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**PROJECT- BASED LEARNING METHODOLOGY AND ITS  
IMPLEMENTATION WITHIN AN EXISTING CURRICULUM AT A BILINGUAL  
PRIVATE SCHOOL: A RESEARCH PROJECT IN THE MIDST OF THE COVID-  
19 PANDEMIC**

BY

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I, Mairilis Saldarriaga Fragozo, hereby declare that this master's thesis has not been previously presented as a degree requirement, either in the same style or with variations, in this or any other university.

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## **Abstract**

The purpose of this case study is to analyze how teachers implemented Project-Based Learning within an existing curriculum in an International bilingual school on the Caribbean Coast of Colombia. The initial focus of this study changed due to constraints imposed by the COVID-19 pandemic, so the focus moved from an interest in observing PBL implemented in the classroom to PBL implemented in the design of classroom projects. This qualitative research study identified the characteristics of projects designed by teachers, characterized teachers' decision-making process in incorporating and designing the projects, and identified the challenges teachers may face when implementing PBL. I used a checklist in order to analyze five teacher-designed projects in science and English as well as interviews to gather information from five of these teacher designers. Findings revealed that the methodology implemented in the school is more similar to Thematic Teaching taking into account PBL and Thematic Teaching similarities and differences. Additionally, adopting a Thematic Teaching basis rather than the intended target PBL teaching and learning methodology might have occurred due to a lack of sufficient training provided to teachers and teacher-designers. Finally, some of the implications resulting from this study include strategic teachers' development and curriculum planning, as well as a consideration of the current methodology described by the school in their current Institutional Educational Project (PEI).

**Keywords:** Project Based Learning, qualitative research, teachers, teacher training, curriculum.

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I knew this journey would not be easy, but I did know it would be worth it.

To God, who has been always there through the most difficult times of my life.

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## Chapter 1. Introduction

*“Education is not an affair of “telling” and being told, but an active and constructive process” (Dewey in Williams, 2017).*

Over the last three decades, the world has changed drastically. The way communication and interactions take place, the access to unlimited sources of information, and the intricacies of the virtual world are some of the challenges that developing sophisticated technologies have brought. These changes have created the need to develop a special set of skills better known as 21st-century skills. These include collaboration, communication, critical thinking, and creativity, required to face continuous change. In order to prepare a society that is able to face such challenges, the new education era should provide learning opportunities that allow students to construct cognitive and social skills (Kaldi, Filippatou, & Govaris, 2011). In this context it is important to bear in mind that meaningful learning most likely takes place when students experience engagement. Conversely, when students’ motivation is low, they are less likely to learn (Blumenfeld, Kempler, & Krajcik, 2006). Lack of motivation can be reduced by involving students in authentic experiences under the constructivist premise of learning by doing along with the Project-Based Learning approach (hence PBL) in the application of ideas that aim to solve real-life problems.

In many contexts around the world, PBL has been implemented, researched, and suggested as a methodology that can enhance students’ learning, critical and creative thinking, and problem-solving skills (Bell, 2010; Grant & Tamim, 2013; Kokotsaki, Menzies, & Wiggings, 2016; Miller & Krajick, 2019). In Colombia, the need for innovative and enhanced education is especially required. As a country that recently took an important

step to put an end to the longest armed conflict in Latin America and is still dealing with drug trafficking and violence, finding a way to keep students engaged is necessary to shield them from school dropouts, drugs, and many other issues. Another important concern is the need to prepare students to solve present and upcoming challenges derived from current socio-political situations. The implementation of innovative methods like PBL might help to strengthen educational processes and foster learners' discovery of peaceful and creative solutions to current and future life challenges.

In 2014 the Colombian government launched the Plan Nacional de Desarrollo (PND) aimed to enhance a more peaceful, equitable, and educated Colombia. Along with this plan, the National Plan of Bilingualism (Plan Nacional de Bilingüismo), also known as “Colombia Bilingüe,” was implemented and its principal objective was to place Colombia as one of the most educated countries in Latin America by 2025 (Ministerio de Educación Nacional, 2016). In order to achieve this goal, it was necessary to create a National Suggested Curriculum (Currículo Sugerido). According to the Colombian Ministry of Education (MEN, 2016), this curriculum intends to integrate foundational skills such as peace and democracy. As one of the suggested methodologies that encourages the development of self-learning, Project- Based Learning was suggested for public and private institutions. The Colombian Ministry of Education (hence, MEN) considers that PBL would be beneficial “due to the fact that students develop communicative competencies by completing significant activities since it is necessary to use a foreign language authentically and in contexts that are relatively real” (MEN, 2016. p, 34). Since then, some institutions, mostly private, have been implementing PBL as part of their curriculum. To provide an example of PBL in Colombia, Gimnasio Los Caobos School in Bogotá has implemented

the PBL method with excellent results. According to Boss (2017), students at Gimnasio Los Caobos developed an app to help Down Syndrome children to locate themselves in crowded traffic streets. In this private school, another project aimed to expand the chocolate industry, and finally, middle-school students became entrepreneurs when devising ideas for business (Boss (2017)).

Another example illustrates the use of PBL to increase ninth-grade students' speaking skills development in a public institution in Bogotá (Vaca & Gomez, 2017). In this study, the researchers reported three main findings. First, after implementing PBL and focusing on developing vocabulary competencies, students demonstrated to be more interested in expressing their ideas orally. Besides giving them the competencies to share their ideas, PBL also benefited students in overcoming their fears when using the L2 to speak in public. Researchers demonstrated that students found it useful to practice their oral production before presenting. Finally, this study demonstrated that through the investigations done by the students, they were more eager to speak about their own experiences.

On the Caribbean coast, PBL has also been implemented to improve students' English skills. For instance, D'vera (2017) conducted a study to investigate the influence of PBL in the development of reading comprehension in tenth-grade students of a public institution. The main findings revealed that PBL increased students' motivation and ability to work collaboratively. It also indicated that the implementation of PBL impacted high-achieving students more positively than lower-achieving students.

Another study developed on the Caribbean coast was conducted by De la Puente Pacheco et al. (2019). This case study research intended to answer whether PBL worked in

different local contexts. The investigation was set at Universidad Del Norte with 481 undergraduate students in an English course for International Relations. They were divided into two main groups: 229 students were taught by teachers that implemented the PBL methodology, while 252 students attended conventional or traditional classes. When comparing the two groups, students from the PBL classroom demonstrated to have more abilities in developing autonomy and problem-solving competencies (Pacheco et al., 2019).

In 2022, Posada et al. conducted a study on the impact of PBL on communicative competencies and self-esteem at a high school on the Colombian Caribbean coast. This action research selected eight-grade students at a state high school in Cordoba, Colombia. Through classroom observation and field notes, the data analyzed revealed that PBL facilitated the improvement of students' abilities to communicate and helped them to overcome their insecurities when speaking in public.

After conducting a literature review, a gap was found. Currently, in the Caribbean region, it seems that PBL in young learners needs development since documented and accessible research on the topic is focused on higher levels of the educational system. Additionally, most studies focus on students' skill development rather than teachers' roles in PBL work. Therefore, this study intends to fill this gap by researching PBL in an elementary school context and teachers' decisions in project design.

### **Research question and specific objectives.**

This study aims to answer the research question below:

How do teachers implement Project-Based Learning (PBL) methodology within an existing elementary school curriculum in the Colombian Caribbean region?

### **Specific objectives**

- Identify the characteristics of the projects designed by teachers.
- Characterize teachers' decision-making process in incorporating and designing the projects (topics, project names, objectives, activities, materials, assessment).
- Identify the challenges teachers may face when implementing PBL.

**Note:** For this study, implementation, as suggested in the research question, will be limited to the design of some of the projects from grades 1<sup>st</sup> through 5<sup>th</sup>. It can be worth mentioning that the original idea for this research was to focus on exploring PBL in classroom instruction and teacher-student interaction, however, the COVID-19 pandemic did not make this possible. Therefore, this study focuses on the analysis of the projects designed by teachers and some of their rationale to create them.

### **Context Background**

The context of study is a Caribbean bilingual private institution located in the countryside of Valledupar. At the time of this research, the institutional community consisted of 494 students, 50 teachers, and 12 administrative staff members. This institution offers three education stages: early childhood education (preschool), primary education, and secondary education subdivided into middle and high school. As an international school, the school follows an international calendar, and students graduate when they finish their 12th grade. The faculty consists of both national and foreign educators. In this institution, there are twelve foreign teachers in charge of English, social studies, economics, and French (the last two subjects are only taught in high school). Meanwhile, Colombian teachers focus on Math, Science, Spanish, Arts, Religion, and Physical Education.

Most of the students are citizens of Valledupar or some cities nearby such as Barranquilla, Santa Marta, and Cartagena. However, we have some international students

from Spain and an ethnic family from La Sierra Nevada de Santa Marta. Most of the students come from the wealthiest families in town, and in general, these parents are highly educated.

As a countryside school, it offers a variety of outdoor spaces, a library, and multiple fields for students and teachers. Besides, this institution provides academic support in English, Math, and Spanish and clubs for improving speaking and writing skills. It is a relatively new school that has been offering its educational services to the community for around nine years. The school is expanding its facilities and is currently building new classrooms and strengthening teaching resources.

Furthermore, most of the teachers are also highly qualified. In this institution, educators have graduated from masters or specialization programs, and international teachers have teaching careers or pedagogical experience. Thus, this study intends to elaborate on the decisions made by teachers when implementing PBL as their teaching methodology within an existing curriculum.

