CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

PROJECT BASED LEARNING

FOR STUDENTS WITH MILD TO MODERATE LEARNING DISABILITIES

WITH AN EMPHASIS ON ECONOMICS CURRICULA

A graduate project submitted in partial fulfillment of the requirements

For the degree of Master of Arts in Special Education,

Mild/Moderate Disabilities

By

Joseph Christopher Mendizza

December 2012

The graduate project of Joseph Mendizza is approved:

_____        _____

Monica Boomgard, M.A.                                     Date

_____        _____

Carol Shapiro, Ph.D.                                       Date

_____        _____

Tamarah M. Ashton, Ph.D., Chair                      Date

California State University, Northridge

TABLE OF CONTENTS

ABSTRACT

PROJECT BASED LEARNING

FOR STUDENTS WITH MILD TO MODERATE LEARNING DISABILITIES

WITH AN EMPHASIS ON ECONOMICS CURRICULA


By

Joseph Christopher Mendizza

Master of Arts in Special Education,

Mild/Moderate Disabilities

Project Based Learning (PBL) is a current educational trend that has been
popularized in the past twenty years as being an effective alternative to traditional
teaching methods.  The core philosophy behind PBL is to give students' access to
curriculum through self-directed, motivating projects that develop students' academic,
problem solving, and inter-personal skills.  Successful implementation of PBL requires a
high degree of teacher training of PBL delivery with regard to curriculum content.  PBL
has shown to improve students' comprehension and retention of content compared to
traditional teaching methods when teachers have received thorough training.  Most PBL
research has focused on students in the general education setting; however PBL
instruction for students with mild/moderate learning disabilities (LD) has received little
attention.  The purpose of this literature review is to inform reader of the what PBL is, to
provide a background of research that supports the use of PBL, to identify the
traditionally special education functions that exist within the process of PBL, to convince

the reader that PBL and economics curriculum are a natural fit, to justify the

implementation of the modified economics PBL unit, and to address the criticisms of

PBL.  Additionally, this graduate project provides a series of PBL templates designed for

use in the special education setting.

# CHAPTER I

## INTROCUTION, HISTORY, AND PURPOSE OF PBL

The purpose of PBL is for students to learn in a naturally engaging and motivating way that not only improves students' knowledge of a subject, but also increases their interpersonal, creativity, accountability, peer acceptance, collaboration, planning, and organizational skills, all of which are necessary for success in the 21st century workplace. (Bell, 2010)  In PBL, students solve realistic (although usually simulated) problems or answer broad questions that reflect the decisions and dilemmas that industries face every day. (Mergendoller, Maxwell, and Bellisimo, 2006) PBL falls within the range of constructivist instructional approaches.  According to constructivist theory, learners acquire knowledge through activities that are designed by teachers to promote deep understanding instead of superficial and short-term memorization.  Constructivists believe that the nature of learning is complex and nonlinear (Fosnot 2005).   Additionally, constructivist theory states that knowledge is built socially through structured interactions and collaborative efforts centered around a meaningful task (Jonassen, Howland, Moore, & Marra, 2003).  Hernandez-Ramos and De La Paz (2009) summarize constructivist principles as follows:  Students bring with them their prior knowledge and beliefs into a learning situation, knowledge is built uniquely and individually through an assortment of tools, resources, and contexts; learning is an active and reflective process,  learning is developed through assimilating, accommodating, or rejecting information, and social interactions expose students to multiple perspectives.

PBL incorporates all of these principles into its theoretical approach to learning. It emphasizes student-centered, collaborative, and integrated learning with real-world issues (Müdriye, & Figen, 2010).

Teachers have likely been implementing projects with their students likely for as long as education has existed. PBL was first implemented in medical education and is now used throughout all tiers of learning (Chin & Chia, 2005). In 1989, the Carnegie Council on Adolescent Development (CCAD) stated that serious changes needed to be made to the culture and curriculum of American middle schools to ensure the success of students as they began their lives in the 21st century. The CCAD recommended an increase in the use of inquiry-based instruction in order to improve critical reasoning skills. As a result, much general research on PBL was first conducted in the early 2000's, indicating it is a viable and worthwhile method for students to learn in an engaging and meaningful way. PBL in its current structure and methodologies was introduced in the late 1990's by the Buck Institute of Education as a response to American educational reforms. Astrid and Cooper (2000) found PBL to be one of the most effective learning strategies for constructing knowledge and creative thinking. Additionally, PBL allows students to develop reflective thinking and problem solving skills (Fatma, Funda, & Mustafa, 2011).

Project Based Learning (PBL) is an increasingly popular method that is used as an instructional response to the challenges that students will face in the 21st century. PBL involves student and teacher generated questions, often regarding a scientific or social problem (Filippatou, 2010). PBL is student driven and teacher-facilitated. Through their natural curiosity, students pose questions that catalyze in-depth research. Teachers

facilitate this process by assisting students, either as individuals or whole class, to refine a driving question from which research can be sought. The discoveries made by students are then presented to an appropriate audience, usually consisting of fellow classmates and the teacher, but may also incorporate other school staff as well as community members who may have particular knowledge of the content being presented by students.

One example of how PBL was put into action is described by the author, as implemented in his 9th grade Health class composed of students with mild to moderate LD. A question was posed by students and refined with teacher assistance: "What do the students on campus know about sexually transmitted diseases and how can we correct their misconceptions?" Students determined that the best way to find out was to survey students and provide them with an informative, student created brochure about sexually transmitted diseases.

Bell (2010) offers another sample of the PBL process. Middle school students were instructed to choose a topic about an aspect of life in ancient Greece. After selecting a topic, each student researched independently and wrote a paper. Following the paper, students formed groups to develop a presentation, such as a performance or debate. A benefit to having students present their projects to a variety of audience members, including the teacher, peers, school staff, and community members, is that performance anxiety is a factor that motivates students to do their best (Hernandez-Ramos & De La Paz, 2009). The teacher graded students' proposals, research notes, work habits, presentation, and paper. Students complete a self-evaluation and a project reflection.

