

Learning through Projects in the Classroom: Project-Based Learning Guide

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Abstract

Project-based learning (PBL) is a teaching approach that introduces and enhances collaboration, critical thinking, and problem solving skills. It allows students to actively participate in class and be put into groups to create projects together. By promoting this approach it displays collaboration among the students and explores the different perspectives and ideas of their classmates. Project-based learning is a new way for students to enjoy learning, be involved in the classroom, freely express themselves, be creative, and most importantly it builds the resources of working together in a group where it is important to learn at a young age to be prepared for their future through a hands on experience. Project-based learning should be applied in classrooms because it strays away from the traditional way of learning and has displayed an increase of students' engagement in their classroom. Nevertheless, there are challenges in organizing PBL in classrooms which will be discussed throughout the article. The article also includes a guide and recommendations on conducting and implementing project-based learning in classrooms. The research was undertaken using a qualitative approach by collecting relevant literature about the relevance and importance of PBL and semi-structured interviews with high school teachers and students from Hungary and Palestine. The study ends with a significance for applying and using project-based learning activities in classrooms as a new way of teaching and learning for students.

Keywords: collaboration, engagement, project-based learning, creativity, communication

1. Introduction

"I like the idea of collaboration...because it pushes you... It's a richer experience...."

-Frank Gehry (2008)

Project-based learning is a teaching method that motivates students, prepares them for higher education and their careers, allows them to have an in-depth knowledge about topics, and allows students to communicate with each other. Project-based learning (PBL) develops and improves 21st century skills, where it allows students to participate in real-world tasks (Bell, 2010; Han et al., 2015). There are many reasons why PBL is useful and beneficial to the students and also for teachers. Research portrays the effectiveness and implementation of PBL for the students because it promotes their understanding and developing skills (Han et al., 2015; Kokotsaki et al., 2016). PBL allows students to learn more and their performance in the classroom enhances (Han et al., 2015).

1.1 Definition of Project- Based Learning

Project-based learning has many different descriptions and meanings, starting off with how PBL is a teaching method that focuses on learning through projects. It is based on stimulating and thought-provoking questions or problems that encompasses students in design, problem-solving, decision making, and investigation (Jones et al., 1997; Marx et al., 1994). Blumenfeld further supports project-based learning and explains two key components for projects; there should be a driving question or problem towards the goal of the project and the project should result a final product that discourses that driving question. The driving question can be created from the teachers and students, but the results should not be prearranged because students need to develop their own tactic towards the project. Students enhance and deepen their knowledge through these projects by creating models, reports, videotapes, and different programs (Blumenfeld et al., 1991). Blumenfeld (1991) also elaborates that, *“Project-based learning focuses on teaching by engaging students in investigation. Within this framework, students pursue solutions to nontrivial problems by asking and refining questions, debating ideas, making predictions, designing plans and/or experiments, collecting and analyzing data, drawing conclusions, communicating their ideas and findings to others, asking new questions, and creating artifacts for example model, a report, a videotape, or a computer program”* (371). According to Smith and Dodds (1997), PBL also indicates the theory and practice of using real-world work using projects to attain collective learning (Panasan and Nuangchalerm, 2010). Thomas (2000) explains that PBL is an *“interdisciplinary, student-centered activity with a visibly and clear project outcome. PBL is described by students’ autonomy, constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices”* (Kokatsaki et al., 2016). Blumenfeld (1991) also delves on how PBL is an in-depth approach to classroom teaching and learning where it promotes students’ engagement and collaboration. Helle, Tynjälä, and Olkinuora (2006) add three other aspects to PBL, firstly that the learner controls the learning procedure through the time, content, and arrangement. Secondly, the students produce genuine projects, and thirdly, PBL emits different results from the projects (Helle et al., 2006). Therefore, PBL is an instructional method centered on the learner, it strays away from the traditional mode of teaching and learning. Through projects, students have a hands- on experience with real life tasks, can explore new topics, and learn new methods and skills with combining previous knowledge from other subjects (Kubiatko and Vaculová 2011).

