriculum

I first became interested in this topic, as I read an article for one of the classes I took, in the spring of 2012. This article was focused on the need to develop 21st century skills in students and prepare them for a place in the global market. I began to think about how strategies like Problem Based Learning could be applied to the subject of Language Arts and end the ever present question for "Why do I need to know this?" The current topic on most students' minds is how the books and essays they are forced to read in school could ever apply to them in the real world. Relevance seems to be the one thing students are missing as they prepare to graduate.

Currently all curricula are driven by standards; this does not mean that learning has to be void of opportunities for strengthening skills they will need for the future: critical thinking, problem solving, collaboration and the ability to be self-directed. It has been an observation throughout my time in higher education that many students who manage to graduate from high school are not yet prepared to be self-directed students in the college arena. First year college students are often disoriented by the lack of step by step instruction professors provide during a semester. As I said, it is merely an observation but one made with the best of intentions, as I begin thinking about my role as an educator.

Problem-Based Learning has the potential to fulfill several student needs in preparing them for their futures whether in a higher learning environment or in the work
place. This is also the end goal of Common Core State Standards as measured by the Professional Assessment for Readiness for College and Career (PARCC). The future student needs to develop the skill of problem solving and hopefully learn the skills necessary to be life-long learners. These skills once learned and applied will never be forgotten unlike many of the facts and figures they are forced to remember during their K-12 education.

My main objectives for this thesis are to answer the following questions: What exactly is Problem Based Learning? How PBL can be applied to a 9/10 grade Language Arts curriculum? Can it be done in such a way as to meet the new Common Core State Standards, due to officially be assessed in schools 2014?

**Literature Review**

Problem-Based Learning is not a new concept it has been around since the early 1900s. I felt that since there is very little in the form of studies including Language Arts curriculum and PBL I would research; what exactly is PBL? This learning approach has a history, a structure and is currently being used in various school curricula. Understanding PBL will help me develop my project as further discussed in the Methodology section.

**History**

PBL has deep roots in constructivist history. It is an approach to learning that has been debated and developed during the 1900s, when the Progressive Era of modern education was in its beginnings. John Dewey in 1916, argued that using problems, significant to area of study, was the ultimate way to engage learners (Torp & Sage,

While Piaget (1975) and Dewey (1910) may largely be responsible for the research that helped to shape problem based learning into what it is, the core skill of critical thinking can be traced back to Plato and Aristotle (Burris & Garton, 2007). The need to develop critical thinking skills in education led to the creation of PBL by E.L. Thorndike (1913) and John Dewey (1910). They placed an emphasis on the Scientific Method as a mode of inquiry when researching the subject of teaching. Because of this emphasis, science and scientific applications would stand side by side with philosophy in determining educational process (Januszewski & Pearson, 1999). The thought was that using the Scientific Method, learners would investigate and self-direct their learning. The method of investigation would then further motivate students by stirring their own natural curiosities.

**Evolution of PBL**

Between 1908-1910, the term “project” had become synonymous with professional school programs such as: medicine, engineering, agriculture, and journalism (Januszewski & Pearson, 1999). The first uses of projects were in the Agriculture, Home Economics, Industrial Arts and Science. Instructors of these subjects viewed “projects” as a manual activity which is aimed at a pre-specified result. The belief was that the “doer” would acquire additional knowledge and/or training from performing the activity (Januszewski & Pearson, 1999). Both Thorndike and Dewey sought to incorporate “learner outcomes, student evaluation, choice in design and
organization of instruction into the science of teaching" (Januszewski & Pearson, 1999). Project-Based learning relied solely on the acquisition of knowledge and applying that knowledge to complete a final outcome in the form of a project. The addition of a scenario and inquiry began the evolution from learning based on projects to Problem-Based Learning.

In 1960, McMaster’s University in Ontario adapted the first PBL curricula because they felt that students needed to be more prepared for the “real-world” medical situations that memorization and recall could not prepare them. The typical medical course sequence was basic science classes proceeded by clinical experience. In the 60’s-70’s, medical schools denounced traditional curricula because they were too “pre-clinical” (Maxwell, 2001). In 1980, Harvard developed a PBL curriculum for their medical program which shadowed the more traditional curriculum. In 1990, medical schools such as: Southern Illinois University, Rush, Bowman Gray, Tufts, Michigan state and University of Hawaii moved to adopt a PBL curriculum (Torp & Sage, 1998, p. 28).

