Problem-Based Learning (PBL) originated in a particular scientific field, so it is important to analyze whether the PBL methodology can apply to other fields. Branching out to rely on PBL philosophy and methodology in social studies is an option that continues to grow; there is a need to try to utilize this valuable learning and teaching tool. Other researchers such as Maxwell, Bellisimo & Mergendoller (2001) used the PBL medical school model (Barrows, 1986) to create their lesson plan to teach high school economics; by moving away from conventional teaching instructional approaches to one where “students formulate and pursue their learning objectives and select learning resources that are most appropriate to the problem they are seeking to resolve” (p. 73). Similar ideology applied to the PBL design for the Grade 11 World History class reported on here.

INTRODUCTION

Problem-based Learning (PBL) originated in a particular scientific field, so it is important to analyze whether the PBL methodology can apply to other fields. Branching out to rely on PBL philosophy and methodology in social studies is an option that continues to grow; there is a need to try to utilize this valuable learning and teaching tool. Other researchers such as Maxwell, Bellisimo & Mergendoller (2001) used the PBL medical school model (Barrows, 1986) to create their lesson plan to teach high school economics; by moving away from conventional teaching instructional approaches to one where “students formulate and pursue their learning objectives and select learning resources that are most appropriate to the problem they are seeking to resolve” (p. 73). Similar ideology applied to the PBL design for the Grade 11 World History class reported on here.

PURPOSE

The purpose of this work was to describe and reflect on the worth of the iterative design of a valid teaching method for senior school level social studies classes reliant on PBL methods. Due to the nature of the approach to learning, there was a need for the PBL implementation to become more evolutionary to integrate social studies and PBL. Through the alternative approach to learning and teaching within a modern Grade 11 World History class (1840-1991)
we continually reflected on the trial and efforts to implement PBL for a unit of study over a month of work during the academic year. The central question for the project implementers was ‘What are the benefits of a Problem-Based Learning (PBL) method for a senior school studies class?’ We envisaged that this methodology could also be a good Final Summative project for the end of the academic year.

BACKGROUND TO THE USE OF PBL

History does not have to be a boring subject. Through this approach, the goal was to foster more student-centered and experiential learning, encourage research, provide scaffolding, and allow for the presentation of a final product completed by students using elements of the PBL philosophy. Students were to study topics that interested them. This methodology could apply to other social studies classes such as Politics, Geography, Law, Contemporary World, Economics, or Current Events classes.

PBL is not a common learning method used by educators. A PBL approach tends to turn regular learning upside down because of the demands that students identify a problem of personal interest before giving any instruction. The students must probe deeply into issues to find connections to develop solutions. The definition of the problem may change through their findings; all the while the student may take on different roles (Stepien & Gallagher, 1993). If we were to apply this method to a social studies context within a real-world application, this may include examples such as historian, geographer, lawyer, or politician, as they use many of the elements of PBL activities daily in work situations.

PBL, originally designed in Canada in the late 1960s out of the medical school at McMaster University (Hamilton, Ontario), showcased the nature of active learning (Hallon, 2011). The more student-centered, self-directed learning approach requires skills that imitate adult learning, and one can readily see that it is a valid method for emergency or case types of scenarios. PBL has been difficult to describe given the developments in the methodology. There is a suggestion that teachers may not always be necessary with PBL group work (Kilroy, 2004). The role of teachers changes in PBL but remains critical to learning.

The PBL process designed in this situation allows for the students to possibly come up with an end solution in terms of trying to answer a problematic question associated with their topic, complete research on their topic, and present a final product in a Final Summative Assignment. In other words, this PBL method attempts to be specific in design to incorporate some other active learning methods through the process and achievement of the final result.

LITERATURE REVIEW

The participants in this study were Grade 11 boys who all attend a private day all-boys Canadian Association of Independent Association (CAIS) school located in Westmount, Quebec, Canada. Crocco, Cramer & Meier (2008) completed a study on gender, technology and social studies from 1987 to 2007. They showed that there was a limited number of studies on that topic.