1.1.1 Purpose of Research

Project- based learning is a new way for students to enjoy learning and being involved more in the classrooms. It allows the students to freely express themselves and be creative in their projects, but most importantly it builds the resources of working together in a group where it is important to learn at a young age to be prepared for future employment (Brush and Saye, 2008, ChanLin, 2008). This study focuses on a review of literature that is relevant to project-based learning to promote its benefits, challenges, and a guide for implementing PBL in the classrooms. Then the study discusses the teachers’ and student’s perception regarding PBL through semi-structured interviews.

1.1.2 Research Questions

This article tackles research questions that are optimistically answered throughout the research about the importance of PBL for teachers and students. What is a guide into creating a PBL course for teachers? How does PBL promote students' engagement? Can students have a more effective learning experience through PBL? What are the challenges of implementing and designing PBL?

2. Literature Review

2.1 History of Project-Based Learning

Project-based learning was first discussed in 1918 in the work of Kilpatrick, where he considered using literacy in profound perspectives can lead people to build their knowledge and attain personal growth. He states that projects be interdisciplinary math, science, social studies that offer learners with valuable concepts and ideas. He proposed that topics come from the students' interests, facilitating group projects that are proposed, planned, completed, and assessed by students. Project-based learning can be associated with a Vygotskian perspective. Vygotsky proposes that learning arises through communication and collaboration because it promotes students to use their cognitive functions. He explains that students will develop their understanding and learning when they are conveying and interacting with one another.

2.1.1 Importance of PBL

There are many advantages when implementing PBL in classrooms and its benefits for students. PBL helps adopt self-regulated learning and encourage pupils' theoretical knowledge through a logical process (Barak, 2012). Students learn to be independent and self-efficient through goal-setting, designing, and collaborating in a social learning environment (Bell, 2010). Furthermore, PBL stimulates social learning where children practice to become more competent with their communication, cooperation, and collaboration skills. The importance of differentiation in students through PBL depicts students' uniqueness and own interests about certain subject to obtain a deeper learning and understanding. PBL is very much active learning where teachers discuss with their students to enhance their skills and thoughts. This leads students to discover themselves as learners. This form of learning develops the students' skills and is crucial for their future education and careers. PBL furthermore facilitates links between subjects and presents an expanded view of the subjects (Blumenfeld et al., 1991). Thomas (2000) discusses five main aspects to PBL, centrality, a driving question, investigations, self-sufficiency, and realism. Consequently, research supports PBL because it engages the students' learning and uses relevant real-world tasks (Bell, 2010). Blumenfeld, Fishman, Krajcik, Marx, and Soloway (2000), depicted the practice and importance of project-based learning as, *"The presumption is that students need opportunities to construct knowledge by solving real problems through asking and refining questions, designing and conducting investigations, gathering, analysing, and interpreting information and data, drawing conclusions, and reporting findings"* (150).



2.1.2. The Role of Project-based Learning (PBL) in Student Learning

It is vital for students to be able to apply what they learned from a PBL activity in their future education. Students need to practice on learning how to collaborate with one another and have a hands-on experience when performing a PBL activity. Through this method, students are the ones in control of the learning process and the teachers are just merely the implementors of the activity. Students are taught using a different method that allows them to merge their knowledge obtained from the activity to real-life experiences. Students become more motivated to learn and have a greater understanding of the subject. In order for all these positive aspects to occur, students need to feel they are in an appropriate environment to achieve a constructive knowledge and obtain new skills. The teachers job in this aspect is to define the target goals and plan a proper project relevant to their knowledge development. As Petrosino (1988) confers students succeed in their project when there is a goal set and produce a great outcome. This coincides with Boyle and Trevitt (1997) asserting that attaining the suitable amount of learning is for the teacher to simplify and have a clear set of goals for the students. Accordingly, goal planning and applying is an essential procedure in the application of PBL (Thomas et al., 1999).