Throughout the process of PBL, students learn self-reliance, planning, and organization. As explained by Bell (2010), students can begin by using organizers to narrow a question that will incite further inquiry and research. Another method promoted by the Buck Institute of Education (2012) is that the teacher provides a "driving question", often in the form solving a problem, such as "How do we ensure the school's drinking water is safe?" This type of question can produce multiple solutions posed by students. Once a question is refined and approved by the teacher, students identify ways t0 conduct research. Depending on the content of the curriculum and purpose of the research, students may wish to rely on traditional library and internet research, or conduct surveys, make observations, or experiment in order to gather original data. Once the research is analyzed, the individual student or group of students decides the best way to present their findings. This is where students have the opportunity to express and explore their creativity. They have opportunities to be creative, communicative, and develop critical thinking and problem solving skills (Solomon, 2003). In addition to these steps, Bell (2010) explains that goal setting is another component of PBL. These goals may be weekly, daily, or even hourly, and students are expected to reflect upon the completion of these goals and determine ways they can more efficiently tackle them.

While teachers may allow the options for students to work independently on PBL, a richer approach to the instructional strategy is to require that students work in groups. This collaborate group work is key to developing the 21st century skills of collaboration, negotiation, and communication that PBL seeks to strengthen. Bell (2010) explains that when students work collaboratively, they have an expectation that each student will contribute equally to the research and presentation of results. This is a method of

productively using peer pressure, as each student is accountable to the other. Teachers

may wish to grade each student individually, and/or grade as a group. Grading the

project as a group puts added pressure on all students to pull their weight.

Another feature of PBL instruction (Bell, 2010) addresses is social learning and

collaboration. Through the process of PBL, students learn to better communicate,

negotiate, and collaborate. These include good listening skills, and teacher may wish to

instruct the class on how to be active listeners. Other aspects of social learning that

students achieve through PBL are productive communication, respect for others, and

teamwork (Bell, 2010). At the end of the project, students complete a self-evaluation

regarding the success of their social interactions.

# CHAPTER II

# LITERATURE REVIEW

**Technology and PBL**

A benefit of technologies such as Web sites, digital video, interactive programs, podcasts and computer software, is that they are capable of supporting rich, multifaceted, and nonlinear educational content and understanding (O'Brien, Grill, Schwartz, & Schlicht, 2006). Kingsly and Boone (2008) indicate that using commercially available technology in the classroom (eg., laptop computers with applicable software, iPads, SMARTboards, digital video cameras) result in small but positive effects on student achievement. Additionally, long-term retention of information is improved for students who learn through Web-based collaborative environments (Heafner & Friedman, 2008). Technology has become standard use in most PBL because it is necessary for acquiring $21^{st}$ century skills that PBL seeks to develop. Technology performs several functions throughout the process of PBL. It motivates students, fosters creativity, and facilitates research. Many of today's students are "digital natives" (Prensky, 2001) and fluent in the language of computers. Many technology applications can be used throughout the course of PBL, most often it is in the form of internet searches, during which teachers instruct students on how to determine the reliability of sources and inform them about the practices of safe internet use. Students can also blog with other students in order to solve project challenges.

Technology is a popular tool for end-of-project presentations. Students can create interactive PowerPoint presentations, podcast, display data with Excel spreadsheets and

graphs, or create how-to videos. The possibilities are almost limitless, and expand as technology improves. These possibilities tie into the crucial element of choice and differentiation, discussed later in this literature review, that makes PBL an effective instructional strategy. It is important to remember however, that students need guidance to use technology safely and effectively (Bell, 2010). It is important that students learn how to navigate the internet cautiously and to determine the credibility of sources of information.

"Americans want numbers when they look at students, schools, state education systems, and how America's students compare to those of other countries" (Barton, 1999, p. 4). Most of what students gain through PBL cannot be quantified and is not measured by standardized tests. As of yet, there are no state assessments that measure a student's interpersonal skills, ability to set and reflect upon goals, or to teamwork. There is little authentic, applicable curriculum in place for these skills, and standardized tests do not measure them. As explained by Bell (2010) PBL success is measured in rubrics and student self-evaluations. Some evaluations include reflecting on how well they worked in a collaborative group, negotiated, listened, and welcomed outside ideas. Additionally, students self-evaluate their projects, presentations, efforts, and productivity levels. They also provide their team members with constructive criticism. In turn, students become aware of their own strengths (Bell, 2010).

**Research Data Regarding PBL**

Research has shown that students who participate regularly in PBL obtain higher scores on their state standardized testing than do their peers who receive more traditional deliveries of instruction (Geier et al., 2008). Students who learned by means of PBL

were three times as likely to receive the highest possible score on British national standardized exams (Geier et al., 2008). In a study during the initial popularity of PBL, three Iowa schools raised their *Test of Basic Skills* scores from "well below average" to the district average, and in two schools they scored "well above the district average." (Thomas, 2000, p.9) In an urban, racially diverse Boston middle school, eighth graders achieved the second highest scores in the district on the *Stanford 9 Open Ended Reading Assessment* (Thomas, 2000). Middle schools in Maine that used PBL for 1 year showed significant increases, 3 to 10 times more than the state average, in achievement in all academic areas on the *Maine Educational Assessment Battery* (Thomas, 2000).

Because of its various features, PBL is a more effective means of adapting to students' various learning styles than the traditional instructional model (Thomas, 2000). Additionally, Thomas's findings indicate that the team work and corporative learning skills required in PBL prompts reluctant and disengaged students to become motivated and engaged. According to Wurdinger, Haar, Hugg, and Bezon (2007), PBL increased the learning and engagement of both high and low performing students who were able to learn at their own pace.

Additionally, cooperation through PBL has shown that working in groups positively affects the social acceptance of children with disabilities by their non-disabled peers. Students who need help can receive it from their peers who may be able to clarify questions in more understandable terms. This causes students with learning difficulties to learn and utilize problem-solving strategies (Filappatou, 2010).

Many PBL studies were conducted in the early 2000's, and as the years progressed, the studies became progressively more specific, usually focusing on an age

group or a specific curriculum area, often social studies or science. With over a decade of studies and research on PBL, few have been conducted pertaining specifically to students with mild to moderate LD.

Guven and Duman (2007) did target students with mild LD. Seven elementary school students placed in a self-contained classroom participated in a PBL curriculum in order to investigate its effectiveness in Istanbul, Turkey. Guven and Duman (2007) delivered a three-phase PBL unit to seven elementary students regarding community businesses. A pre- and post-test was administered that revealed PBL was an effective learning tool for students with mild to moderate LD. Additionally, students were able to maintain interest in the topic. The teacher also reported positive feelings about the effect of PBL; the project enabled students to apply knowledge and skills in a natural context.