Teaching history is not easy. Students seem to struggle with events from the past in terms of finding connections to the modern world; some students may wonder if history even matters. The use of teachers using textbooks that provide disconnected facts, ideas and dates make the likelihood of meaningful learning weak, given the linear or retrieval of fact approach (Misco & Patterson, 2009). History classes often provide too broad a coverage of content (Misco & Patterson). This criticism has encouraged history teachers to consider new ways to approach learning about the subject and concepts.

A constructivist approach was consistent with the chosen PBL method and it drew on ideas from past research on history teaching, suggestions for a reverse chronology approach (Simpson, 1983), and an issues-centered learning approach (Engle & Ochoa, 1988). These ideas assisted with our PBL design method. The use of the multiple steps in the PBL method were those used by Boniface (2011). It was designed as a scientific method and modified for this social studies plan.

A good review of the hundreds of PBL methods, albeit primarily medical, is provided by Barrows (1986). His review demonstrates that many research gaps exist around social studies.

PBL METHODS

Gender plays an active role in consideration of this design and method. The participants in this study are all Grade 11 boys who all attend a private day all-boys school. This PBL design involved a five-step process, with two different classes of ten students, run concurrently once with Cohort Group #1 (2017-18) in the spring of 2018, and twice with Cohort Group #2 (2018-19). Three PBL examples of stimulus material involved twentieth-century historical content, beginning with World War Two (1939-1945) and concluding with the Cold War (1946-1991).

PBL#1 and PBL#3 were similar in that they both dealt with the Cold War (1946-1991) and were summative activities at the end of the academic year. The PBL #2 material was World War Two (1939-1945) and, best classified as a warm-up for Cohort#2-PBL #3 as the PBL processes evolved for teachers. Grade 11 Modern World History class, encompasses the period 1840-
1991. It begins with the Victorian Era and runs to the end of the Cold War (1946-1991). Our mandatory Contemporary World-class for Grade 11 students, as dictated by the Quebec Ministry of Education, is a current events class that deals with modern social studies from 1991; that year involved the collapse of Communism in the Soviet Union and the internet invention.

The Grade 11 World History class, is a full-year elective course option available for graduating grade eleven students at SHS. In the province of Quebec, Canada, students graduate after Grade 11: These boys are approximately 16 years of age. Cohort #2 (2018-19) was a stronger academic group than Cohort #1 (2017-18) in terms of academic achievement, work ethic, skills, and general interest in history as a subject. Ten students in each elective class enabled class reliable comparisons in reflections on student development associated with the PBL process.

The Province of Quebec, Canada, controls education; evaluation is competency-based. For example, two competencies here were Competency 1 (C1): Students will examine and interpret historical events using the historical method, and Competency 2 (C2): Students will construct consciousness of citizenship through the study of history. In Quebec, 60% is a pass; all twenty participants did pass. Figure 1 shows that marks were split evenly between both competencies for their Final Summative grade. For example, a grade of 50/60 would translate to mean 25/30 for each of the two competencies.

Originally a PBL guide through a PowerPoint was the tool used to introduce the PBL method to the students, and then the students followed through a number of slides that demonstrated what PBL is as a learning tool for students. Both Cohort Groups #1 (2017-18) and #2 (2018-19) were directed, through an on-going and teacher created Google Classroom, in the Grade 11 World History class, for resources, throughout both academic years, to review this new PBL teaching method. Cohort Group #2 (2018-19) practiced on World War Two (1939-1945) as the first of two PBL exercises.

The essential steps that all students followed were: 1. Meet the...
Problem (What is the specific question related to the problem that you wish to analyze?); 2. List Ten (10) Known Facts plus List Ten (10) Unknown Facts as this area involves students researching their topic to fill-in-the-blanks about any questions associated with their topic; 3. Generate Possible Solutions; Choose the Most Viable Solution; and 4. Report Solutions. The students were expected to work through the steps and then present their findings to the class. The teacher gives some advice, whenever sought, or if necessary. The second step of Known or Unknown Facts could be considered a two-step process as the goal is that students will analyze their topic through the different research analysis of fact-finding. It is an important phase as it allows the students to delve deeper into their selected topic through research.