2.1.3 Challenges to PBL

There are challenges that teachers face when integrating PBL in their classrooms. Teachers need the assistance and supervision to start applying PBL in their classrooms, yet schools may not have the suitable materials and funds for organizing and managing this new teaching method. Therefore, this article will delve into the teachers' perspective on how PBL can be difficult to apply in their classrooms. The teachers in this article are active and driven to improve their teaching skills and learning about new approaches to teaching. Another obstacle teachers face is giving most control to the students in their learning process. Teachers may perceive this as not having full control of their class and some students might become demotivated to conduct the PBL activity the teacher has set in motion. Assessing students in a PBL activity can be a challenge for teachers because they need to find the proper and fair assessment and evaluation. Time management is a massive issue when executing a PBL activity in the classroom because not all teachers perhaps have sufficient time to conduct and finish the activity (Mentzer et al., 2017) (Aksela and Haatainen, 2019). Marx (1997) depicts that teachers are challenged in promoting PBL because they mentioned how it takes effort and time, it is an unorganized way of teaching, lack of classroom management, implementing technology, and assessing them through projects was difficult as well. Therefore, schools need to aid their teachers in fostering PBL in their classrooms by giving them trainings and workshops. These trainings and workshops will benefit the teachers and allow them to understand how to incorporate PBL in their classrooms because using new techniques and methods in classrooms can stimulate the students and encourage them to learn. These strategies include students' cooperation and group work with one another, being responsible and having a role in any group work, boosting confidence in expressing their opinions and ideas, to promote love to learn, and allowing students to reflect on how the project went and what they can do to make it better in the future (Herro and Quigley, 2016). Not only do teachers face challenges in implementing a new teaching method, but students do have a hard time accepting and reacting to a new teaching method.



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2.1.4 Guide to Efficient PBL

There are a few recommendations as a teacher to keep in mind when implementing a PBL activity in their class. This guide can aid teachers in adopting a successful project-based learning activity:-

1. Supporting students: Teachers need to guide their students during a PBL activity and offer advice and direction to ensure their productivity and a fitting environment.
2. Supporting teachers: Teachers need to feel supported as well when initiating a new teaching method in their classrooms. Schools need to offer trainings and professional development meetings to encourage teachers in applying PBL.
3. Group work efficiency: Students need to work together in an effective way to guarantee the same level of participation and learning.
4. Stabilising an informative and independent approach: Teachers need to create a balance where students gain a certain knowledge about a topic before delving into independent work.
5. Assessment: Choosing the proper tools for assessing the students after completing a PBL activity, either by self-reflections and evaluations or peer evaluations.
6. Student choice: Students should be comfortable during the PBL learning process to feel they have control over their learning (Kokotsaki et.al, 2016).

Fleming (2000) also delivers a guide for teachers to promote effective PBL in their classrooms for students. The first step to consider is significant content where teachers need to find the proper type of project matching the curriculum standards and the learners' needs and interests. Second step is to identify the students' knowledge, skills, and goals achieved through the project activities. Third step is to introduce the project and students involvement by preparing them for collaborative work and contributing in deciding what criteria to be used for evaluation. The fourth step is the teacher-led and student centered activities; the project should not be presented by the teachers, but from the students. The teacher may have to provide some instruction during the project, so that the students develop and demonstrate their knowledge and skills to complete the project. The fifth step is to create project time lines and milestones. PBL activity can last from two to eight weeks and teachers should consider how much of the course curriculum is addressed through the project and how much time students will need to complete the project. The sixth step is monitoring students' progress through report and feedback tools such as individual assignment checklist or peer evaluations. Next step is evaluating the project where the teacher or group may assess the students' work using more than one method of assessment. Teachers can use performance-based assessments based on individual tasks or some combination of individual and group achievements. The last step is reflection and feedback, teachers should provide proper feedback for the students in order to develop their skills for the next project. Students should reflect on the project and their achievements.

3. Methodology

3.1. Data collection

The purpose of this study was to understand the perception of teachers and students on the importance, advantages, and challenges of PBL. Data was collected through literature and semi-structured interviews with 8 high school teachers from Hungary and Palestine and 7 high school students from Hungary and Palestine.