Guven and Duman's (2007) state PBL allows teachers to deliver individually and developmentally appropriate content for students of all learning levels. Also, PBL causes students to see their classroom environment as a collaborative communities, and develops a sense of obligation to each other.

Filappatou (2010) studied of a group of 25 middle school students with mild LD who were included among their non-disabled peers for instruction. All students acquired new knowledge of terminology and categorization. Students with LD improved their attitude regarding self-efficacy and group work, and after the study, these students believed they could perform at a higher level in the specific subject area than they had before the project was implemented. All students, both with and without LD, reported they learned better and were able to retain more information than with traditional teaching, such as direct instruction, teacher talk, and independent study. Additionally,

9

students found the project structure to be amusing and more motivational.  Overall, 22 out of 24 students with LD reported that they found their project to be more effective.  Five of the 24 students with LD however, reported that while they learned more from the project, their role in the group was passive.  They listened and followed the directions of more assertive students: however, they did not volunteer or take on any leadership type roles.  Nine of the 24 became accustomed to a more active position among their peers through discussion, cooperation, and negotiation.

Filappatou's (2010) findings coincide with results by Guvan and Duman (2007) that revealed an improvement in the performance of students with LD after the implementation of PBL.  Additionally, students with LD acquired a more positive attitude towards group work, as well as increased social acceptance and involvement in the learning process.  Often students with LD initiated dialogue among their group when they needed assistance.  This lead to clarifications, the exchange of ideas, and an increase in involvement.  Both Filappatou (2010) and Guvan and Duman (2007) found students with LD were more engaged in the process as opposed to traditional teaching which required these students to take a more passive approach.

Hernandez-Ramos and De La Paz (2009) conducted a study consisting students from two middle schools in Northern California.  They focused on students' ability to learn historical information.  Their assessment consisted of a pre- and post-test.  Students from the intervention school received a technology incorporated PBL unit of digital primary and secondary sources, while students at the control school received quality non-PBL instruction.  Both sets of students were delivered a six-week curriculum covering the same academic standards.  Groups of students consisted of a heterogeneous mix of

learning abilities; however students with IEPs were not identified specifically in the study, and therefore their individual post-test gains cannot be reported.  The study's data revealed that 11% of both schools' populations had LD and that they were integrated into general education classrooms.  Even though the individual scores of students with LD were not included in the study, their scores are meaningful because they contributed to the overall gains achieved by the PBL intervention group.

Students from Hernandez-Ramos and De La Paz's (2009) PBL intervention group were assigned to a small group of students.  Each individual student in the group was directed to choose one geographic region of the Western United States to research.  Their combined research would result in a collective project presented by the group as a whole.  This allowed the researchers to not only measure what the students learned about their own geographic region, but also measure what they learned from their fellow team members as a result of the PBL process.

Hernandez-Ramos and De La Paz's (2009 came to several conclusions.  The pre-tests indicated students with both the contrasting and intervention settings did not differ significantly in initial knowledge of the content.  After completing the six-week instruction however, students who participated in the PBL group and created a multimedia presentation learned more than those who did not in the contrast group.  In both the subtest and overall test of the study, the PBL intervention group scored significantly higher than the contrast group receiving whole-class instruction.  Furthermore, Hernandez-Ramos and De La Paz (2009) found that students who were delivered the PBL instruction were more engaged in the historical thinking that was expected of them than their whole-class counterparts in the contrast group, despite the

new demands of a multimedia project that was demanded of them. Additionally, students in the PBL group used a variety of secondary technology based sources that were selected by students at their judgment. This created a degree of differentiation that is sought when delivering content to students with LD, and further supports the use of PBL for this population. Also, students in the intervention group were able to gain and present a richer understanding of the historical curriculum instead of just presenting facts. In addition to these academic achievements, the study found that PBL instruction resulted in several positive social gains as well, such as an improved ability to work with others. Students at the PBL interventions school rated the experience positively, agreeing that it improved their learning, that it was enjoyable, and that the skills they learned could be applied to future projects.

Additionally, Hernandez-Ramos and De La Paz (2009) attempted to measure the positive attitudes and beliefs of students about social studies. Their study suggests that most students who participated in the PBL intervention gained positive views about working collaboratively to create a multimedia project. This conclusion is consistent with other studies involving technology-integrated PBL instruction (Scheuerell, 2008).

A few limitations existed within the study by Hernandez-Ramos and De La Paz (2009). Concerning this thesis project, the project was limited with regard to the researchers' access to knowledge about students with LD. Whether permission was not granted to have these students identified, or if it was not a concern to the researchers is unknown, but for those interested in the results of students with LD, this information would be particularly valuable. A limitation addressed by Hernandez-Ramos and De La Paz (2009) was that due to the constrictions of state standards, students were given no

opportunity to provide input to develop their driving question. The authors do not reveal their rationale for this limitation. One possible solution for this would be to present the standard and substandards of focus, and have students brainstorm questions about it. With assisted refinement from the teacher, the students may be able to develop a driving question. For example, in a high school Economics class, the teacher could present the California Economics standard 12.2 #2: Discuss the effects of changes in supply and/or demand on the relative scarcity, price, and quantity of particular products (California State Board of Education, 1998). The teacher could guide the students to ask a driving question such as "How does supply and demand affect the local communities of Los Angeles?" This driving question directly addresses the standard and makes the standard relevant to the lives of students who live in Los Angeles. Students would be able to each focus on a different community, research how supply and demand impacted scarcity, price, and quantity; and bring that information back to their team in order to compose a group project.

A study by Belland, Glazewski, and Ertmer (2009), sought not to determine the positive results of PBL, but to understand the roles taken by students in mixed-ability PBL groups. They wanted to 1) understand the difficulties faced by included students in PBL and 2) understand the roles taken by students with a learning disability within their PBL team. To answer their questions, Belland, et al. (2009) filmed 20 seventh-grade science students who participated in a PBL unit. The central problem addressed in the project was about genetic decoding, and students had to form an argument from the position of science and religious leaders. The researchers' findings in the form of observations focused on three students in one PBL team. Student A focused mainly on

13

the big picture of how to solve the problem, and paid little attention to the steps that needed to be carried out in order to solve it. Student B focused on breaking tasks down into manageable steps, as well as understanding concepts presenedt in the curriculum. Student B however, had difficulty understanding the overall concept of the project. Student C took on the role of task-performer, but had trouble understanding big-picture and small-task strategies, as well as the content of the project. Additionally, student C gained confidence in his public speaking skills. Most importantly, researchers observed that the students were able to support each other and come up with solutions as a team. They were able to compensate for each other's shortcomings and all were instrumental to the group's success. Overall, the study concluded that students felt more engaged than during typical teacher-led instruction, which these students called "boring."