Completing a Mind-Map on a selected History Unit got students thinking about all the possible topics that they wished to consider. Then students added all the important historical events that they might want to consider as topics to begin the process. It is a great starting point, and a great segue into the next PBL steps that students will have to follow to complete the process. Hopefully, they would work out a topic of interest faster than if they did not have this sort of information. Students were also encouraged to consider creating their own Google Docs so that they could continue to add their information to the topic, while assisting them with their organization. The students were encouraged to add their teacher and the Learning Strategist educator, a collaborator, in this case, to the Google Docs; student progress could be monitored in this way. This class did not have a set Learning Strategist but SHS has an advanced academic program in which there are two Learning Strategists available as resources for the entire school if necessary at any time.

To ensure that students fully appreciated the Cold War period a list of nine possible topics was available to pique their interest. The introductory PowerPoint for this PBL activity included other topics - Yalta Conference (Churchill, Roosevelt, Stalin); VE Day; Hiroshima/ Nagasaki; Cuban Missile Crisis; Kennedy Assassination; Gold Standard; Vietnam War for Independence; Black Panthers; and Peace Movement and Counterculture. More topics were suggested as well through the included website https://www.historyonthenet.com/the-cold-war-timeline-2/ (Rank, 2016) at the bottom of the slide suggesting additional topics to encourage the students to continue to explore and find a topic of interest for their further analysis. The topic of study was theirs to choose.

PBL focuses on student learning in a hands-on way instead of memorizing facts. It also urges students to use high-level thinking skills, which require them to analyze, create, defend, or evaluate, and the useful website of https://www.queensu.ca/ctl/teaching-support/instructional-strategies/problem-based-learning from Queen’s University (Kingston, Ontario), to help students understand PBL. The evaluation (assessment) process can be reviewed and detailed in the second class; setting up the structure is important.

Results: Reflections on the Worthiness of Elements of Process Coincidentally, the number of students (ten in each cohort group) was exact, and this contributed to a valid means of comparison between the two groups. The diversity of analyzing different topics, associated with the broad Cold War (1946-1991) historical period, did make comparison difficult. Students were encouraged to analyze different topics as one of the only means of teacher-control for this activity to avoid repetition of information when students presented to their peers: This also made group comparison more difficult. However, the use of pairs or groups will be possible in the future, and will permit students or a class to focus on a specific history topic, event, or person.

A bigger challenge with this PBL design was with evaluation (assessment). In terms of peer evaluation, the attempt to prevent collusion amongst the boys was not easy and raised issues about the validity of this evaluation. Evaluations used throughout and in the final product presentation, were also challenging to determine what exactly we were looking for in terms of student learning. Both the collaborator (SHS Learning Strategist) and I evaluated the students for all of their final presentations. There were many times that we wrestled, edited, and disagreed with each other in the process of attaining the evaluation method that we sought to address students’ learning. Having students assess their learning was a challenge as it is difficult for students to reflect on how they may have grown through the process.

As any educator knows with peer evaluation, another challenge is ensuring that collusion is not present because it may be hard for a student to be critical of a friend. Deals can be made! The pattern was predictable.

Cohort Group #2 (2018-19) utilized two PBL methods through World War Two and the Cold War era; whereas the Cohort Group #1 (2017-18) only did one PBL with the Cold War unit of study. It was difficult to compare both classes, so the focus was more about student outcomes and student-demonstrated learning.

Cohort Group #1 (2017-18) students analyzed the Cold War topics – What is the impact of Glasnost during the Mikhail Gorbachev era?; Why did the Afghanistan War in 1980 occur?; What contributed to the Cuban Missile Crisis?; What is the impact of the Technological Advances of Nuclear Submarines during the Cold War?; The Space Race - why the Soviet Union failed over
time?; What was the impact of the Vietnam War-Resistance War against the USA?; Reaganomics - how it contributed to a new economic model?; What is the impact of the Chernobyl, Ukraine (1986), incident?; What were the United Nations Security Council Challenges with Controlling China after World War Two?; and How did the KGB Illegal’s impact both Canada and the USA?