3.1.1. Interview Questions

There were two sets of interview questions, set of questions for high school teachers and a set of questions for high school students. The questions asked to the eight high school teachers from Orchidea School, Hungary and Jerusalem School Bethlehem, Palestine were what is and know about project-based learning in your teaching experience? Can project-based learning benefit the students and give them a better and advanced experience in their classroom? What are some project-based learning you may have conducted in the classroom? What are the challenges that you face when trying to implement a project-based learning activity? How can you integrate PBL into the classrooms or curriculum?

The set of questions asked to the seven high school students from Orchidea School, Hungary and Jerusalem School Bethlehem, Palestine were, have you heard about PBL? What does project-based learning mean to you? Have you done any project-based learning activities in the classroom? If so what were they? What are your perceptions regarding working in a group? Do you enjoy working in a group of individually? Does project-based learning activities give you a better learning experience? How can project-based learning help in your future learning and career?

4. Data Analysis

4.1 Results and Discussion

The analysis was done by data-driven qualitative content analysis with phrases and sentences as coding units. The data consist of written answers to the following questions written above. The data was organised for the analysis as a whole set of the teachers' and students' answers where they described their perception about PBL, its advantages, and challenges. Teachers and students from #1-4 are from Jerusalem School Bethlehem, Palestine and teachers and students from #5-8 are from Orchidea School, Hungary.

4.1.1 Teachers Results and Discussion

The data was reduced by coding. There were altogether four codes for the advantages and five codes for the challenges of implementing PBL. Teachers, as well, depicted their perspective on the importance of PBL and projects they conducted in some of their classes.

Table 1: Advantages of PBL in teachers' perspective

Teacher	Collaboration	Creativity	Innovative teaching	In-depth learning	Confidence
#1	x	x	x	x	x
#2	x	x		x	x
#3	x	x	x		x
#4	x	x	x	x	x
#5	x	x			x
#6	x	x	x	x	x
#7	x	x	x	x	x
#8	x	x	x		x
Freq	8	8	6	5	8

All the teachers found a lot of advantages of using and conducting project-based learning in their classrooms, as shown in Table 1. Every teacher explained the importance of PBL on the value of collaboration among the students. All the teachers explained how students can benefit from one another by working in a team, promotes creativity among the students, and lastly, boosts their confidence when presenting their projects to their classmates.

“The most beneficial aspect of PBL is the social interaction and collaboration students have among each other when learning as a group” (Teacher #1).

“Collaboration is the most important thing about project-based learning” (Teacher #4).

“Weak students work with the strong students and vice versa promotes collaboration and learning among each other, which is very beneficial for the students especially in a project-based learning activity” (Teacher #8).

“The main thing I think about when I think of projects is how students can learn working with each other and learn how to cooperate” (Teacher #5).

“They can be more confident in the future, they practice their speaking skills in the future. It promotes students to present in front of the class even if they are shy. It will help them a lot” (Teacher #6).

“The best part of projects is that each student gets to be creative and they merge their ideas together” (Teacher #8).

Some teachers think that PBL is an innovative teaching method that needs to be implemented in classrooms, especially in today's generation. Teacher #2 explains,

“PBL is an innovative and new form of teaching. I think it is important to integrate new teaching methods throughout the classrooms, so that students don't get bored and PBL is one of them”.

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“In today’s technology era, innovative tools is important to use in the classrooms and teachers need to be updated with these new tools, and using projects in the class promotes innovativeness and promotes different materials to use in the class”. (Teacher #5).

The last advantage most teachers discussed was how PBL contributes to an in-depth learning for the students. Teacher #6 states,

“PBL promotes an in-depth learning for students because they have a hands-on experience to a certain topic. Students are involved more and can attain the information better”.

“In-depth learning is associated with PBL because students learn from each other and are actually working on something together that enhances their learning experience. They are working on a project for some time so that can be considered in-depth learning” (Teacher #3).

In summary, all the teachers portrayed how PBL is beneficial and important in the students’ learning experience. There are advantages to PBL that were displayed, however with any advantage comes a disadvantage and teachers faced some challenges when trying to do a project in class.