A study by Ravitz,, et al. (2010) attempted to provide evidence for the effectiveness of PBL in high school economics. Five curriculum units were designed by the Buck Institute for Education (www.bie.org) regarding economics and problem solving. The researchers went to great lengths to prepare participating teachers in the intervention group for the course of PBL lessons. Thirty-five teachers from California and Arizona underwent a 40-hour economics course for teachers that covered 50% to 70% of the states' Economics content standards. The course also contained information on how to deliver PBL modules. Participating teachers received materials for use in the classroom during implementation of the Economics projects. The study examined whether the curriculum improved students' economics knowledge as measured by the *Test of Economic Literacy* (TEL). It should be noted that the 40-hour Economics/PBL professional development (PD) including student materials was delivered to participating

teachers who were already considered qualified in Economics instruction.  This study

was federally funded and most school districts cannot afford to match this type of PD for

their teachers.  It would be unrealistic to expect the same results from teachers who have

not undergone such extensive targeted PD.

As stated by Geier et al. (2004), implementing a thoroughly realized, in-depth

PBL project presents several challenges, especially for diverse urban school systems.

Such challenges include a lack of resources, high levels of poverty, low student

achievement, below grade level English proficiency, families who move often,

attendance problems, and recruitment and retention of highly qualified teachers.  Geier et

al. (2004) adds that PBL instruction may be challenged by culture, policy, and the

management of school districts.  Inquiry instruction, such as found in PBL, should

include materials and issues that are culturally relevant to students with diverse

backgrounds (Lee & Luykx, 2005).  The final portion of this graduate project is a PBL

unit that seeks to overcome some of the PBL difficulties typically encountered by

schools, particularly training, resources, and adaptations for students with special needs.

Mergondoller et al. (2006) sought to understand the difference in student

achievement on pre- and post-test macroeconomics knowledge between students

receiving PBL instruction and those in traditional instructional environments.  Their

study included five teachers from four different high schools in a large northern

California metropolitan area.  All of the teachers taught the same Economics standards

using a PBL approach to one class, and a lecture-discourse approach with another.  A

total of 346 students participated.  Pre- and post-test results indicated students in the PBL

class made greater gains compared to those in the traditionally instructed class.  Also,

individual students whose verbal ability was below average learned more in the PBL

class than they did in traditional lecture-discourse classes.  This is particularly promising

for students with LD, as many of these students experience difficulties with verbal

expressive communication.  Mergondoller et al. (2006), however, did not specify the

nature of these students' verbal challenges, such as whether they experienced stuttering,

verbal processing delays, or some other verbal skill deficiency.  The authors conclude

their findings supports the use of PBL instruction for students with limited verbal skills.

Mergondoller et al. (2006) also examined the impact of students' initial interest in

Economics as a factor influencing the effectiveness of PBL instruction versus traditional

lecture.  They found that instructional approach affects students' learning differently

depending on their interest in economics.  Results indicated that students who favored

Economics in the lecture-discussion class showed little change in their mean content

knowledge; whereas students in the PBL class with the same degree of interest showed a

significant gain in content knowledge.  As the researchers explained, it seems as though

students with a pre-instructional interest in Economics were able to capitalize on their

interest and use the open-ended approach of PBL to their benefit by expanding their

knowledge.

Strobel and van Barneveld (2009) conducted a meta-synthesis of meta-analyses

comparing PBL to traditional teaching in order to determine which was more effective.

Their purpose was to find common results across the meta-analyses with regard to the

effectiveness of PBL.  The authors formulated two distinct conclusions.  Regarding

measures of short-term knowledge assessed by multiple-choice format tests, the results

indicated that traditional teaching approaches were more effective.  Assessments that

measured recall rather than recognition, where students had to write and elaborate as much as they remembered on a particular topic, tended to favor the PBL instructional approach. Additionally, PBL instruction provided superior results in long-term knowledge memory of a period between 12 weeks to 2 years. It is this author's assumption and hope that teachers will agree that long-term retention of knowledge is preferable to short term. Additionally, Strobel and van Barneveld (2009) found that students and teachers experienced greater satisfaction with the PBL approach; however, studies have reported consistently that traditional teaching produced greater standardized achievement scores. However, when students were required to elaborate their knowledge beyond simple multiple-choice questions, the research favored PBL overwhelmingly.

**Criticisms of PBL**

A limitation of PBL is that it may not be effective for students who lack adequate baseline skills in reading and writing (Westwood, 2006). Also, as Filappatou (2010) found, students with memory difficulties often do not retain vocabulary knowledge. As explained by Bell (2010), students must be able to use their time effectively and be able to stay focused on the tasks at hand, which may be difficult for those with LD.

Other factors that PBL takes into consideration include repeated failure due to lack of motivation, as well as withdrawal, passivity, and low self-esteem (Sideridis & Scanlon, 2006). PBL can be a potential solution to remedying these challenges because it requires students become active participants, both in terms of research and communication, and it does so in a more student friendly manner because they have the option to choose the style and degree of involvement and communication, and to choose a method that they find most comfortable.

**Special Education and PBL**

Since the formal conception of PBL in the 1990s, a few researchers have studied its effects on middle school students with LD who were included in the general education setting. These studies suggest that PBL has both social and academic benefits for this population (Bottge, 2001). Cuevas, Lee, Hart, and Deaktor. (2005) revealed that inquiry instruction, such as utilized in PBL, can produce greater achievement for students who are low achieving, at-risk, and have LD. Many of these students are integrated into general education classrooms. They may face a variety of cognitive or psycho-emotional problems, and the majority of them have difficulties regarding oral and written production, as well as memory and attention difficulties (Lerner, 2003). . Additionally, they often have problems generalizing their learning into a real-world context (Lerner, 2003). PBL is a strategy that may work for our students who have LD. PBL incorporates strategies that are typically used by special education teachers, such as differentiation, scaffolding, and allowing students to learn at their own pace. While PBL can be used in the special education classroom, it is also applicable in classrooms containing students of mixed abilities.