Finally, this context was impacted by the COVID-19 pandemic, which imposed certain limitations, for instance, in-person classes switched to online environments, teacher work load increased greatly, and spaces for collaborative work such as planning and discussing were highly reduced. This is the reason why the focus of this study changed from observing PBL in instruction and interaction in the classroom to analyzing curricular decisions. In the next chapter, a revision of PBL theories will be presented.

## **Chapter 2. Theoretical Framework**

This section will show the beginnings of Project Based Learning as an instructional model along with frameworks and concepts that support it. It will discuss the theory of

Situated Learning as foundational for PBL and it will review studies on the area. Finally, it will highlight the gap that this work aims to fill.

John Dewey's pedagogy can be considered as the foundation of Project-Based Learning. He based his methodology on inquiring, establishing that "students will develop personal investment in the material if they engage in real meaningful tasks that emulate what experts do in real-world problem situations" (Krajcik & Blumenfeld, 2006. p, 318). In that sense, PBL not only develops standard-based content, but also helps students deepen skills needed for lifelong learning and adult skills (Larmer, Mergendoller, & Boss, 2015; Thomas, 2000).

Educational projects in general are based on the premise that learning by doing is fundamental to provide learners and teachers with meaningful understanding, throughout the discussion and revision of ideas and the experience itself (Hewett, 2001). Project-Based Learning is not a new concept. As mentioned above, Dewey's statement transformed many educators' thoughts about inquiry, which caused the beginning of the Progressive Education movement, mainly developed in Europe during the '60s and '70s (Williams, 2017). This led to the emergence of the project approach investigations, and they are pivotal in the process of inquiry. Helm and Katz (2016) defined the project approach as "an in-depth investigation of a topic worth learning more about" (p. 1). Helm and Katz emphasize the Project approach on young learners. Therefore, projects can be considered an introduction or an initial state to engage students in investigative processes. Also, the functionality of projects in young learners is assumed as a paradigm since researchers have shown that projects contribute to the deepening understanding of learned topics, and it has been argued that might not work properly on superficial learning (Dochy, Segers, Vanden

Bossche, & Gijbels, 2003; Vernon & Blake, 1993). Nevertheless, Katz (2014) also pointed out that one of the most important features of the project approach is to focus on finding together (teachers and students), through scaffolding, possible answers or solutions to the questions proposed either by the teacher or the students. Besides, Katz, Chard, and Kogan (2014) highlight that the project approach not only provides students with in-depth investigations but also empowers students' self-motivation through curiosity and the joy of learning.

The features of the project approach mentioned above relate to Projects-Based Learning. Several authors have worked on the concept of PBL. A strong framework for PBL has been proposed by The Buck Institute for Education (henceforth, BIE), which defines Project-Based Learning as a teaching method that encourages students to answer real-world complex questions throughout active learning. For BIE (2015), PBL is an instructional methodology that has been standardized under the Golden Standards developed by the aforementioned institution. Another important definition is given by Krajcik and Blumenfeld (2006) who stated that Project Based Learning is an overall approach and an extension of Situated Learning that overlaps with the constructivist findings that support meaningful learning through activity building with the acquired knowledge in context.

Moreover, according to the definition provided by Thomas (2000), Project-Based Learning is a model that structures the learning processes around projects. PBL intends to involve learners in a problem-solving, decision-making, and investigative experiences that along with collaborative learning, enhances students' abilities to develop completed products or presentations. Similarly, Kokotsaki, Menzies, and Wiggins (2016) define PBL

as a student-centered approach based on the constructivism principles that focus on the seeking of knowledge while answering questions.

At this point, a variety of definitions have been presented from the point of view of different authors. However, the following characteristics were commonly identified (BIE, 2015; Krajcik & Blumenfeld 2006; Kokotsaki, Menzies, & Wiggins 2016; Thomas, 2000; 2006) and are considered key criteria of any PBL:

- Centrality of curriculum
- Driving question(s)
- Constructive investigation
- Learner-centered autonomy
- Authenticity

Although there are other characteristics that might be included by different approaches to PBL, these have been identified as the most common ones. Thus, this study considers PBL as a socio-constructivist, student-centered, and experiential teaching and learning methodology that includes these central criteria and can help students develop the necessary skills to become critical autonomous individuals prepared to face the challenges of current times.

### **Situated learning Theory**

In Situated Learning theory, learning is contextually situated, and the use of activities, context and culture can deeply impact on the knowledge acquisition process (Brown, Collins, & Duguid in McLellan, 1996). In this model, there are eight key elements that sustain the theory that will be briefly defined in this section. These key components are stories, reflection, cognitive apprenticeship, collaboration, coaching, multiple practice,

articulation of learning skills, and technology. The first concept is stories which, in situated learning, are part of the social construction of knowledge, and are considered narratives through which learners transfer knowledge and discoveries (Brown, in McLellan, 1996). Stories are seen as a “tool for learning, understanding, and remembering” (McLellan, 1996). The second concept is reflection. Norman (1994) claimed that not only experiential cognition was necessary, but also the reflective thinking process. He defined reflective thinking as a conscious process that engages the revision of the learning process and that must be part of experiential learning throughout the cognitive stages. The third concept is cognitive apprenticeship, and it refers to the different strategies that encourage students to construct learning through activities and interactions that simulate real-world experiences (Brown, Collins & Duguid, in McLellan, 1996). The concepts also include collaboration and coaching. The former is relevant in situated learning theory because it develops key skills through problem-solving, opportunities to participate in different roles, discussion of misconceptions and inefficient strategies, among other collaborative work skills (Brown, Collins, Duguid in McLellan, 1996). The latter is the role of the teacher as a guide that scaffolds students work, only, when necessary, otherwise, the teacher lets students construct their own knowledge. This role has been widely criticized possibly due to misunderstandings of its nature by practitioners. This role is not about “laissez-faire” or leaving students adrift. It is about choosing strategically when to support students.

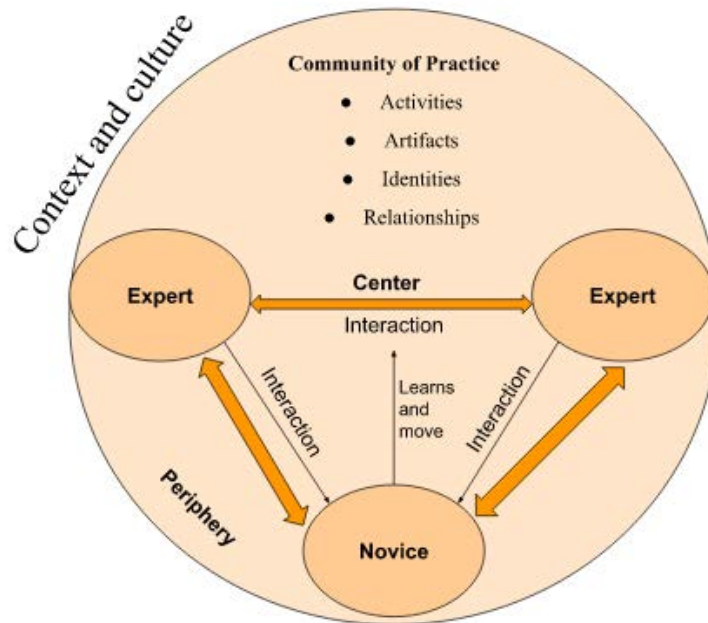
The two additional concepts are multiple practice and articulation of learning skills. The first provides students with different activities that help them master and, therefore, move beyond the novice stage advancing progressively towards the level of expertise, and the second helps students develop the necessary skills to better understand their thinking

process. Finally, technology is seen as a tool that can help to provide more resources that support the development of the previous skills (McLallen, 1996).

Other authors that explain situated learning are Lave and Wenger (2020). They state that learning should be seen as a “situated activity” (Lave & Wenger, 2020. p. 29), where learners move in a Legitimate Peripheral Participation, meaning that all individuals as part of a community are constantly moving forward through a community of practitioners. As individuals, firstly considered newcomers or novice, have more opportunities to practice, they will be able to master knowledge through their relationships with the old-timers or experts, along with activities, and artifacts, among other experiences (see figure 1).

**Figure 1**

*Model of Situated Learning*



*Note:* Figure 1 shows the interrelationship within the periphery among experts and novices. Interaction plays a relevant role in the community of practice's progress from novices to experts. Activities, artifacts, identities, and relationships are elements that promote interaction among the community members.

As stated by Minner and Nicodemus (2022), situated learning is a theory that considers learning happens when the individuals are exposed to authentic environments, along with real-world problems that unfold into real social interaction. Therefore, situated learning in Project- Based Learning includes many benefits such as research, observations, and explanations, among other activities related to real-world problems (Krajick & Blumenfeld, 2006). One benefit of implementing such activities in the classroom is that students will be able to draw meaningful conclusions from the experiences in the community of practice. Also, situated learning promotes exposing students to acquire

information from meaningful context, which helps learners to connect prior knowledge with new one. Therefore, students will create a wider and better understanding of the concepts (Krajick and Blumenfeld, 2006).

In Project- Based learning, as in situated learning, socialization and collaboration are key elements in the learning process. In both theory and practice, learning is conjoined to social practice, context, and culture. Learning is far from a “transition-assimilation” process (Lave & Wenger, 2020. p. 47). Distinct from internalization, in situated learning, learning is the result of social practice in context, and the individuals’ world itself.