Table 2: Teachers challenges for PBL

Teacher	Time Management	Starting a PBL activity	Managing a Project in the classroom	Assessing students in group projects	Students’ interest in a project
#1	x	x	x	x	x
#2	x	x			
#3	x	x	x	x	
#4	x	x	x	x	x
#5			x		
#6					
#7	x		x	x	x
#8	x		x	x	
Freq	6	4	6	5	3

Table 2 depicts the codes that were produced after analyzing the teachers interviews regarding the challenges they face when trying to implement a PBL activity in their class. Time management and managing a project were the hardest challenges that most of the teachers discussed during the interview. These themes were related on how long projects take and coordinating it in a short amount of time.

Teacher #2 stated,

“Sometimes it is hard to do in class projects because it takes time, so some projects are at home projects. It could be hard to plan a lesson revolving just projects and actually doing it in the classroom, you need to be prepared and manage the students through these projects can be difficult. It is hard to manage the students during the projects because students get loud and



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sometimes out of control. Lastly, managing these projects you need sources and tools to implement them. The school lacks the resources to give their teachers if they need to do a project in their classroom”.

Teacher #7 stated,

“Teachers during the day feel exhausted and tired and creating projects in the classroom is time consuming and the class period itself is very short, so managing a project and students in a short amount of time is tough. But they try to survive it. This is a main barrier when trying to implement PBL in a classroom. Lastly, some teachers might not have the appropriate tools and resources to conduct these projects in the classrooms”.

Another challenge some teachers faced was how to begin doing and implementing a PBL activity in their classrooms. Some teachers do not have the proper expertise or ideas on how to start PBL and what are the suitable projects to use in their classrooms on a certain subject.

Additionally, assessing students through projects was a major issue for most of the teachers. This theme discusses the difficulty in finding a suitable assessing method for students working in group projects. Teachers aren't familiar with different assessment tools and usually only grade the final product not the process. Teacher #1 explained the struggles of assessing student,

“I do not know different assessing tools for using in a project. I just tend to grade the end product, not usually the process of how students work. So in the end I do not know whether all the students did the work, I just see the end result, but I would like to know different assessments to use during the process and maybe that would help me evaluate them better”.

The last difficulty some teachers faced, but wasn't a big issue is the students' interest in a project. Teacher #2 explained,

“ Most students are interested in conducting projects, however there are always a few who do not participate in their group and I think that is related if they are interested in the project. Some students might not enjoy working in a group, maybe some prefer working individually, and when students see that their group mates aren't working they become de-interested in completing project”.

Lastly teachers explained what projects were facilitated in the class, Teacher #3, explained a project conducted in a science class,

“ They did a project about cell structure and some students were creative. I had a group who baked a cake, where they put the different cell parts (example the nucleus) inside the cake, and the other parts on the top of the cake. Another group did a 3-D model of the cell structure different materials. Their projects were very creative and interesting to see and each group was unique and designed something different. This just shows how working in groups students can learn from each other, hear their perspectives, and learn how to work in a team. When they work in groups, they learn and remember what they learned”.

Teacher #4 portrays a project conducted in their class,

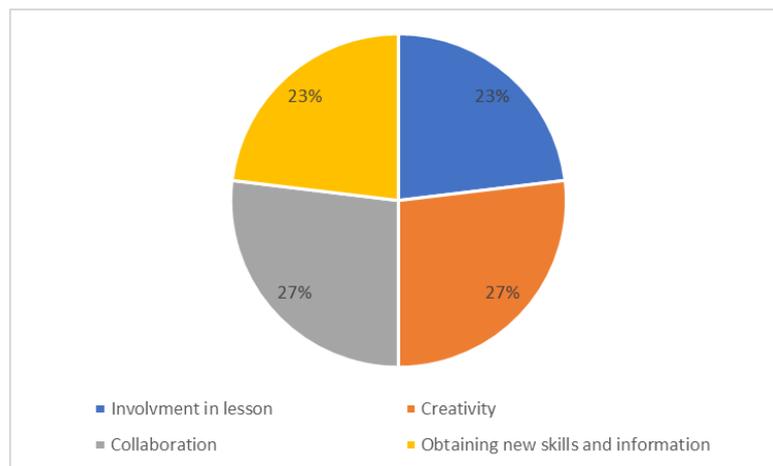
“Projects were very popular during online learning because it was the easiest thing to do for students since they are at home and easier for them to learn through these projects. Some were in groups and some were individual projects. The students loved doing the projects, especially using online platforms for creating projects like doing 3D shapes or buildings”.