Choice as a form of differentiation is an attractive element of PBL for students with LD. Allowing students to pursue their interests within range of the curriculum gives students with LD a sense of control over their education and assists in sustaining their interest and motivation (Bell, 2010). Because students choose their sources of information, they select options appropriate for their own level or they are motivated to read materials that are just above their reading level (Bell, 2010). Additionally, students choose their individual or group way of demonstrating their learning, whether it be a

video, presentation, essay, or portfolio.  An important part of student choice is that the participants reflect on the choices they have made.  This is typically done in a journal or in a structured group dialogue (Bell, 2010).  .

Scaffolded instruction, a series of decreasing levels of temporary support, is a function of PBL that has been associated typically as a strategy used for students with LD (Bell, 2010).  In PBL, scaffolding helps to ensure their success.  As a student achieves an academic goal with the support of teacher assistance, some of that assistance is removed the next time the student attempts a similar task, and is continually removed until the student can perform that task independently.  Scaffolded instruction allows students to make academic progress that is just beyond their reach. (Bell, 2010)

PBL is designed to create meaningful learning by linking students' prior knowledge to their current experiences.  Additionally, they promote self-direction, motivation, and employ various modes of communication, such as traditionally written papers, visual presentations, art projects, and debates.  These various modes of communication can be beneficial to students with LD, and the structure and openness of the projects are beneficial to all students because they can perform at their potential to the best of their ability (Westwood, 2006).

**Economics and PBL**

There is a need throughout the field of Social Studies, including Economics, to identify teaching strategies that will engage students, give them an understanding of how professionals in the field work, and to develop Social Studies knowledge and skills. (National Research Council, 2005).  Many students do not understand Economics and there is concern that their teachers do not have the content knowledge, relevant teaching

materials, or adequate PD to deliver Economics instruction effectively (Watts, 2006).

This is especially true for Economics instruction where students encounter abstract and

theoretical ideas that are not framed within the linear structure they may have previously

encountered in other Social Studies classes, such as History.  Economics instruction has

received increasing attention over the past 10 years at the state and federal levels.  Forty-

eight states have Economics content standards and 17 states require an Economics course

for graduation. (National Council on Economics Education 2007).  PBL has been shown

to be an effective and engaging method for delivering Social Studies instruction.  It is

important that students want to learn about Social Studies , not just so that they can pass a

test, but so they can grow into informed and effective citizens in democratic societies

(Bennett & Fessenden, 2006).

# CHAPTER III

## RATIONALE FOR GRADUATE PROJECT

This graduate project includes a series of PBL templates intended for student use with special education teacher guidance.  The templates are designed to take the major elements of PBL, such as the project question, reflection, and collaboration, and organize them in an easy-to-use manner.  The templates are designed for teachers who are not PBL experts and who may not have access to the extensive PBL training that research shows leads to PBL success.  It should be noted that these templates are not designed to encompass the entire PBL process, especially the work that students do towards the project.  The nature of PBL is open-ended, and to create a collection of templates that covers every possible path of a student project is not only outside the scope of this graduate project, but unrealistic.  The beauty of PBL is its capacity to take student learning anywhere- so where these templates lack, it is the special educator's expertise that must compensate.  Rather, these templates offer a solid starting and ending point for PBL.  One of the concerns when designing these templates was making sure they remained open-ended and flexible, while still providing structured guidance.  To accomplish this, an "other" category was added to most templates to accommodate additions the teacher or students would like to make.

The templates start with an activity that guides students towards creating a useful driving question by dividing the question into parts.  Examples of project questions are included.   This is followed by a checklist, allowing students to reflect on the quality of the question and to make necessary changes.  The third page of the template collection

allows students to decide how they wish to present their project, and offer them possibilities they may have not considered before.  These options do not have to be used in isolation, but students are encouraged to combine several project formats into one project.  A team consensus box is included to encourage collaboration skills.  This is followed by a resources page, providing students an opportunity to think realistically about what they will need to create their project successfully.  After the resource page, a daily reflection is provided.  This is intended for repeated use at the end of every day students work on their project.  It focuses on both the logistics of the project as well as their 21$^{st}$ century skills of collaboration and negotiation.  The next template is a collaboration checklist.  This is a useful tool that teachers can choose to use once at the end of the project process, or as part of the daily or weekly reflection.  Students look through a check list of collaboration skills and assess their own skill, as well as that of another peer.  Through repeated exposure to this exercise, the goal is that students will increase their collaboration skills.  The final template is a project rubric.  As mentioned earlier, PBL is intended to be open-ended, so a rigid rubric would defeat its purpose.  Instead, this rubric is designed to allow teachers to add to or eliminate items in order to better suit their students' needs.

It should be noted that while this literature review focuses on Economics instruction, this collection of templates avoids focusing on a specific content area in order to make the templates more open-ended and accessible to teachers of all content areas, but specifically middle and high-school.

**CHAPTER V**

**CONCLUSION**

Overall, the research has produced findings that are in favor of PBL use. Some key points of PBL success include improved attendance, which is found to be higher in PBL schools (Thomas 2000). Also, evidence found by Gultekin (2005) reveals that students develop better research, problem solving, and higher-order thinking skills when experienced in PBL. This may be in part because PBL is highly engaging to students, increases their involvement, interest, and investment in learning,, while raising self-esteem by beginning the cycle of success (Dopplet 2003). Regarding PBL and standardized test scores, PBL students underperformed slightly in regards to short-term retention. Most teachers agree that the goal of instruction is skill development and long-term retention. Thus, preference should be given to instructional strategies that focus on students' skill development in authentic situations, as is the goal of PBL, and their long-term knowledge retention, and not on their performance on tests aimed at short-term retention of knowledge (Strobel and van Barneveld, 2009). Since high school exit exams test content students have learned over the past several years, schools could see improvements in scores if PBL were implemented. In addition to skill development and long-term retention, the emotional benefits of PBL, such as increased confidence and feelings of peer acceptance, are well documented in research, but have not been given as much emphases as objective or standardized test score results (Strobel & van Barneveld, 2009). There are no studies that suggest that PBL has an overall negative impact on student achievement or emotional development, but there are a few results that point out

23

some flaws of PBL.  The most significant flaw is revealed by Kirschner, Clark, and

Sweller (2006) who found that PBL fails when teachers have been given minimal

guidance.  By failure, this means that test results do not improve beyond the scores of

non-PBL peers.  Another criticism of PBL is that it can be challenging for students and

teachers to develop a driving question that is both motivating and interesting to students

and encompasses the content of the targeted standard (Caron, 2005).