PBL origins emphasized the connections between doing, thinking and learning (Goodnough, 2006). PBL makes learning relevant to real-world, promotes higher order thinking, encourages learning how to learn, and requires authenticity (Torp & Sage, 1998, pp. 21-23). PBL also has a very distinct structure.

**Structure**

As previously mentioned, PBL began as Project-Based Learning and evolved into what is currently being used as Problem-Based Learning. The difference between the two is solely in the focus. In Project-Based Learning, the focus is on the outcome
(Kain, 2003). A student is given criteria and instructions to complete a manual activity. The teacher does not grade for learning but merely on the result of their work. In Problem-Based Learning, the focus is placed on the process of inquiry (Kain, 2003).

Traditional Lecture Based Instruction follows a “stair case model” where students are taught simple ideas first and gradually learn more complex skills building on the previous skill or idea. PBL resembles more of a “spider web:” where in a question or problem is given and the student then becomes responsible for determining the direction the learning will go in order to provide one of the many possible solutions to the problem (Ward & Lee, 2004).

In PBL, students are given an ill-structured problem. Ill-structured problems contain little to no details that students could use as clues for solving. Students must analyze, synthesize and evaluate to gain the sense of whole problem and formulate a viable solution to the scenario (Torp & Sage, 1998, p. 18). Ill-structured problems offer greater opportunity for students to identify their own present knowledge and new information they will need in order to develop a solution. In contrast, offering a well-structured problem can lead the student to only identify what the instructor feel they need to know and often only one solution exists.

Experiential learning, such as PBL, is a “minds-on, hands-on” approach organized around investigation and resolution of messy ill structured problems (Torp & Sage, 1998, p. 14). In PBL, no right or wrong answers exists. The only focus is on how
thoroughly a student investigates to formulate a solution. This helps encourage creativity, problem solving skills and critical thinking in our students (Ward & Lee, 2004).

The guiding principles for PBL are: 1) Problem or purpose should be introduced before any knowledge to be learned. Introducing information before the scenario or problem then changes the process from Problem Based to Project Based. 2) Principles should be developed as needed to complete the process. 3) The scenario must hold student interest. This keeps students motivated to investigate the problem. 4) Problem scenario should resemble real life. 5) Students will learn how to think, how to do and how to complete work. 6) PBL can either be individual or small group based. It can also fluctuate between the two during any process (Januszewski & Pearson, 1999).

As we move further into the 21st century, the belief of Gasser (2011), a high school math teacher is that students need to acquire skills that cannot be outsourced. Students need to be able to perform tasks beyond the capabilities of a computer. This means that as teachers we need to change our role as dispenser of information to the role of facilitator or coach. The role of the teacher becomes that of a coach, questioning and steering students in the directions they need to go in to successfully navigate through investigation (Ward & Lee, 2004).

In order for PBL to be successful in the classroom, teachers must improve their skills in Socratic inquiry, Conflict Resolution and Classroom Management. (Ward & Lee, 2004). Teachers also need to be aware of how students are adapting to this process. Depending on skill level students may or may not have acquired the skill necessary to
make decisions regarding their research (Belland, 2010). For example, a middle school student may not have the skills necessary to make evidence based arguments successfully. In this case, the teacher should have tools available to scaffold students through the process until they are capable of performing a task unaided.

Student roles will need to adapt as well. PBL confronts students with messy ill-structured scenarios through which they will assume an "ownership" role. They will be asked to assume the role of the stakeholder in a given situation. They will need to identify the real problem and learn whatever is necessary to arrive at a viable solution (Torp & Sage, 1998, p. 14). Through PBL, students will develop and use valuable reading skills such as: concept mapping, elaborating on previous knowledge, resource managing, paraphrasing and journaling. (Cartier, Plante, & Tardif, 2001).

Challenges

One of the challenges that many teachers face is: How do they evaluate their students? Assessment in Lecture Based Instruction can take a variety of different forms ranging from multiple choice tests to portfolios all done individually. In PBL, assessment should focus on the processes and thoroughness of the completed project rather than on the final answer (Ward & Lee, 2004). This does not mean that they should not be evaluated on content learned but it should be done in conjunction with evaluation of their investigation process as well. Evaluations for PBL can also range from multiple choice tests to portfolios (Hsu, 1999).