Concluding on the teachers’ perspectives regarding PBL, the data depicted above shows positive outcome and perceive PBL as an important and innovative teaching method for students.

4.1.2 Students Results and Discussions

The data was coded and put into a pie chart portraying the advantages and challenges of PBL in the students’ perspective.

Figure 1: Advantages of PBL in students’ perspective



All the students found advantages and benefits to PBL, as shown in Table 1. Every student also explained the importance of PBL on the value of collaborating with each other and being creative. The students found doing projects in their classes useful and Student #4 explains,

“I definitely prefer doing projects in the classes because I consider myself very artistic and doing projects it allows me to be creative and show what I can do visually”.

Similarly student #2 states,

“By doing projects, I am automatically being creative and already allows me to cooperate and collaborate with my fellow classmates regarding the topic of the project. Working together is beneficial because it gives me different skills to use in my future and lets me practice how to be part of a team”.

Student #6 explains,

“I prefer working in groups because I like getting to know my classmates opinions and hear their ideas regarding a topic. I also like working together because I do not have to do all



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the work myself, I can get help from my classmates. Teamwork helps me being able to work with individuals and learn how to work collaboratively”.

Student #8 depicts,

“ Projects are a fun way to learn a subject and these projects lets us be creative by using different methods. Projects brings out different ideas and we can learn from each other when working together in a team ”.

Lastly, student #1 explains,

“Working in a group is useful because it gives me a lot of skills I can use in the future because when I work I want to be an engineer and I need to practice how to work with other people. So it is important to start now and get used to working with other people. I consider myself a creative person and doing projects lets me be as creative as I can be and I find that very useful and important”.

Furthermore, students felt that by doing projects they become more involved in the lesson and course, and students can learn new skills from their fellow classmates through projects.

Starting off with student #4,

“I personally like doing group projects more than individual projects because it associates using your memory when working in a group with the subject you are learning. I also think it is better than doing a test because projects you can learn more and actually remember what you learned than doing tests. Projects is a good way to learn in my view”.

Student #2 explains,

“Projects allows me to feel like I am being part of the lesson instead of just sitting and listening to the teacher the whole time. I feel like I learn more not only from the goal of the project, but from my friends and classmates because we are all sharing our ideas through the project”.

Student #3 states,

“I am a visual learner and doing projects I right away feel engaged in the class. Students participate more and can learn more through projects”.

Lastly, student #7 describes PBL as,

“Learning through projects is a great way for me to be more busy in the class, and learn information from my friends because we are working together in a group to create the project”.

In summary, all the students portrayed how PBL is beneficial and important in their learning experience.

Figure 2: Challenges of PBL in students' perspectives

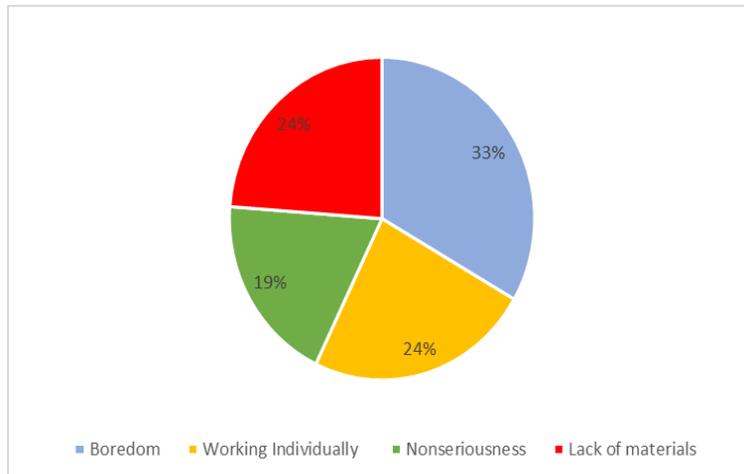


Figure 2 portrays some challenges students felt whenever they worked in a project. The first issue that was noted was that students felt bored during the project that isn't relevant to their studies. Student #4 stated,

“There are some places where a group member or members will chat or not pay attention, which is not the best. The other students see that the project isn't important so they get bored and don't bother to continue with the rest of the group”.