Topics were different; Cohort Group #2 (2018-19) analyzed the Cold War unit of study. Besides being a slightly stronger academic group, they had the benefit of having two runs at the PBL methodology, so this made for better final presentations. World War Two (1939-1945) presentations followed the same method, but the evaluation piece was brief and not heavily weighted in terms of impact. Topics included: What if Germany wins World War Two?; What if Japan did not bomb Pearl Harbor?; Why World War Two is the most complicated and most interesting topic to study, in history?; What military advancements around armored warfare occurred in World War Two?; How did World War Two contribute to espionage?; Why were the Allies well prepared for the D-Day Invasion?; What contributed to the Holocaust?; Why did Japan not surrender?; and What if there were not any medical advancements occurring in World War Two? One student did not present in this session for health reasons.

For Cohort #2 (2018-19), the selected topics for the Cold War by the ten students included: The Vietnam War: How could the United States have won the war?; John F. Kennedy and the connection to the Cuban Missile Crisis; Hiroshima and Nagasaki-How did it change the world?; What if The New York Times never published the Pentagon Papers?; Muhammad Ali- Why was there controversy with him?; What is the impact of the 1972 Summit Series in terms of impact on the political culture?; What is the impact of the Khmer Rouge Killing Fields in Cambodia; Who shot John F. Kennedy? and Could it have been avoided?; How did the British Invasion of the 1960s change music?; and What is the impact of the 1969 Woodstock Music Festival?

LESSONS LEARNED THROUGH THIS PBL METHOD

It was important for all the students to begin their PBL study with a question as it allowed them to focus not only on answering it, but also to consider the various alternatives to the question in terms of counter-arguments, or challenges that might exist. The process involved research, an analysis of historical perspectives about the issue; this is an important step to consider and, all students should begin with a PBL question to try to answer it as best they can. The critical thinking involved in this process is of value because the question encourages the students to think about the topic in a more diversified way; while understanding some of the complexity that can be associated with the particular question.

It is also important for a student to narrow the focus of a historical topic. For example, with the Vietnam War (1954-1973); 1954 is when the French were officially kicked out of Vietnam by the communist Viet Minh forces of North Vietnam, and 1973, was the year in which the USA President, Richard Nixon, officially withdrew the remaining American troops from Vietnam. Other historians may suggest that the war lasted from 1969-1975, given the intense conflict between the USA and Leader, Ho Chi Minh and the North Vietnamese, in this time, and 1975 as the final year when the South Vietnamese officially surrendered to communist North Vietnam. In 1976, Vietnam united the North and the South together as a Communist country. Students should be encouraged to narrow a focus with historical events that cover many years.

In terms of how the evaluation pieces changed, it was profound. It was necessary to devise a better method for Cohort Group #2. For Cohort Group #1 (2017-18), teacher evaluation was preferable, but two students evaluated each presentation. It was not as formal in intent, but notes were encouraged and a score out of ten expected. The two student evaluators were modified each time to encourage all students to complete at least one peer evaluation.

The evaluation piece was adjusted for Cohort Group #2 (2018-19) to be more formal, linear (in the sense of seeking connections), and diverse. All students in the group evaluated every presenter every time, allowing for at least nine evaluators for every presentation. A student self-evaluation form had to be completed by presenters; this was about their process and presentation, and both teachers completed an evaluation rubric as the student presentations occurred in real-time. In total, for every student presenter, there were three diverse forms of evaluation all weighted differently, and a total of 12 evaluations emerged for every student.

The PBL Essential Elements Checklist - Student Self-Evaluator (Figure 2) was used by students to immediately assess their presentation to the group and see connections with peer and teacher evaluations. The design of the student assessment form aimed for efficiency and ease of use; the presenter needed to check one of the boxes of Strongly Agree, Somewhat Agree, or Non-Exist for different criteria. This specific grade equivalency for each section was not provided to the student, ensuring they provided honest feedback about their presentation and the work that they put into the project. The teachers felt that this was an important
Aspect to keep private from the students so that they would better reflect on their presentation without realizing there was a mark attached to each of the boxes, and thus encouraged a fair assessment for Cohort #2 (2018-19). The biggest problem we had with the Cohort Group #1 (2017-18) was the evaluation piece so we were happy with the process, and many of the student presentations demonstrated good levels of learning (See Figure 3: Project Design Rubric - Grade 11 World History- 2017-18).