A study done by Pedersen, Arslanyilmaz, and Williams (2007) investigated teachers' assessment choices during a PBL module, in which through the process of
interviews, observations and surveys measured the types of assessment tools teachers of varying experience would choose to use. The research revealed the most popular form of assessments were: paper based hard-copy notebook, observations/interactions, and check points. The paper based notebook contained sections divided by headings where students could track and record their findings. It also provided more specific topics for further investigation. The checkpoints were a combination of quizzes, warm-up activities, and deadlines for completing a certain percentage of their project. These practices enabled teachers to make sure that students were on track and learning the necessary content as well. Observations/interactions enabled teachers to discuss issues teams or individual students were having and ask questions to refine their thinking and redirect if necessary.

Another issue is inclusion. While PBL does blend well with collaboration and varying activities that can enhance the learning experience for ELL students, not all students enjoy working in a PBL setting. Goodnough (2006), found through her observations that PBL can be used in conjunction with other forms of teaching and learning. She also found that it is necessary to use various modes of presentation to reach differing learning styles.

**Effects on learning**

PBL has been developed and implemented in a variety of different programs, mostly in which a hands on approach can be easily adapted. Science and Math programs in middle and high school levels have been the first to adapt their curricula around PBL. Public school curricula are driven by standards and currently standardized
testing is being used to measure student learning in our public schools. The research emerging from public schools using PBL show that content knowledge is being acquired at an equal rate as traditional LBI. Research findings also are now suggesting that students are retaining information at a slightly higher rate compared to LBI. Students engaged in a PBL curriculum have a greater depth of understanding. These results show that students did as well as their counterparts on multiple choice tests with deeper understanding of subject matter (Kain, 2003).

A study in a high school Food and Nutrition course placed students in two different instructional methods. Two groups received Lecture Based Instruction and two groups were given PBL. After the course completion all students were asked to take the Food and Nutrition state standardized test. It was found that both groups had gained significant content knowledge and had performed equally with no significant difference on the state exam (Ward & Lee, 2004). Although this study does not clearly point to PBL, we know that PBL involves students in their own learning and that further research in other subject areas is needed. Certainly, PBL does not inhibit content knowledge acquisition of students.

**Methodology**

For the construction of my thesis project, I propose to create a curriculum guide that can be used in a 9th/10th grade literature program in a Language Arts class. In creating this guide, I will take into consideration the fact that high school curriculum goals are determined by content driven state testing programs, AP exams, district and state curriculum standards. “PBL materials must address these standards if they are to
be used” (Maxwell, 2001). In the state of Florida, Common Core State Standards will be implemented in schools by 2014. To keep my guide relevant to current teaching methods, I will use Common Core standards to guide the creation of problem scenarios. Common Core also includes a list of texts that can be included in instruction. I will use this list to determine the authors and/or texts scenarios will be based on. The curriculum will be designed with those 9/10 grade literature texts recommended by Common Core in mind and will encompass a full school year of study for students.

Belissimo et al. (2001) used the generic medical school model for PBL and created a high school Economics curriculum. I will use this model (see Appendix A) and Ann Lambros’s (2004) book *Problem-Based Learning in Middle and High School Classrooms* to guide the creation of my curriculum guide. A sample problem scenario, taken from her book:

“You are a writer who wishes to submit your writing for a book on modern writers of American Literature. You are preparing a chapter on the Harlem Renaissance. The chapter must focus on one author from this period who is worthy of exemplifying the whole period” (Lambros, 2004, p. 103).

Included with scenarios will be lesson plans, and a copy of an adapted K-W-L chart useful in helping students organize their research. I will also include a model of any assessment tools created for the purpose of implementing PBL in a high school Language Arts classroom. Attached in appendix B, you will find a full schedule, month by month; I will follow to create this PBL curriculum guide.
Conclusion

“Most English teachers look for ways to improve discussion in the classroom. They want students to recognize how course material is relevant in their own lives” (Frank, 2008). PBL used in a Language Arts curriculum at the secondary level has the potential to help students acquire skills not only necessary for the global market, but it can help students become self-directed, life-long learners. This hands-on approach with roots in Constructivist philosophy can provide “real-world”, authentic learning for students who are constantly wondering, “When will I ever use this again?”

I believe that given the history and use in various school programs, Problem-Based Learning could be useful in developing much needed relevance and authentic learning experiences to high school students.
Reference List


(Original work published in 1910)