   Initiating PBL instruction can be an intimidating task for teachers unfamiliar to it.

The intention of this graduate project is to offer middle and high school special educators

an easy-to-use, structured, yet flexible, PBL tool with the research background to support

its use.  The PBL templates and research will contribute to the field of special education

by easing teachers into delivering PBL instruction, and hopefully inspiring them to

pursue more in-depth PBL exploration so that their students can achieve long-term

conceptual understanding of content.

**REFERENCES**

Astrid, K.V. & Cooper, L. (2000).  Exploring the transformative potential of project

    based learning in university adult education. *Studies in the Education of Adults,*

    *32*(2), 212-29.  Retrieved on April 18, 2012 from

    www.internationalsped.com/.../0%2022%20%201%20complete.doc

Barton, P. E. (1999). Too Must Testing of the Wrong Kind: Too Little of the Right Kind

    in K-12 Education.  *New Jersey: Policy Information Center.* Retrieved on April 3,

    2012 from http://www.ets.org/Media/Research/pdf/PICTOOMUCH.pdf

Bell, S. (2010). Project-based learning for the 21st century: skills for the future.  *Clearing*

    *House, 83*(2), 39-43.  doi: 10.1080/00098650903505415

Belland, B. R., Glazewski, K. D., & Ertmer, P. A. (2009). Inclusion and problem-based

    learning: Roles of students in a mixed-ability group. *RMLE Online: Research in*

    *Middle Level Education, 32*(9), 1-19.  Retrieved on April 3, 2012 from

    http://www.amle.org/portals/0/pdf/publications/RMLE/rmle_vol32_no9.pdf

Bennett, L., & Fessenden, J. (2006).  Citizenship through online communication.  *Social*

    *Education 70*(3), 144-146.  Retrieved on March 9, 2012 from

    publications.socialstudies.org/se/7007/700706450.pdf

Bottge, B.A. (2001). Building ramps and hovercrafts-and improving math skills.

    *TEACHING Exceptional Children, 34*(1),16-23.  Retrieved on December 2, 2012

    from

    http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1

    &ved=0CDQQFjAA&url=http%3A%2F%2Fciteseerx.ist.psu.edu%2Fviewdoc%2

Fdownload%3Fdoi%3D10.1.1.200.5296%26rep%3Drep1%26type%3Dpdf&ei=b

AC8UI2TBe7jigL8loHYBQ&usg=AFQjCNHfla9-O4jFpF16N42fxgrAJBtWZA

Buck Institute of Education, (2012). Retrieved on April 1, 2012 from

http://www.bie.org/about/the_bie_story/

California State Board of Education. (1998). *History-social science content standards*

*for California public schools. Kindergarten through grade 12.* Sacramento, CA:

Author. Retrieved on March 7, 2012, from

http://www.cde.ca.gov/be/st/ss/documents/histsocscistnd.pdf

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing*

*American youth for the 21st century.* New York, NY: Carnegie Corporation.

Caron, E. (2005). What leads to the fall of great empires? Using central questions to

design issues-based history units. *The Social Studies, 96*(2),51-60.

Chin, C., & Chia, L. (2005). Problem-based learning: Using ill-structured problems in

biology project work. *Science Education, 90(1),* 44-67. Retrieved on November

24, 2012 from

http://olms.cte.jhu.edu/olms/data/resource/6259/problem%20based%20learning%

20biology.pdf

Cuevas, P., Lee, O., Hart, J., & Deaktor, K. (2005). Improving science inquiry with

elementary students of diverse backgrounds. *Journal of Research in Science*

*Teaching 42*(3), 337-357. DOI: 10.1002/tea.20053

Dopplet. Y. (2003). Implementation and assessment of PBL in a flexible environment.

*International Journal of technology and Design Education. 13.* 255-272.

Retrieved on December 2, 2012 from http://cedu521-k-

f07.pbworks.com/f/Implementation+and+Assessment+of+Project-

Based+Learning+in+a+Flexible+Environment.pdf

Fatma, B., Funda, A., & Mustafa, P. (2011). The effectiveness of cooperative learning on

the reading comprehension skills in Turkish as a foreign language. *The Turkish

Online Journal of Educational Technology*. *10*(4) 330-335. Retrieved on

December 2, 2012 from http://www.tojet.net/articles/v10i4/10433.pdf

Filippatou, D., & Kaldi, S. (2010). The effectiveness of project-based learning on pupils

with learning difficulties regarding academic performance, group work, and

motivation. *International journal of special education, 25*(1), 17-26. Retrieved on

November 24, 2012 from http://www.eric.ed.gov/PDFS/EJ890562.pdf

Fosnot, C.T. (2005). *Constructivism: Theory, perspectives, and practice* (2$^{nd}$ ed.). New

York, NY: Teachers College Press.

Geier, R., Blumefield, P. C., Marx, R. W., Krajcik, J. S., Soloway, E., and Clay-

Chambers, J. (2008). Standardized test outcomes for students engaged in inquiry-

based curricula in the contect of urban reform. *Journal of Research in Science

Teaching, 45*(8), 922-939. doi: 10.1002/tea.20248

Heafner, T.L., & Friedman, A.M., (2008). Wikis and constructivism in secondary social

studies: Fostering a deeper understanding. *Computers in the Schools, 25*(3-4),

288-302. doi: 10.1080/07380560802371003

Hernandez-Ramos, P., & De La Paz, S. (2009). Learning history in middle school by

designing multimedia in a project-based learning experience. *Journal of Research

on Technology in Education, 42*(2), 151-173. Retrieved on April 18, 2012 from

http://www.teacherscollegesj.edu/resources/publications/PBL%20History%20Mid

dle%20School.pdf

Jonassen, D.D., Howland, J., Moore, J., & Marra, R.M. (2003). *Learning to solve*

*problems with technology. A constructivist perspective* (2<sup>nd</sup> ed.). Upper Saddle

River, NJ: Merrill Prentice Hall.