### **Understanding the Project-Based Learning Framework and the Gold Standards.**

As a framework, Project-Based Learning aims to develop 21st century skills, therefore, it is essential to understand PBL’s background and its relationship with 21st century skills.

Krechevsky, Mardell, Rivard, and Wilson (2013) describe five principles that underlie learning by doing through projects. This framework establishes that learning can become visible through the construction of learning artifacts such as videos, drawings, and even photographs. To make thinking visible, it is important to “emphasize the reflective, social, and artifact-driven qualities of powerful teaching and learning” (Krechevsky, Mardell, Rivard, & Wilson, 2013, p. 136). According to these authors, there are five different ways to make learning visible that suggest seeing learning as purposeful, emotional, empowering, and representational.

This framework considers the pedagogical practices of the Reggio Emilia Pedagogy based on their approach to early childhood education. This suggested pedagogy is based on five main principles. The first principle considers children as capable and strong

individuals. The second principle focuses on the teacher's role by not being only an expert but an observer, listener, and engager (Rinaldi, 1998). The third principle shows the curriculum as a *progettazione*, which is explained by Rinaldi as a flexible and open approach that develops a topic considering children's ideas, hypotheses, and theories in a learning group. This concept is related to the importance of the development of long-term and in-depth projects (Rinaldi, 1998). The fourth principle is about documentation, which suggests that learning progress should be documented and not only through the traditional gathering of learners' activities (Gandini, 2011) but rather through a coherent, systematic, and intentional process. Finally, the environment is seen as the provider of appropriate materials used purposefully for students' engagement in curiosity and learning development. Besides these five principles, the Reggio Emilia Pedagogy is based on the social-constructivist approach that far from being individualist, advocates the support to the congregation of the whole school community to be part of the learning process of students and, together, construct a better learning environment for them (Rinaldi, 1998).

Project-Based Learning has been in the educational field for more than forty years (Krauss & Boss, 2013). Advocates of PBL claim that PBL allows for "students to gain important knowledge, skills, and dispositions by investigating open-ended questions to "make meaning" that they communicate in purposeful ways." (Krauss & Boss, 2013. p. 24). Therefore, PBL is a student-centered approach in which the teachers' main role is guiding, designing, and preparing projects along with students. Krauss and Boss (2013) also mention that PBL is the curriculum, not an add-on. Therefore, in PBL students are not expected to only study the content, but to develop abilities that result in a better understanding of the topic of study. The process of developing such deepen understanding

allows the teacher to design assessments based on the experiences throughout and at the end of the project.

Another important definition is given by the Buck Institute for Education (BIE, 2021). For this institution, PBL is a teaching method that engages students in active learning and real-world experiences. BIE has been gathering information from North American and other nations' school communities, external members of the community, and even other stakeholders, about the main characteristics of senior students, or as described by Larmer, Mergendoller and Boss (2015), the "ideal-graduate." Common qualities were found despite the variety of cultures, languages, and systems of education. The results demonstrated that people expected graduated students to be:

- Problem solvers
- Responsible
- Team workers
- Independent workers
- Critical thinkers
- Confident
- Effectively manage their time and work
- Able to have effective communication with others

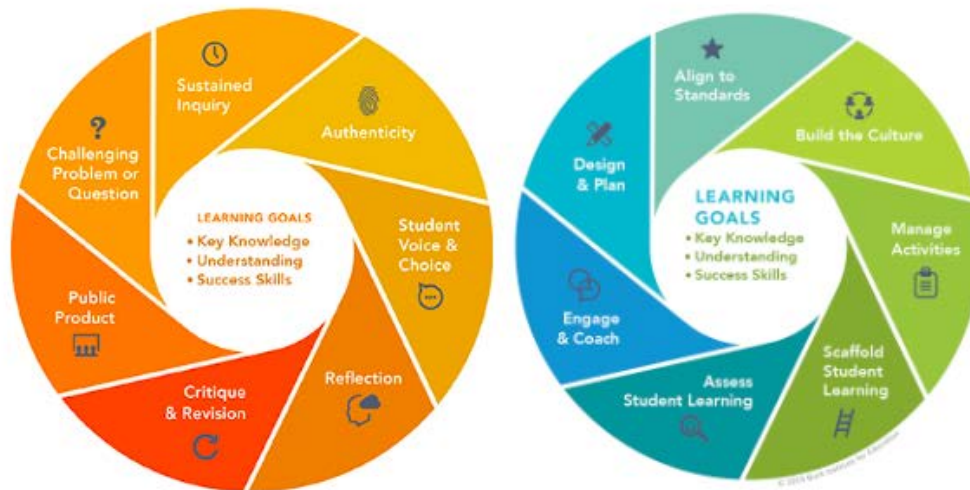
(Larmer, Mergendoller & Boss, 2015. p. 2)

These skills might be developed in an educational setting that motivates students, that engages their curiosity about real-world problems by deepening their understanding in the application of skills that facilitate solutions. To accomplish this meaningful learning and avoid wide variations that might affect this effectiveness, the BIE proposed the PBL

Golden Standards model for project design and teaching practices. The former is composed of seven Essential Project Design Elements displayed in figure 2.

**Figure 2**

*Essential Project Design Elements and Teaching practices.*



(BIE, 2021)

The Essential Project Design Elements for Gold Standard PBL mostly requires providing possible solutions to a real-world issue in a pedagogical context, through the interaction of these elements or steps that I will briefly describe. Key knowledge and understanding refer to the importance of meaningful learning, acquired through experiences and motivation, and in which activities are the means and knowledge and understanding the goal (Larmer, Mergendoller, & Boss, 2015). Students should be able to apply the knowledge acquired through abilities that allow them to think, analyze, contribute, and solve current or future issues. These are the 21st century skills abilities mentioned in PBL as the Key success skills.

Challenging problems or questions give structural organization to the projects. All projects in PBL should be based on a question or problem to answer at the appropriate level of students. Framing the project in a question will help students to understand the importance of what is being learnt and a meaningful purpose.

In sustained inquiry students' prior knowledge and new research should be fostered in order to solve the driving question. Information is not only gathered in books or websites, it can be also taken from interviews, experiments, or through field work. Authenticity is related to sustained inquiry since it aims to involve students in real-world problems, or as real as possible (Larmer, Mergendoller, & Boss, 2015), that must be solved through real-world resources and activities (BIE, 2021). This authenticity can be reflected in three main ways: context, task, and impact. In order to develop critical thinking and problem solving, in PBL students should be allowed to make some decisions about how and what they create without determining limitations because teachers' role should be that of a guide. Teachers should also determine how many choices students can have and whether or not they are benefiting from such choices. Another key element is reflection, which aims for teacher and students to think back about the process, its effectiveness, the obstacles presented, and whether they were overcome (Larmer, Mergendoller & Boss, 2015; BIE, 2021). The reflection element is relevant because it motivates students and teachers to reflect on their strategies and whether their application to solving a problem was effective or not to consider it for future experiences. After the reflection, students should receive and provide feedback or formal evaluations that can help them to improve their process. When teaching students how to provide feedback, teachers should show them how to give "specific, helpful, and kind" (Berger in Larmer, Mergendoller, & Boss, 2015)

feedback to other students. Finally, the publication of students' products can allow for the display of students' projects to real audiences that go beyond the classroom. By doing this, students might feel more motivated, projects can be more authentic, and this can increase students' commitment (Larmer, Mergendoller, & Boss, 2015; BIE, 2021).

Additionally, the first element of the Gold Standard PBL seven project-based teaching practices is design and plan. It aims for teachers to materialize their ideas into a framework project that fits their context. The second element is directly related to this, aligning the projects to standards. This step is essential because it ensures that students' products will require the standards for their level. Therefore, teachers should make use of these standards to design the projects. In culture building, the main goal for teachers is to build up an environment of independence, inquiry, and attention to quality in order to create a healthy PBL classroom (Larmer, Mergendoller, & Boss, 2015; BIE, 2021). For activities management, teachers and students should work together to construct and make decisions about these activities. Along with reasonable control and independence over the learning process, teachers must also scaffold students' work and development through instructional strategies and resources that aim to achieve the project's goals. In PBL, building rapport with students is an essential part of the engaging and coaching practice through inspiration, motivation, and building teams (Tomlinson in Larmer, Mergendoller, & Boss, 2015).

All the components above are part of the Gold Standards that aim to help students to become more capable learners that will become successful in their careers and lives (Larmer, Mergendoller, & Boss, 2015).

This part of the paper has focused on explaining the beginnings of Project-Based Learning, as well as its transition to the Gold Standards Framework. Finally, it has

presented the Situated Learning Theory key elements that support the objectives of Project Based Learning. The next section will present the methodology applied to gather and analyze the data.

### **Chapter 3. Methodology**

This session discusses the type of research approach, participants, the data collection procedures, the research design, and the data analysis involved in this study. It is important to mention that this study follows a qualitative interpretive research approach since it intends to understand how teachers integrate PBL methodology within an existing elementary school curriculum in the Colombian Caribbean coast.

#### **A Qualitative Research Approach**

Qualitative research, as defined by Saldaña (2011), “is an umbrella term for a wide variety of approaches to and methods for the study of natural social life” (p. 3). This kind of research is interested in studying human behavior, interactions, and human phenomena in general, so researchers try to understand the dynamics behind all these human issues. Qualitative research can be conducted across a variety of fields such as education, sociology, psychology, anthropology, among others. Creswell (2013) argues that qualitative research is most appropriate for inquiries in which the target research variables are unknown and, therefore, there is a need to explore the problem. More specifically, in this kind of research answers emerge from participants and exploration.