Student #1 explains,

“I do enjoy doing projects, but sometimes the teacher doesn't choose a good or interesting project, which doesn't make me excited. I like something that challenges me and if the project doesn't, I would get bored and I know the other students feel the same. Some projects the teachers give us is to easy and for younger kids”.

Student #3 similarly states,

“ There are projects that seem too easy to do and I do not have a lot of fun making these projects. I wish we did projects that were different and using different materials and tools that make it more interesting”.

Two other challenge students face when doing projects in the classroom are that students prefer to work individually and that the other students aren't serious enough during the project itself. Student #5 starts off by saying,

“Some students don't take the projects as a normal task, they take advantage of the situation and begin to have fun and just talk to their friends”.

Student #2 similarly states,

“Students aren't serious enough to do projects in the classroom or outside the classroom. Students will begin to have fun in the class instead of working on the project with their classmates. This gives them a chance to fool around and have fun in the class. Due to

that, I prefer to sometimes work alone because I know I will get the job done and do a good job and get a good grade”.

Student #8 explains their view about this by saying,

“Sometime I like to work alone depending on the people I am working with because sometimes some people in the group do not take the project serious and want to have fun instead of work”.

Student #4 also portrays her perception regarding these challenges by stating,

“As, I said before projects are important because it lets us work together, but sometimes I like to work alone because I might be with a group I know won't do the work or aren't taking the lesson serious so they just want to talk and have fun. It is frustrating, but I always in the end work with my group and wish the next time they become more serious”.

The last issue that most students discussed in their interviews was how they don't have the proper materials to use in their projects, starting with Student #1,

“ I think the school needs to support the students with materials dealing with the project. Sometimes I don't have time to go get materials or funds to create a certain project, for example maybe getting wood”.

Comparably to what student #3 stated,

“I shouldn't buy my own materials for a project that is related to a school subject because I think the school needs to get the materials for each student to support us when we do the projects”.

Student #4 also explains,

“Sometimes we have the regular materials like paper and crayons, but some projects we need more materials and the school lacks these things to give us. I sometimes have to go get my own materials or my classmates for the project”.

After coding all the interviews, the data portrayed a positive outcome and perception about PBL from the students' answers. Students enjoy new experiences and creating projects that are relevant to the class.

5. Limitations

There were some limitations in this study. Firstly, the small sample size of high school teachers and students due to last semester schools were being held hybrid and difficulty in finding teachers willing to agree on conducting an interview. Secondly, it is possible that face-to-face interviews would have had greater in-depth and quality of data. Due to the pandemic, some interviews were not possible to conduct face-to-face, therefore, online interviews were organized. Finally, it is also possible that the interviews depicted the perceptions of people motivated on implementing a new teaching method or to learn from a new teaching method.

6. Conclusion

The objectives of the article was to demonstrate the important of implementing PBL in classrooms, teachers' and students' perception regarding PBL, the advantages and disadvantages to using PBL, and effective recommendations for teachers to conduct PBL activities. The literature mentioned throughout the article supported the significance of PBL activities in classroom and its benefits to students and teachers. The literature as well portrayed the challenges that teachers might encounter when integrating PBL activities in their classrooms. Furthermore, the interviews that were conducted regarding the value of PBL was consistent to the literature with PBL benefits on how.....and challenges that teachers faced were conducting PBL activities, time management, planning the proper project activity for the subject, time consuming, and guaranteeing learning. The students' perception regarding

Acknowledgment

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