Project Design Rubric - Grade 11 World History - 2017-18 lacked specific criteria for each category. All evaluators assessed each presentation based on a rough estimate of the criteria to determine a sense of what grade the student deserved; it was not ideal for PBL; adjustments occurred for Cohort Group #2 (2018-19). Evaluators also tended to assess the presentation out of ten marks based primarily on whether the student presented ten points or facts. It needed work! One Rubric used for Cohort Group #1 (2017-18) - (Figure 3) was poorly designed, with four areas assessed and within each, there were different criteria.

The final evaluation chart for Cohort Group #2 (2018-19) (Figure 1) shows how the distribution of the final 60 marks: It was equally teacher and peer evaluated to make up 24 marks for each criterion, 48 in total, leaving the last 12 marks to the student’s self-evaluation. The aim was to have a balance between both the student peers and educators. The evaluators were the observers and, it seemed to make the most sense for validity and reliability to have these two areas of equal value. This evaluation method allows for balanced teacher and student-centered control. The student self-evaluation piece involved 12 of the 60 marks, and half of the teacher and peer evaluation pieces, to avoid the possibility of a student generously or more-harshly evaluating themselves. It also emphasized the importance for students to present their findings well to their audience, informing them...
about their selected topic. Students used evaluation forms to conclude the process; they could also view the teacher’s comments.

From Figure 4, it is evident that the teacher’s evaluation for Cohort Group #2 (2018-19) was much more extensive in defining each of the criteria in the rubric. As the educator was in charge of running the class, the expectations for a more thorough and detailed evaluation method was necessary. All evaluation items were available to students before their presentations. Of the four, level 4 is a key student goal when they present.

The six criteria in this rubric were:
- Use of Research and Historical Connection (the student should demonstrate research skills that linked to facts, believable and referenced evidence);
- Appropriate Word Choice - spelling, grammar, and context (students should conduct a review of the final product in terms of editing);
- Required Elements for the Project (student completed and demonstrated all areas of PBL);
- Originality (in the design of the presentation);
- PBL Counter-Argument (the student was able to assess an argument that conflicts with the primary issue raised from their PBL analysis); and
- Final Oral Presentation to the Class

Learning outcomes about their topic should be evident from their findings.

There is a direct correlation between the student’s evaluation method (Figure 6) and the Final PBL Evaluation Chart (Figure 1), for Cohort Group #2 (2018-19); one difference was that the students were encouraged to complete a Likert Scale in one and meet the criteria within a Rubric in the other. The intent was to make it easier for the students to simplify their grading and encourage them to complete peer assessment tasks. For Group #2 (2018-19), more detail was added for Group #1 (2017-18), as seen in Figure 5.

INSIGHTS INTO PROCESSES AND OUTCOMES

Cohort #2 in 2018-19 was successful as teachers were able to gauge progress on PBL on two occasions. Processes improved as we worked through and continually engaged with the students for ways to make learning better for them. Cohort #2 (2018-19), in comparison, with Cohort #1 (2017-18), were a little bit stronger as a group in terms of work ethic and achievements led to better results. It was a successful PBL tool for both groups as the majority of student presentations were well done, and demonstrated sound student learning. It was easier for students the second time: Outcomes were evident in the use of PowerPoint, the story-lines about their topic, bristle board presentations outlining their findings.

For Cohort #1 (2017-18) and Cohort #2 (2018-19), at least three of both student groups could be classified as showing merit, especially the less academically-inclined boys; 6-8 boys in each
cohort group completed sound PBL studies. One student did not complete the PBL methodology as well as they might have done. All of Cohort Group #2 (2018-19) presented well and validated PBL as appropriate for social studies teaching. Evaluation methods were tighter than those used for Cohort Group #1 (2017-18); the double method processes also involved a more comprehensive evaluation scheme. While the Cohort Group #1 (2017-18) results were also impressive, the limited easier evaluation method(s) curtailed full assessment of the PBL method.