To provide an overview of qualitative research, this section will present key concepts in order to clarify decisions made based on this approach. There are two approaches to research, namely quantitative and qualitative. Quantitative research intends

to verify or disqualify existing theories through the implementation of statistical methods (Leavy, 2016). Quantitative research is mostly objective and measurable.

In contrast to quantitative research, qualitative is variable and theoretical rather than numerical and statistical (Polkinghorne in Elliot & Timulak, 2015). Furthermore, the qualitative approach emphasizes people’s subjective experiences and meaning-making processes (Corbin & Stauss, 2015; Leavy, 2017;). Therefore, this kind of research contributes to the understanding of the sense people give to the phenomena of study. Qualitative research is malleable and flexible, and it involves a constant revision of the processes as this might change due to unexpected new findings. Hence, this paper considers the qualitative research approach because it aims to explore the characteristics of the projects designed by teachers, their decisions in the design process, and the challenges that they experienced in the construction of the projects. In order to develop it, instruments related to the qualitative approach such as checklists and interviews were implemented. Table 1 below shows the specific objectives of this study and the data collection instruments related to each of them.

**Table 1**

*Specific Objectives and Data Collection Instruments*

Specific objectives	Instruments
Identify the characteristics of the projects designed by teachers	Checklist

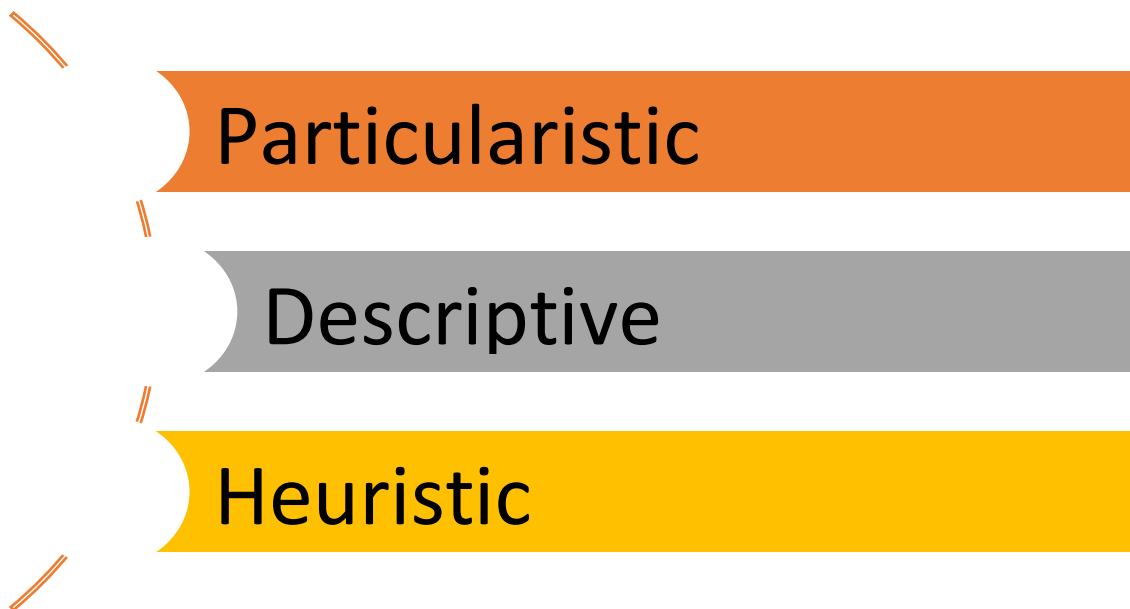
Characterize teachers' decision-making process in incorporating and designing the projects (topics, project names, objectives, activities, materials, assessment)	Interviews
Identify the challenges teachers may face when implementing PBL	Interviews

### Case study

This study follows the data collection procedures of the case study method. As defined by Merriam and Tisdell (2021), “a case study is the examination of a specific phenomenon, an event, a person, a process, an institution or a social group” (p. 9). A case study is a type of qualitative research approach, and it is subdivided into five main categories presented in figure 3.

### Figure 3

*Merriam's Three Types of Case Study*



Note. Figure 3 represents the three different types of case studies described by Merriam (as cited in Hamilton , 2012, p. 7). Particularistic types emphasize in studying very particular and specific contexts. It is mostly used in particular problems or situations that result from everyday practices. On the other hand, descriptive types focus on thick descriptive data which studies not only the participants themselves, but also the context that might affect them. In thick description, the investigation is complete and literal. This type of research can be longitudinal and study the ways in which one variable may affect others. Finally, in heuristic types, the research intends to provide an understanding of the studied phenomenon by discovering new meanings, expanding the researcher's experience, or verifying information (Hamilton, 2012).

Another important definition explains that case study explores matters through the study of one or more cases within a common system that involves a variety of data collection sources (Creswell, 2013). Moreover, Creswell distinguishes three variations of case study. The first one to be presented is a single instrumental case study in which the “researcher focuses on one issue or concern and then selects one bounded case to illustrate this issue” (Stake in Creswell, 2007 p. 74). The second type is called the collective case study, where the researcher also focuses on one issue but in contrast to the single instrumental, the inquirer selects multiple cases in order to show different perspectives from the scenarios where the study is replicated (Yin, 2003; Cresswell, 2013). Finally, the intrinsic case study focuses on one particular study due to its originality or rareness (Stake in Creswell, 2007).

In order to understand how teachers integrate Project-Based Learning methodology within an existing elementary school curriculum in the Colombian Caribbean region, this study has selected the heuristic type, as presented in Figure 3, in order to understand the phenomenon studied. According to Douglass and Moustakas, “Heuristics involves a subjective process of reflecting, exploring, sifting, and elucidating the nature of the phenomenon under investigation” (Douglass & Moustakas, 1985, p. 40). Thus, heuristic focuses on meaning and experiences because it intends to understand the phenomenon practices and beliefs. This type of research involves the researchers’ experiences along with the participants’ one. Therefore, the researcher must include him/herself in the phenomenon experience, in order to have a better understanding. Since I, as the researcher, was experiencing how PBL was implemented in the school, and this case study intends to explore teachers’ implementation of PBL, this research will be considered as heuristic.

### **Participants**

To understand how teachers implement PBL, the target population was drawn from first to fourth grade teachers of a bilingual private institution in the Colombian Caribbean region. They were five teachers, national (2) and international (3), all between 31 and 53 years old. They were two female and three male teachers of English, Social Studies, Science, and Math. Table 2 below provides more information about the teachers. As the table shows, for the purpose of analysis, teachers will be referred to as Teacher 1, 2, 3, 4, and 5.

**Table 2***Participants Information*

<b>Teacher</b>	<b>Information</b>
<b>Teacher 1</b> <b>code:</b> <b>Int/01/CH</b>	She is the first grade English and Social Studies teacher. She is 53 and is from the United States. Teacher 1 has been working at the school since 2020, and she had no experience working as an elementary teacher before. She has a bachelor's degree in economics, but she taught English as a second language for adults two years before working at this school in Colombia.
<b>Teacher 2</b> <b>code:</b> <b>Int/02/MS</b>	Teacher 2 is the second grade English and Social Studies teacher. He is 32 and is from the United States. Teacher 2 joined the school in January, 2022. He worked as a teacher for four years in Cucuta, but he decided to move to Valledupar because he liked the weather and the people. He has a bachelor's degree in history. He has been teaching for 4 and a half years.
<b>Teacher 3</b> <b>code:</b> <b>Int/03/GP</b>	She is the third grade Science and Math teacher. She is Colombian and has been teaching in the school since 2017. She has a bachelor's degree in teaching English and Spanish from Universidad Popular del Cesar. She has been working as a teacher for nine years. Her previous job was in a bilingual private institution in the city. She worked there for four years as a kindergarten teacher.

<b>Teacher 4</b>  <b>code:</b>  <b>Int/04/DW</b>	He is the 4th grade English and Social Studies teacher. He is from the United States and has been teaching in the school for three years, which he joined in 2019. He has a Bachelor of arts in sociology with minors in leadership and Japanese. Also, he has a master's in elementary education. He previously worked in his home country teaching English and Social Studies in an elementary school. Teacher 4 has been teaching for nine years.
<b>Teacher 5</b>  <b>code:</b>  <b>Int/04/EB</b>	He is the 5th grade science and math teacher. He is Colombian, and he has been working in the school for four years. Teacher 5 has a bachelors' degree in teaching English and Spanish. He has been teaching for eight years. His previous job was in an elementary private institution as a homeroom teacher.

25 students' final products or artifacts were also analyzed to corroborate the PBL design elements implemented by the teachers. These artifacts were gathered from 1st to 5<sup>th</sup> graders whose ages vary from six to ten years old. Each class section has an average of 21 to 25 students each, 184 students in total. Classrooms are spacious, and students have a variety of resources such as computers, televisions, desks and chairs, books, and art materials among others. Moreover, teachers implement technological tools such as videos and slides to present projects, ideas, and materials needed. It was also observed that some teachers used music as a way to raise students' moods and help them feel relaxed during the class. This is fully controlled by the teacher since computers are not allowed to be used by the students up to fourth grade. Therefore, the projects' productions and materials used were mostly handmade.