Kingsly, K.V., & Boone, R. (2008). Effects of multimedia software on achievement of

middle school students in an American history class. *Journal of Research on*

*Technology in Education, 42*(2), 203-221. Retrieved on December 2, 2012 from

http://slenc139.wikispaces.com/file/view/Effects+of+Multimedia+Software+on.p

df

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during

instruction does not work: An analysis of the failure of constructivist, discovery,

problem-based, experiential, and inquity-based teaching. *Educational*

*Psychologist, 41*(2), 75-86. Retrieved on April 18, 2012 from http://igitur-

archive.library.uu.nl/fss/2006-1214-211848/kirschner_06_minimal_guidance.pdf

Lee, O., & Luykx, A. (2005). Dilemmas in scaling up innovations in elementary science

instruction with nonmainstream students. *American Educational Research*

*Journal 42*(3)411-430. doi: 10.3102/00028312042003411

Lerner, J. (2003). Learning disabilities: theories, diagnosis and teaching strategies. (9<sup>th</sup>

ed), Boston, MA: Houghton Mifflin Co.

Mergendoller, J. R., Maxwell, N. L., and Bellisimo, Y. (2006). The effectiveness of

problem-based instruction: A comparative study of instructional methods and

student characteristics. *Interdisciplinary journal of problem-based learning*

*1*(2)131-149. Retrieved on March 11, 2012 from

http://docs.lib.purdue.edu/ijpbl/vol1/iss2/5

National Council on Economics Education. (2007). *Economic, personal finance, &*

*entrepreneurship education in our nation's schools in 2007.  A report card:*

*Survey of the states.*  New York, NY: National Council on Economic Education.

Retrieved from

http://www.councilforeconed.org/about/survey2007/NCEEsurvey2007.pdf

National Research Council. (2005).  How students learn: History, mathematics, and

science in the classroom. In M.S. Donocan & J.D. Bransford (Eds.), *Committee*

*on how people learn: A targeted report for teachers.*  Division of Behavioral and

Social Sciences and Education.  Washington, D.C.: The National Academy Press.

O'Brien, J., Grill, A., Schwarz, S., & Schlicht, J.  (2006). Tracking current events: using

the internet to explore unfolding stories.  *Social Education*. Retrieved November

24, 2012 from HighBeam Research: http://www.highbeam.com/doc/1G1-

145527135.html

Prensky, Marc. (2001).  On the horizon.  *NCB University Press, 9*(5). Retrieved on

August 11, 2012 from http://www.twitchspeed.com/site/Prensky%20-

%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.htm

Schueurell, S. (2008).  The great immigration: Using a problem-based learning approach

and the internet.  *Social Studies Research and Practice, 3*(1), 68-79.  Retrieved on

December 2, 2012 from http://www.socstrpr.org/files/Vol%203/Issue%201%20-

%20Spring,%202008/Practice/3.1.5.pdf

Sideridis, G.D., & Scanlon, D. (2006). Motivational issues in learning disabilities.

    *Learning Disability Quarterly, 29*, 131-135. Retrieved December 02, 2012 from

    http://www.highbeam.com/doc/1G1-151663030.html

Solomon, G. (2003). Project-based learning: a Primer. *Technology and Learning, 23* (6),

    20-30. Retrieved on December 2, 2012 from

    http://pennstate.swsd.wikispaces.net/file/view/PBL-Primer-

    www_techlearning_com.pdf

Strobel, J., & van Barneveld, A. (2009). When is PBL more effective? A meta-synthesis

    of meta-analysis comparing PBL to conventional classrooms. *The*

    *Interdisciplinary Journal of Problem-Based Learning, 3*(1). 44-58. Retrieved on

    March 6, 2012 from http://docs.lib.purdue.edu/ijpbl/vol3/iss1/4

Müdriye, Y.B., & Figen, G. (2010). A study on the effects of project based education on

    the developmental areas of children. *International Journal of Academic Research*

    *2*(5)379-388. Retrieved on November 24, 2012 from

    http://research90.groupsite.com/uploads/files/x/000/05c/71b/Abdavi%60s%20sec

    ond%20week%20article.pdf?1302968479

Thomas, J.W. (2000). A review of research on project-based learning. Retrieved on

    March 11, 2012 from

    http://www.bie.org/images/uploads/general/9d06758fd346969cb63653d00dca55c

    0.pdf

Watts, M. (2006). *What works: A review of research outcomes and effective program*

    *delivery in precollege economic education.* New York, NY: National Council on

    Economic Education.

Westwood, P. (2006). Teaching and learning difficulties: Cross-curricular perspectives.

    Camberwell, Victoria, Canada: ACER Press.

Wurdinger, S., Haar, J., Hugg, R., & Bezon, J. (2007). A qualitative study using project-

    based learning in a mainstream middle school. *Improving Schools, 10*(2), 150-

    161. doi: 10.1177/1365480207078048

# Creating a Project Question

Use the guide below to develop possible PBL questions.

| Subject: | | |
|---|---|---|
| Team members: | | |
| | | |

| Who, what, when, where, why, how | Who or what | Do something |
|---|---|---|
| What time of the day | is the sun's radiation | most dangerous for our skin? |
| How does | the stock market | make people money? |
| How can | we | prevent sexually transmitted infections? |
| | | |
| | | |
| | | |
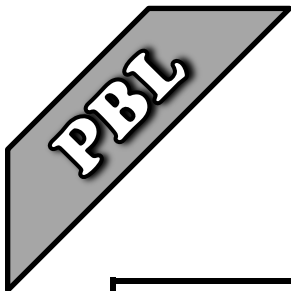
# Student Project Question Check List

| Project Question: | | |
|---|---|---|
| | YES | NO |
| Is the question understandable? | | |
| Is the question challenging, about a controversial issue, or interesting? | | |
| Does the question make you ask more questions? | | |
| Does the question have to do with your local community? | | |
| Does answering the question allow you to "take action?" | | |
| Could there be more than one answer to the question? | | |
| Other: | | |

# How Will You Present Your Project?

You have the option to present your project in many different ways.  Think about your strengths and the strengths of your team members.  Which formats would you like to use?  Then discuss why with your team-mates and come to an agreement on one *or more* formats.