Some strong student outcomes were evident from Cohort #1 (2017-18) who were considered weaker than Cohort #2 (2018-19) based on academic achievement and skills demonstrated throughout the year. Their above average results may have been a result of an evaluation method that needed work. The Project Design Rubric, (Figure 3) was taken from another source, and was not PBL focused in design. Both teachers did not like the evaluation methods but the results indicated the need to try again the next year, formulating our own evaluation method and rubrics.

**BENEFITS OF THE PBL METHOD**

One benefit of the PBL method was the use the School Learning Strategist as a collaborator to assist with the process. Constant contact was maintained in-person, over lunch meetings, through the use of Google Docs (so that we could continue to add information or contribute questions to the process), and via e-mail. When designing and implementing PBL, it was clear that working with a learning strategist made for a better product. Students had learning differences and the collaborator was familiar with this dynamic in his school role; he was able at times to direct the boys more with their specific focus to enhance their skills. Some of the boys were comfortable meeting in his office to achieve more clarity or ask questions.

The collaborator was valuable because he was a great sounding board, and his ideas shaped and contributed to this final PBL process. He evaluated all the presentations as I did; it was a great way to discuss each performance and to compare and

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**Figure 6.** Final PBL Grade 11 World History Evaluation Chart.
gauge our evaluations. There was only one student's evaluation that led to a dramatic difference between the two of us. Further discussion led to a consensus on the student's mark. Final summative evaluation pieces involved a total of twenty students, who presented their findings, so only one outlier is encouraging. 

In terms of gender studies, as this teaching method was used exclusively on boys, it would not be fair to comment given that girls not part of our school. However, this method should be just as effective with female students. It was a successful method for the Grade 11 students, so the principles should work for any Grade 9 to 12 social studies class.

A benefit of this initiative was that students analyzed a diverse range of history topics, progressed their selected learning event/s and presented their findings to each other. Beginning with a problem-based question is a great place to start, and the step-by-step methodology was also valuable as it was not so difficult that a student could not work through it. Having different steps in scaffolding increased the student's learning through the completion of the necessary steps to get to a final solution. The building blocks were required to improve or layer the work.

The boys enjoyed the process as they worked through their topics. It was not uncommon for the students to modify or change their original choice after the process began. This change should be welcome because students, in this learning method, are to do their learning through analysis. I recall one student who wanted to study the Vietnam War (1955-1973), and discovered very quickly that he needed to modify his topic to be more specific with his analysis of why the United States may not have won the war? He learned very quickly that this is too broad, controversial, and it would be too deep for a proper analysis in the limited time that we have for this activity. He narrowed the focus to analyze his selected interest to look more specifically at US military strategies associated with the Vietnam War.

**CONCLUSION**

PBL methods can work well in History classes, and there is the possibility that this learning and teaching method be applied in other social study classes. Given the nature of social studies often involving conflicting interpretations, and the encouragement for
students to resolve what has contributed the most to impacting a debatable topic, this PBL design concept is beneficial. The students presented some comprehensive findings and frequently surprised us with their analyses, creativity, and knowledge about their selected topics. This method works well with male students, and the various steps contribute to an approach that encourages students to analyze a topic of their interest and learn more about it through a PBL method. PBL is a valuable option as a teaching tool. Using PBL twice a year enhanced the final product. The first PBL offering could have been quicker, and more about working through the process to understand it as we did with Cohort Group #2 (2018-19). The second run was all about student learning outcomes seen through a comprehensive finished product. The second run-through can also be incorporated as a culminating Final Summative activity to end the process.

ACKNOWLEDGEMENTS

Thanks to the Collaborator- Senior School Learning Strategist, Sebastien Lajoie, at Selwyn House School (SHS), for his contributions, great ideas, dedicated work, advice, and assistance provided to the students throughout this PBL social studies initiative.

SHS financed the requirements that were associated with my graduation in 2019 with eight other educators from Canada that are part of the Canadian Association of Independent School Association (CAIS). Thanks to the CAIS Next Steps Directors, Val Cambre, David Hadden, David Robertson, and Dr. Barry Wright for their advice and support in leading the program.

Thanks to Professor Margaret McMillan for reviewing the manuscript and offering editorial suggestions.

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