## **My Positionality**

According to Savin-Baden and Major (in Holmes, 2020), positionality “reflects the position that the researcher has chosen to adopt within a given research study” (p.71). The term positionality is understood as the researchers’ view and the standpoint adopted regarding the research task and the social and political context (Holmes, 2020). When conducting qualitative research, it is important that the researcher sets a self-reflection and a reflexive approach. These aspects will facilitate the researchers’ understanding of the effects of their position and direct or indirect influence in the research ongoing process.

During this research, my role as a teacher and researcher helped me to understand my part in both processes. As a teacher, I was able to navigate more easily the school context since I was familiar with it. My part as a researcher was to understand, respect, and disclose the reality of my context and my part in it. In order to assure trustworthiness of this paper, I acknowledge both roles I play in this study. I understand that my knowledge of the context should not influence the information to be analyzed. Therefore, to avoid bias, I did not include myself as a teacher in this paper. Instead, I asked my colleges from first to fifth grade to be part of this investigation. To collect the information, I interviewed my co-workers individually, and I recorded and transcribed the interviews to assure I included all the information gathered. Also, I used a checklist that facilitated the identification of the criteria I was looking for in the other set of data, which were students’ projects.

As a qualitative case study, the major interest of this research is to understand the integration of PBL in a private school in the Colombian Caribbean region. In order to gather the data, two main instruments were implemented as previously mentioned: a checklist and two interviews. Interviews were implemented to gather teachers’ experience

with the implementation of PBL within their existing curriculum, and the checklist was selected due to its practicality to contrast the information of the students' final products and the Gold Standards.

### **Checklist**

According to Gawande (2011), on October 30, 1935, Boeing introduced the brand-new Model 299, also known as B-17, the most advanced technological airplane in aviation history. During take-off, the aircraft perfectly lift and began to climb, however, within seconds, it crashed into the field. Two people were killed including the pilot. After the crash, the investigators found that no mechanical failures could have caused the crash. However, they found that the airplane crew forgot to release the flight control gust locks. They also found that the airplane was too complex for a man to fly. The solution was to create a checklist as a permanent mandatory tool. After that, Boeing could sell the Model 299 to the US Army without any incidents. These checklists are still used today for taking off or for landing by any commercial flight company (Gawande, 2011).

The use of checklists has gone beyond airplane use. Checklists are used in different fields of investigation and practices such as medical, psychological, educational, and many others. In research, a checklist is defined as “a data collection instrument derived from a consideration of factors linked to the research question” (Smith, 2021, p. 55). Islam, Khan and Baikady (2022), claim that this instrument is used in quantitative and qualitative data collection and in research methods such as social research, case study, ethnography, and documentation survey. According to Islam, Khan, and Baikady (2022), the checklist is most commonly applied in qualitative research as a data collection instrument that, along

with observations or discourse analysis, helps the researcher to confirm the presence of the possible options mentioned in the checklist.

Checklists are appropriate to use when the researcher needs to observe if the options or characteristics sought are presented or not observed. As this instrument presents only a dichotomous set of characteristics or options, it intends to be quicker and easier for the researchers, however, one of its main disadvantages resides in not presenting enough details or reasons for the data obtained (Mertler, 2009). In this study, the checklist helped to gather information about the characteristics of the projects designed by teachers.

To design the checklist, the first step was to set the criteria. Taking into consideration that this study aims to answer how teachers implement Project-Based Learning within an existing curriculum, the criteria presented in the checklist aim to evidence the effectiveness of PBL in the school by comparing the students' final products with the elements that, stated by the Gold Standards, should be followed in the educational practice to achieve the development of problem-solving, collaborative work, experience, and reflection (Larmer, Mergendoller, & Boss, 2015). The students' final products were examined with the checklist that includes eight elements or criteria based on the Gold Standards. To clarify and specify the purpose of the criteria, thirteen questions were added in the "specific" section shown in Figure 4. The evidence section was added and divided into two sections to verify whether the criteria or elements were presented or not in the projects. If the criteria were presented or evidenced in the document, I would indicate it with "y" for yes, and if it was not the case, I would write "n" for not. Whenever there was something particular that did not apply, I would indicate it with "NA." There are eight spaces for comments which were created for each criterion with the purpose of writing

further observations and clarifying doubts around the projects or documents. Once I designed the checklist, I validated it by sharing it with three expert language teacher-researchers who gave me valuable feedback, which I considered for completing the final version (Table 3)

The checklist pivotal functionality was to establish the criteria or essential design elements that, according to the Gold Standards Framework, PBL methodology should follow. Based on the statement, Table 3 represents the checklist applied to the projects analyzed.

**Table 3**

*The Checklist*

<b>CHECKLIST TO ANALYZE THE GOLD STANDARD ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments</b>
<b>1</b>	<b>The project is meaningful</b>	Does the project have a driving question?			
		Does the question have an experiential purpose?			
		Is the driving question adequate for students' cognitive and language proficiency levels?			

2	<b>The project sustains inquiry</b>	Does it motivate students to research an issue or answer a question?			
		(Does the project encourage learning about something students do not know or do not know enough?)			
3	<b>The project involves real-world issues</b>	1) Are the tasks and materials used in the project connected to reality (e.g., preparing budgets, writing letters to editors, doing surveys)?			
		2) Does the project call to any kind of action or change from students?			
5	<b>The project engages students in self-reflection</b>	Are there questions or activities that engage students in self-reflection while developing the project?			
6	<b>The project provides spaces for feedback</b>	Does the project encourage self-evaluation?			

		Does the project provide space/ opportunities for teacher feedback?			
		Does the project provide space/ opportunities for peer feedback?			
7	<b>There are spaces to make students' projects visible (if included in the project description or guidelines)</b>	Do students share, present, or exhibit their final products?			
8	<b>The project goal is aligned to the Common Core Standards for the level</b>	Is the project goal connected to the expected standard?			

To implement the checklist for analysis purposes, I decided to choose one set of five projects per grade level from 1<sup>st</sup> to 5<sup>th</sup> grade in English and Science, based on access to digital and physical student products. I decided to look closely at student products because there were no written guidelines for project instructions at the time that I conducted this study. Students' projects, 25 total, were randomly selected out of a total of 184 students enrolled in these levels. In this school, grade levels are subdivided into two, A and B. The

number of students in this international bilingual school does not exceed 25 students per classroom. The target sample taken into consideration for implementing the checklist was 1<sup>st</sup> to 5<sup>th</sup> grades, as mentioned above, during the first and second academic terms of the school year. Since the school is an international bilingual institution, it follows an international calendar, known in Colombia as Calendar B. This calendar consists of four academic terms. The first two happen from August to December and the third and fourth happen from January to June. The time frame for this study took place in the school year starting on August 23<sup>rd</sup>, 2021, and ending on June 24<sup>th</sup>, 2022. In 2021, in Colombia we were still facing the effects and limitations of the COVID-19 pandemic. At the beginning of the school calendar in this year, classes were both remote and in-person. For in-campus classes, not all the students were able to attend the school due to medical conditions or parents' decisions. By September 6<sup>th</sup>, under the regulations of the Ministry of Health (Ministerio de Salud) and the Ministry of Education (Ministerio de Educacion), the school administration decided to start all in-campus classes. Classes under COVID-19 did not allow for access to the data defined for this study. Therefore, I decided to wait until the second half of that school year to gather the data that would allow me to answer my research question.

After this decision, I needed to select the target school subjects that would provide the data for this study. One of the main reasons for this decision was justified by the number of weekly hours each subject had. This was in order to understand how the intensity of the time invested influenced the projects' development, the achievement of the expectations of the process, and the final products. Another key factor that influenced this decision was to obtain perspectives about Project- Based implementation in the school,

from national and international teachers. In this school, international teachers are in charge of English and Social Studies, while Colombian teachers, or Spanish natives, teach Math and Science. Therefore, the subjects selected were English and science since they have similar hourly distribution per week, and they are taught by national and international faculty.

There are some important facts to understand about this context of study. The first one is the curriculum decisions, which are materialized through resources provided and standardized by the school. By the end of 2019, the school administration along with the head of teachers decided to implement a new curriculum. Based on the students' needs, the current level of the students, the Common Core Standards, and the accessibility to the teaching material (price and how easy and quickly the resources would arrive), they decided on the core English materials, *Journeys* by Houghton Mifflin Harcourt. For science, they decided to work on in-house teachers selected/ designed materials. As part of the school staff, I was aware that the school was flexible with the materials used to meet students' needs. For example, teachers were also able to use other resources according to students' needs and interests, such as Web pages, Internet worksheets, or any other supplementary content and activities that helped students achieve the objectives of the curriculum.

The Common Core State Standards (CCSS), original from the US K-12 educational system, presented its last version in 2010 by the Center of for Best Practices and Council of Chief State School Officers (CCSSO), as a way to unify students learning and ensure that all students from K-12 accomplished the requirements to enter colleges or contribute to the American economy and society (Morrow, Wixson & Shanahan, 2013). As an international

bilingual school, which prepares students to be global citizens and to be able to succeed in foreign English native speaking countries, this school has adopted and adapted the CCSS to meet not only national, but also international competences that meet the 21<sup>st</sup> century skills. It is important to clarify that this school also applies the National Suggested Curriculum for the subjects that are taught in Spanish. In elementary, teachers must follow the National Standards presented in the Spanish subjects such as social studies and Spanish. In High School, Spanish increases its intensity, as students prepare to present the National Standardized test (ICFES: Instituto Colombiano para la Evaluación de la Educación).