| Writing | Presentation | Multimedia | Building | Planning |
|---|---|---|---|---|
| ☐ Editorial | ☐ Dance | ☐ Animation | ☐ Gallery exhibit | ☐ Blueprint |
| ☐ Informational brochure | ☐ Debate | ☐ Audio recording | ☐ Garden | ☐ Business plan |
| ☐ Letter | ☐ Lesson | ☐ Comic strip | ☐ Machine | ☐ Experiment |
| ☐ Poem | ☐ Live newscast | ☐ Drawing/painting | ☐ Model | ☐ Flow chart |
| ☐ Research report | ☐ Musical composition | ☐ Graphic design | ☐ Product prototype | ☐ Graph |
| ☐ Script | ☐ Play | ☐ Internet blog | ☐ Scientific instrument | ☐ Proposal |
| ☐ Training manual | ☐ Sales pitch | ☐ Photography | ☐ Structure | ☐ Timeline |
|  | ☐ Speech | ☐ Scrapbook | ☐ Vehicle | ☐ Spreadsheet |
|  |  | ☐ Slideshow |  | ☐ Survey |
|  |  | ☐ Video |  |  |
|  |  | ☐ Website |  |  |

Other ideas:

Team consensus:

# Project Team Resources

Think about the access to resources you and your team members have to complete your project and to present it.  Think about all the places where you can gather materials.  Resources can come from almost anywhere.

✓Check off the resources you have, and ⬭circle⬭ the ones you think you will need.

| Technology | Materials | People | Community Assistance |
|---|---|---|---|
| ☐ Computer | ☐ Paper | ☐ Children | ☐ Library |
| ☐ Internet | ☐ Display board | ☐ Males | ☐ Parks |
| ☐ Flash drive | ☐ Wood | ☐ Females | ☐ Museum |
| ☐ Email account | ☐ Paint | ☐ Business owners | ☐ Gardening land |
| ☐ Projector | ☐ Glue | ☐ Public officials | ☐ Law enforcement |
| ☐ Speakers | ☐ Magazines | ☐ Scientific/Medical | ☐ Recreation center |
| ☐ DVD player | ☐ Scissors | ☐ Teenagers | ☐ Chamber of Commerce |
| ☐ TV | ☐ Power tools | ☐ Media/arts | ☐ Medical facility |
| ☐ Audio equipment | ☐ Work space | ☐ Engineering | ☐ Other: |
| ☐ Video camera | ☐ Batteries/electrical | ☐ Public safety | |
| ☐ Digital camera | ☐ Other: | ☐ Other: | |
| ☐ Printer | | | |
| ☐ Other: | | | |

# Daily Project Progress Reflection

1. What did you accomplish today towards completing your project?

2. What did you want to accomplish, but were unable to?

3. What could you do differently tomorrow to improve?

4. How did you work with your team-mates?  Did you use collaboration, negotiation, and team work?  Was the work fairly and evenly divided, or did one person do all of the work?

5. What advice would you give your team-mates to make the project more successful?

6. Other:

# Collaboration Check-List

Use this check-list to reflect on your collaboration skills and to assess the skills of your team mates.

| | Yourself | Team member |
|---|---|---|
| **Responsibility** | ☐ Prepared and ready to work<br>☐ Available for meetings<br>☐ On time<br>☐ Communicates with team<br>☐ Do what you are supposed to do without reminders<br>☐ Completes tasks on time<br>☐ Listens to feedback from team members to improve work<br>☐ ★Does more than you have to do<br>☐ ★Asks for extra feedback to improve work<br>☐ Other: | ☐ Prepared and ready to work<br>☐ Available for meetings<br>☐ On time<br>☐ Communicates with team<br>☐ Does what he/she is supposed to do without reminders<br>☐ Completes tasks on time<br>☐ Listens to feedback from team members to improve work<br>☐ ★Does more than you have to do<br>☐ ★Asks for extra feedback to improve work<br>☐ Other: |
| **Teamwork** | ☐ Help to solve problems<br>☐ Stay focused and organized<br>☐ Manage conflicts<br>☐ Share ideas<br>☐ Give useful, specific, and supportive feedback to improve work<br>☐ Offer to help others<br>☐ ★Steps in to help when a team member is absent<br>☐ ★Notices if a team member does not understand and helps to clarify<br>☐ Other: | ☐ Helps to solve problems<br>☐ Stays focused and organized<br>☐ Manages conflicts<br>☐ Shares ideas<br>☐ Gives useful, specific, and supportive feedback to improve work<br>☐ Offer to help others<br>☐ ★Steps in to help when a team member is absent<br>☐ ★Notices if a team member does not understand and helps to clarify<br>☐ Other: |
| **Respect** | ☐ Listen carefully to all teammates: do not interrupt, waits to speak<br>☐ Polite and kind to all teammates<br>☐ ★Encourages the team to respect each other<br>☐ ★Encourages all team members to use their strengths<br>☐ Other: | ☐ Listens carefully to all teammates: do not interrupt, waits to speak<br>☐ Polite and kind to all teammates<br>☐ ★Encourages the team to respect each other<br>☐ ★Encourages all team members to use their strengths<br>☐ Other: |

What is one area that you need to work on?  How can you improve it?

Items with a ★ are exceptional collaboration skills

# Project Check-List Rubric

| Project Question: |
| Project Title: |
| Team Members: |

| Area | Criteria | Points Possible | Points Earned |
|---|---|---|---|
| **Introduction** | ☐ Team members are introduced<br>☐ The purpose of the project is stated<br>☐ A table of contents, summary, or preview of project is given<br>☐ Other: | | |
| **Body** | ☐ Information is presented in an organized manner<br>☐ Evidence for answering the project question is provided<br>☐ Other: | | |
| **Conclusion** | ☐ The answer to the project question is clearly communicated<br>☐ A summary of research is provided<br>☐ A call to action is expressed<br>☐ Other: | | |
| **Presentation** | ☐ All team members participate in presenting to the audience<br>☐ Team members speak audibly and clearly with correct pronunciation and grammar<br>☐ The project is consistently focused and on topic<br>☐ The presentation is well practiced – eye contact, gestures, maturity<br>☐ Other: | | |
| **Written** | ☐ All team members contributed to the written part of the project<br>☐ Organized<br>☐ Minimal spelling or grammar errors<br>☐ Other: | | |
| **Q. & A.** | ☐ Team members are prepared for questions and respond with confidence<br>☐ Other: | | |
| **21st Century Skills** | ☐ Effective communication among team members<br>☐ Critical thinking, analysis, and synthesis skills are demonstrated<br>☐ Teamwork is evident<br>☐ Collaboration with people beyond the classroom<br>☐ Technology skills are incorporated in the project<br>☐ Other: | | |