Narrowing down to the topics of each term, and due to the extensiveness of the curriculum, that was difficult to fully and successfully accomplish by the end of the terms, the school administration suggested the grade level meeting, where teachers would meet to analyze and make decisions about the topics to be covered in each term. The school opened a monthly space for planning time, every Monday morning from 6:30 to 7:40 before students' arrival at the school. Teachers considered the skills required to successfully achieve the standards and the students' needs in terms of the four main skills: reading, writing, speaking, and listening

When the checklist was created, it was necessary to include information that would link to the purpose of each project. This information included the Common Core Standard, the project objectives, and further project details. Before implementing the checklist, I shared it with the teachers and explained its purpose. I also asked them to provide the CCS, the objective, and the expected process and product (Projects further details). Teachers also explained that since students are non-English native speakers, the CCS had to be adapted to their level. Table 4 shows an example of the checklist.

**Table 4**

*Sample 1: Project 1, grade 1, Int/01/CH*

<p><b>Project 1, grade 1, Int/01/CH:</b></p> <p><b>Common Core Standard:</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p><b>Objective:</b> To identify, recognize and differentiate the weather changes presented in every season and how they affect our culture, traditions, and lifestyles.</p> <p><b>Project further details:</b> For this project, students had to create a lapbook describing the different seasons in the world. For every season, students mentioned activities they could do, animals, weather, temperature, and celebrations. Simple sentences and mainly visuals such as craft and drawing were observed.</p>
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CHECKLIST TO ANALYZE THE GOLD STANDARD ELEMENTS IMPLEMENTED IN THE PROJECTS					
Item #	Checklist item	Specific	Evidenced		Comments
1	The project is meaningful	Does the project have a driving question?		N	The project was based on a name: Made in Colombia.
		Does the question have an experiential purpose?		N	

		Is the driving question adequate for students' cognitive and language proficiency level?	Y		Despite there is not a concrete stated question, the theme name was adequate for 1st-grade level in this bilingual private school.
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Note. To differentiate the checklist, a title was provided for each one. This sample shows checklist Project 1, grade 1, Int/01/CH, which represents the number of the project according to the grade (first grade) and the interview that is linked to the checklist. The justification for the connection between the checklist and the interviews will be provided in the interviews section.

### **Document analysis**

As stated by Corbin and Strauss (2015) and Rapley (2008), document analysis is a systematic procedure implemented to analyze and evaluate documents or materials. Merriam and Tisdell (2016) define documents as “an umbrella term to refer to a wide range of written, visual, digital, and physical material relevant to the study (including visual images)” (p. 162). Thus, a variety of examples can be considered documents, for instance, books, magazines, posters, mockups, experiments, poems, among others (Merriam & Tisdell, 2016). Document analysis occurs “naturally” in the environment. Therefore, this type of technique does not alter or interfere with the real environment. For this study, this characteristic is relevant to analyze the convergence or coherence between the teachers’ notions and decisions on PBL, and the final products or students’ final projects.

There are four types of document analysis that will be briefly mentioned: public records and personal documents, popular culture documents, and visual documents

(Merriam & Tisdell, 2016). Public records refer to all types of records regarding social issues or events such as marriages, census, and government documents, among others. In contrast to the aforementioned type of document, personal documents are defined as “any first-person narrative that describes an individual’s actions, experiences, and beliefs” (Merriam & Tisdell, 2016, p. 166). On the other hand, popular culture documents are any type of popular media sources of information that help to identify sociocultural patterns, behaviors, or trends. Researchers can analyze examples of popular culture documents such as debates, YouTube videos, or social media effects. Visual documents refer to any type of information captured with a camera such as films, photographs, or videos. This type of document can be captured using cameras or can be taken from already existing materials that are already available online or in a physical setting. Researchers can use it to analyze nonverbal patterns, such as facial expressions or reactions. Visual documents can be used as a source of information and to present the findings of research. For instance, researchers can use photographs to remember important details of an investigation and might also use them to present the results of their study (Merriam & Tisdell, 2016).

This study focused on personal documents. That is, students’ production in the form of projects, which include students’ views on certain issues, their application of contents learned in class as well as the competencies they gradually develop throughout their elementary school studies (see Appendix A, B, and C for sample projects).

It is important to mention that this study was conducted during the COVID-19 pandemic, which imposed considerable limitations for research on the school campus or any kind of interaction. For this reason, it was necessary to adjust the original idea set for

this study, which involved observations and field notes, and rather include data collection instruments that did not require interactions or dependence on teacher or students.

Therefore, document analysis was selected as the technique for this study, as it suited the situation, according to the characteristics described by Merriam and Tisdell (2016).

## **Interviews**

Interviews are considered one of the most widely used methods to gather and analyze the variety of meanings attributed to the phenomenon (Ritchie, Lewis, Nicholls, & Ormston, 2014). As a student-centered methodology, in PBL the teacher is considered as “a facilitator, a coach, a conductor, the guide on the side, not the sage on the stage” (Larmer, Mergendoller, & Boss, 2015. p. 45.). Therefore, gathering information from teachers about how they lead the learning process in PBL is relevant to understanding their instructional decisions in terms of content, activities, final products, engagement and guiding process, and also, the culture built to develop PBL in the classroom (Larmer, Mergendoller, & Boss, 2015).

Furthermore, Kvale and Brinkmann (2009) claim that qualitative research interviews endeavor to interpret the phenomenon of study through the participants' viewpoints; to understand their meaningful experiences, before providing a scientific explanation. According to Bucholtz (2000) and Oliver, Serovich, and Mason (2005), there are two types of interview transcription: naturalized and denaturalized or semistructured. Naturalized transcription prioritizes verbal and non-verbal language. It is a “thorough transcription of what is said and how it is said” (Azevedo et al., 2017, p. 161). On the other hand, denaturalized interviews prioritize verbal information, excluding “idiosyncratic

speech elements” (Azevedo et al., 2017, p. 161), such as non-verbal expressions.

Denaturalized interviews are also known as semistructured interviews (Tisdell & Merriam, 2015). Therefore, in a denaturalized or semistructured interview, verbal information is prioritized. Due to the importance given to the oral information gathered with the interviews, semi-structured type has been chosen for this study.

### **Interview Data Collection Procedure**

Although qualitative interviews are considered unstandardized, some authors provide a variety of methods, ethical implications, and preempt consequences for the interview process (Kvale & Brinkmann, 2009). These interviews were conducted following the framework proposed by Azevedo et al. (2017), as explained below.

**Step one:** Initially, I identified five interviewees who were teachers from 1<sup>st</sup> to 5<sup>th</sup> grade in English and Science, and each of them was assigned a code (see Table 2). The respondents were selected by the researcher taking into consideration their contributions to and experience in the school, as well as their availability.

**Step two:** this step consisted of identifying the type of transcription and getting familiarized with the type of materials available for the interview. In this case, audio recording was used to analyze teachers’ responses. Additionally, note taking was also implemented to confirm that the information provided was clear and correct, and as aforementioned, it is a denaturalized or semistructured type of interview (Tisdell & Merriam, 2015).

The type of transcription scheme chosen was linear (Azevedo et al., 2017), which means that the answer follows the questions (see Table 5 - Sample 2)

## Table 5

### Sample 2: Interview “Int/01/CH”

**Int:** Describe how you design a project for your course (What process is followed)?

**Int/01/CH:** *Okay the three-subject teachers get together and identify projects for the term and we coordinate so that Spanish, science, and social students, all ideas can synchronize on one general project topic. For this semester, our project had to do with the planets and earth, so this term was led more by the math and science side and so I believe math and science are doing more with the actual solar system and the planets. After this, the three of us agree on this overall term project, then we individualize it for the material of our courses.*

Note. Table 5-Sample 2 shows the first question asked to the first grade English and Social Studies teacher. The codes used were “**Int**” that stands for Interviewer, and “**Int/01/CH**” first two stand for word “Interviewee” and the grade, first, in this case. The last two letters, CH, represent the interviewee initials.

**Step three:** For this study, I transcribed the audio files, which allowed me to review the interview and confirm observations that I had written in my notes. After that, final details were added, such as punctuation, capitalization, and codebooks were used. It is important to mention that highly specialized transcriptions are not as necessary in meaning analysis research as in interview analysis focusing on Language (Kvale & Brinkmann, 2009).

**Ethical issues:** The teachers were informed about the purpose of the project and the kind of questions they were going to be asked. At the moment of the interview, the teachers orally gave permission to use the information provided in the interviews for the research

purpose of this study. See Appendix D to access the interview. This study was approved by the school administration office. Students' products were analyzed as a whole and the students' personal information was never revealed at any stage of this research.

### **Modes of interview analysis**

Kvale and Brinkmann (2009) grouped interview analysis into two main groups: analysis focusing on meaning and analysis focusing on language. This study will follow the former type of analysis due to the need for interpretation in order to understand the information gathered from interviews and checklists. This study is not seeking to focus on the aspects of language such as grammar or the structure used in the language. Therefore, an analysis focusing on language was not considered applicable.

In order to conduct the analysis, coding was used to analyze the information collected. According to Glaser and Strauss (2017), coding is "The process of breaking down, examining, comparing, conceptualizing and categorizing data" (Glaser and Strauss, 2017. p. 61).

The criteria to analyze the projects were broken down into checklist categories and then matched and compared to the related answers provided by teachers during the interviews. To analyze the interviews, the teachers' original answers were named as "Natural unit" and the analysis of the theme that dominates the answers was named the "Central unit" (Kvale & Brinkman, 2009 p. 205.).

It is relevant to restate that the categories used for the checklist and the interview questions were based on the Project-Based Gold Standards. For clarification, the Gold Standards presented two types of standards, Essential project design elements, adapted to the Checklist categories, and Project Based Teaching Practices were used as the basis of

Interview questions. As explained in the theoretical framework section, the Gold Standard PBL seven project-based teaching practices guide educators to design, plan, and materialize the curriculum into a project that meets students' needs for their current level. Therefore, building the interview question found on the PBL teaching practices would provide a better understanding on how the teachers design, plan, and implement PBL in the school. Also, it will help this research to compare how PBL is applied in this school in comparison with how it is suggested by the Gold Standards.

The categories in the checklist were related to the questions in the interview. Additionally, the connection between the interviews and the students' final projects was fundamental to verify the coherence between teachers' answers and the way they were reflected on the projects. Besides, having the final products and the teachers' information about the process of designing and implementing the projects could also help triangulate the data. One last point worth mentioning is that for Standard 5, I included some observations I was able to make based on my role as a teacher in the target research context.

## Chapter 4: The Results

The purpose of this study is to understand how teachers integrate the Project-Based-Learning methodology within the existing curriculum in this international bilingual private institution of the Caribbean coast. The 25 projects analyzed were provided by the five teachers interviewed as shown in the previous chapter where the methodology and data were presented. After analyzing the interview answers and triangulating them with the findings in the checklists, the following characteristics were found:

- From the five teacher designed projects, only one of them included a driving question, as observed in the sets of student products chosen for this analysis. It was the project designed and implemented by the 3<sup>rd</sup> grade science teacher. This same project also met all the requirements presented in the checklist (see Appendix N1 to R). Besides, during the interview, the teacher answered in question 8 (Have you ever heard of the PBL Gold Standards? If so, what do you know about them?) that she claimed to have an idea of what the Gold Standards are and the implementation of a driving question in a project (see Appendix R)
- According to the data from the checklist, 100% of the project analyzed required students to research their topics. Depending on the students' levels, they needed to look for information or use and expand the data given by their teachers to accomplish their projects (see item 2 Appendices F, K, O, T, and Y of the checklist).
- According to the checklist, four of the teachers' designed projects were authentic or included a real-world issue, as observed in the sets of student products chosen for this analysis. It means that students were exposed to certain abilities that certain

professions might face. For example, grade 5 (see Appendix C) analyzed and represented the layers of the soil, they made sense of their learning by going outside, observing and recreating the elements and the functions of the soil learned in class.

- 100% of the projects analyzed in this paper were visible for other students, parents, and teachers (see item 6 Appendices I, N, R, W and Z2).
- All projects in this paper are aligned with the Common Core Standards (see item 7 Appendices H, M, Q, V, and Z1).

In this section it is necessary to review the main characteristics of the Project-Based Learning Methodology, following the Gold Standards, which is the framework decided for the design of these projects. The aspects highlighted in this section are also connected to the previous findings. The way in which each of the elements of the Golden Standards can be found or not in the document analysis and the interviews will be explained in detail here.

## Standard 1. Challenging Problem or Question

The first characteristic of the Gold Standards suggested that all projects should be based on a question or problem that helps to develop a learning purpose. However, most of the projects analyzed are designed on curriculum themes rather than a driving question which were not evidenced in the projects as it is following evidenced from the checklist

**Table 6**

*Projects' Titles*

<b>Project #</b>	<b>Title or question</b>
Projects from grade 1. Subject: English.	There are four seasons in the world.
Projects from grade 2. Subject: English.	Not evidenced in the projects. Students developed a mockup, 1 per grade (1 for 2 <sup>nd</sup> a, and 1 for 2 <sup>nd</sup> b) no name was seen.
Projects from grade 3. Subject: Science.	How can we contribute to environmental conservation?

Projects from grade 4. Subject: English.	This project allowed students to give a title to their projects, which were named after students' tales inspirations. Some examples are: The bad Mr. Derrick, The bad princess, The dictator world (see Appendix B)
Projects from grade 5. Subject: Science.	Layers of the soil

Note: Table 6 shows the general names, (questions), or themes that the teachers give to the projects.

Table 6 demonstrated that the majority of the projects implemented by the teachers were based on a theme or name rather than a question. In order to understand the implications of these decisions, this checklist item will be compared with the teachers' answers to question 2 (Table 7), asked in the interview.

**Table 7**

*Teachers' Answers to Question 2*

<b>Teacher question:</b>	<b>Answers</b>
<i>Do you design your projects based on a</i>	

<p><i>question or on a topic?</i></p> <p><i>Explain.</i></p>	
<p>Int/01/CH</p>	<p><i>I think more of a topic... Yes, there were questions like How can you care for our planet earth? but it was not, the whole project was not directed to a single question.</i></p>
<p>Int/02/MS</p>	<p><i>Well, both. Questions about specific topic, The project should be designed around answering a question related to a topic.</i></p>
<p>Int/03/GP</p>	<p><i>I have to say both because I start with the topics and then I plan a question, like a problem.</i></p>
<p>Int/04/DW</p>	<p><i>In social studies, it's a question and in English is usually a project, a topic, or a skill. For example, in social studies, this last term it was what does Colombia look like? what is the composition of Colombia? so that composition includes the culture, the region, the landscapes. And in English, our topic or skill was, how does somebody write poetry? This could be a question but for me, that is more like a skill.</i></p>
<p>Int/05/EB</p>	<p><i>It's based mainly on the topics, and how they connect to each other. We also take into account in what ways this project is applicable to real life situations.</i></p>

It can be inferred that despite questions not being included in the projects' final products, teachers might have mentioned them at the beginning and during the project process. Thus, what teachers seem to have in mind about inquiry questions does not reflect as such in students' projects. Implications and concerns about not having a driving question might be thought to cause students not to narrow down particular problems or refer to a specific issue to apply the acquired knowledge. It may suggest that some learners might not find a purpose for the content or activities developed. However, it was noticed that despite not having a question, students were producing and applying the content and skills learned in their final projects. For example, in Appendix B (Fourth-grade ELA sample projects) students created stories based on the types of government learned in class. A real-life issue was connected to students' skills development, such as writing full sentences, joining paragraphs, and making a sense of closure. These skills were needed to produce this project. According to Larmer, Megendoller, and Boss (2015), the challenge in this type of project is determined by how the teacher addresses difficult concepts and provides clarification of the concepts; the problems to solve should require students to find their own solutions; the complexity of the procedures; and the time spent or the number of steps taken to develop this project. A common pattern was observed in the teachers' answers to question # 5: **What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?** Teachers provide high-frequency words, allow students to work in collaboration with other students named leaders, activate prior knowledge, and modeling, and implement visual resources such as videos and images. These answers demonstrated that most of the teachers implement the similar scaffolding strategies to help their students achieve the expected goals. On the other

hand, PBL also requires students to develop inquiry skills, which is one of the main characteristics of this method. The development of this element will be explained below.

## **Standard 2. Sustained Inquiry**

In Project Based Learning, inquiry is seen as the curiosity awoken in the students while developing the projects, along with the purpose of learning. In Larmer, Megendoller, and Boss' (2015) words, inquiry is: "It is this intentional and purposeful pursuit of a solution or answer that is at the heart of inquiry" (p. 39). When interpreting the interviews' answers, it was noticed that inquiry is mostly understood by the teachers as the search for information or exploration using resources with instructional strategies, which are either provided by the teachers or found by the students themselves. Also, when looking through the projects, it was observed that research and autonomy increased with the student's grade level. Another important characteristic found within the projects and the interviews is how important it is for teachers to develop autonomous and motivated students that show interest in the learning process. For example, in INT/01/CH (see Table 8) teacher did not mention encouraging inquiry, she claimed that she focused more on developing autonomy through independent thinking and motivating students to care about the topic. In interview (Int/03/GP), the teacher mentioned that she provides students with materials that help them find information and develop curiosity about the topic. In interview (Int/05/EB), the teacher encouraged inquiry through instructional strategies and real-life activities that help develop skills students might use in the future. In interview Int/02/MS, he was the only teacher who mentioned the implementation of interviews to the school community or families as a resource of information. An interesting answer was given in interview Int/04/DW (see Table 8), he considered that he would have liked to work more on inquiry, but due to

students' English level and the skills needed to do so, he claimed it was difficult to develop. However, when comparing interviews and projects, due to the lack of questions on most of the projects, it is hard to measure and prove the level of inquiry developed by the students. Despite four out of five teachers claiming to encourage inquiry and autonomy in the classroom, after analyzing teachers' answers and comparing them with the projects' checklists, it can be said that inquiry did not take up much space in the students' projects or, at least, it is not clearly evidenced. Table 8 shows the answers that led to the previous inferences.

**Table 8**

*Teachers' Answers to Question 4*

<p><b>Teachers' code</b></p> <p><b>Question:</b> Do you consider whether your projects encourage autonomy and inquiry? If so, how?</p>	<p><b>Teachers' answer</b></p>
<p><b>Int/01/CH</b></p>	<p><i>I think... my goal was to encourage autonomy, independent thinking, to encourage personal opinions, and production of their own language and ideas I give them options to choose from and I give them the building blocks for the words and then I ask them to create their individual thoughts, their individual sentences, so each student has an opportunity in their own small ways, to express</i></p>

	<p><i>their own thoughts and to express their own opinions. Maybe they care more about plants, maybe they care more about pandas, ... children... a little bit they can follow their interest with the limited vocabulary.</i></p>
<b>Int/02/MS</b>	<p><i>yes, students be able to look for information using the resources given like the books. I also like them to kinda interview people in the community like their parents, family, teachers and even other students. Sometimes I come with resources different from the book, like using Google in the classroom.</i></p>
<b>Int/03/GP</b>	<p><i>yeah, I consider that we do that. I bring them the topics, and I bring materials for them to explore. Can I give an example? We were working with the constellations 2 weeks ago and there was a project how the constellations help us in our daily life and they came up with good ideas, but they didn't know the name of the constellations and didn't give it to them so I gave them materials, and they were interested about the zodiac, the Greek methodology and all of that. They were accountable for their knowledge. I encouraged them to explore the topics they were interested in.</i></p>
<b>Int/04/DW</b>	<p><i>There is autonomy on the productions side but give them that... in these schools where students are still learning English as a second language, there is still quite a bit of a need for meeting the teacher</i></p>

	<p><i>so there is a collaborative effort with myself and the students to reflect over the work, edit the work, to see what the mistakes are, and so I need to have a talk with each individual student... that's two times each in a week but they do the production part ... that is alone. For me this last one (inquiry), not so much. the inquiry at a 4th-grade level, I would like to go a lot more than what I have been. A lot of it depends on their reading level, they need to pull out information so for them to be able to investigate... if I present sources and then they read them, find information depending on their reading English skills.</i></p>
<p><b>Int/05/EB</b></p>	<p><i>I guess they do. When we plan the project, we match the content that needs to be taught with the appropriate instructional strategies. We expect our students to apply independently what they have learned to a real-life situation, they are also expected to share their experiences and understandings through written publications, videos, or presentations of their outcomes.</i></p>

### **Standard 3. Authenticity**

There are four aspects that should be considered to address authenticity in PBL practice: context, task, impact, and personal authenticity. By *context*, Larmer, Megendoller, and Boss (2015) referred to real situations where the students are able to apply the projects. *Task* refers to the tools and activities that match what people do in real-life situations such

as writing letters, creating mock-ups, and analyzing results, among others. In PBL *impact* are the activities that raise any type of change or require actions to benefit the members of the community. Finally, *personal authenticity* is the relation between the students' interests and contexts, such as culture, values, and language, that promote learners' motivation.

When analyzing the projects and relating them with checklist item 3, it was observed that four out of five teachers intended to implement authentic elements that lead to a real-world situation (see teachers answers to question 4 presented in Appendix F, K, O, T, and Y). In the following chart, I will also provide the reason why the project was considered authentic or not. The table below indicates a brief explanation of the project, and it uses the previously mentioned aspects to consider if the projects are authentic or not.

**Table 9**

*Item #3: The Project Involves Real-World Issues*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b>	
Item #3: The project involves real-world issues.	
Project number	Reason
Project 1, grade 1, Int/01/CH	The task and materials used in this project were mainly educational.  Students had to create a booklet.

Project 2, grade 2, Int/02/MS	Creating mockups is part of the 21st-century skills careers and through this project students are expected to learn and respect the community places and jobs.
Project 3, grade 3, Int/03/GP	For this project students researched the importance of the animal's environment, and what helps them to take care of and respect animals and their habitats. The students' final product was the creation of souvenirs made by themselves and pretending to sell them at the science fair.
Project 4, grade 4, Int/04/DW	This project matches two of the four different ways teachers can design an authentic project. According to Larmer, Mergendoller and Boss (2015), authentic projects can be addressed by the context, task, impact and personal authenticity. This project matches two of them: <i>task and personal authenticity</i> . Writing stories is a real-world performance <i>task</i> that students might face in their future careers. This project also matches with the personal authenticity because it shows students interest through their creation of their own stories.
Project 5, grade 5, Int/05/EB	Experiential and authentic. For these projects, students were studying the different types of materials that compose the soil. Therefore, they were able to apply their learning in a real-life context.

After looking at the teacher answers and item 3 of the checklist, it can be concluded that the teachers who intended to develop authenticity in their students, encouraged it

throughout the projects. For instance, Int/01/CH's answer, demonstrated that she is more focused on the development of students' autonomy and the expansion of the students' "limited vocabulary" using sentence starters rather than concentrating on the development of authenticity. The use of the word "maybe" in her answer might mean that, in this project, making students aware of the environment was not the main focus. On the other hand, Int/03/GP considered that she intends to expose students to authentic materials that students can use to explore and find interesting facts. This project reflected students' research and the use of extinct animals to raise awareness of the current situation for our environment, calling for action to not have more extinct animals. Three out of five teachers intended to develop authenticity and their projects showed achievement.

#### **Standard 4. Reflection**

Reflection is seen as the metacognitive process that involves thinking about the problems, the strategies, and the process of the project itself. In PBL, reflection is necessary to comprehend and think about ways to improve future practices. When analyzing the projects and comparing them to the interviews, it was found that none of the projects proved to have a written or observable reflection. The main reason might be because most of the teachers, during the interviews, claimed to do it orally. I will provide the teachers' answers to question 6 and more explanation below in table 10.

#### **Table 10**

*Teachers 'Answer to Question 6*

Q6: Do you include spaces/ opportunities for students to self-reflect on the projects? If so, how?
--

<b><i>Int/01/CH</i></b>	<i>Ummm, not formally, the real answer is no. Not in a formal way. Informally I think the project was interesting to them because they were talkative about it in Spanish but they just don't have the vocabulary in English so I think we did a good job selecting the project because I think it was interesting and relevant in some way to all of them. So I could tell they liked it, you know they could go to work quickly on it but a reflection like, do we formally deeply ask what they thought of it, no.</i>
<b><i>Int/02/GP</i></b>	<i>During the project, I'm always monitoring, and at the end, I always try to do self-evaluation. they have to write. Because if I do it orally, they might not be honest because of the other students. But when they are writing I like that because I'm telling them nobody else is going to read it. It is only for miss Gina, you can be honest. so they say how they feel, they might say what they did not understand. at the end of the project I also ask the other students what they think about their peers' process. But you know, I have third graders so I have to encourage them to always say something positive and if they have something bad or mean to say, then keep it. try to say something nice, because everybody is making a big effort to speak in front of the class or to present something.</i>
<b><i>Int/04/EB</i></b>	<i>As the project progresses, we as teachers try to find opportunities to let the students ask questions, clarify doubts and also to ask questions that will</i>

	<i>deepen students' thinking, while also finding ways to connect previous or new knowledge and skills.</i>
<b><i>Int/04/DW</i></b>	<i>yeah, a lot of it right now is verbal, so when I meet with each one, with their writing, I ask them to read their work to me, tell me what it means, why they chose to write it this way, and then, sometimes we do partner work, they'll ask someone else these questions, the same questions for example, what was your fav poem, why did you like this poem ... it's a self-reflection done with another person. kind of an interview process with another person.</i>
<b><i>Int/05/MS</i></b>	<i>Yes, mostly verbal since their English level is low, I encourage them to talk about their progress and behavior in the project. For this project, it was such a challenge to have them write at least 2 or 4 sentences, some of them did it perfectly, some of them still need help.</i>

The pattern found in the previous answers was “verbal.” To have students reflect, most of the teachers had their students talk and discuss the process. However, it can also be inferred that they apply their own methods according to their students’ English level. For instance, the answer “***Int/03/GP***” shows that the teacher prefers to have learners write because they can be more honest and not afraid of their classmates’ reactions. Also, it can be inferred that this teacher cares about encouraging positive feedback among students. On the other hand, from answer ***Int/05/EB*** (see Table 10), it can be implied that in the reflection process, this teacher focuses more on clarifying content and helping students to set and connect knowledge. The last two answers are very similar in terms of how students

interact with each other to talk about their reflections and what were the students reflecting on (progress, likes and dislikes, reasons for choosing the topic...). Relating every teacher reflection method to the one presented in this framework, it can be said that the most meaningful method was provided in the answer *Int/04/DW*.

### **Standard 5. Public Product**

PBL Gold Standards motivates teachers to give a purpose to the students' projects by making them visible instead of filing them for no one different to teacher and classmates to see. In the particular case of this standard, I was able to observe students display or presentation of their final products since these were some of the first activities done after resuming work from the COVID-19 pandemic. It is worth highlighting that my role as a teacher allowed me to confirm the compliance of this standard because my students and I were involved in these activities. During the analysis of the third-period project (academic term), most of the students' projects were public to parents, teachers, and students from other grades. **Project 1, grade 1; Project 2, grade 2; and Project 5, grade 5** were shown to parents in the Students' Led Conference, where students show parents and other relatives' activities and projects done during that period or term. **Project 3, grade 3**, was presented at the science fair. Students created their own stands and pretended to sell them dinosaurs fossils and souvenirs as they explained to their audience what they learned and how they made the fossils. For **Project 4, grade 4**, students were placed in one of the green areas of the school and they invited other students from 5th and 6th grades to listen to the stories created. For this activity, students wrote five questions that were asked by the audience at the end of the reading. There is a chance that having students present their work can make it more meaningful (Larmer, 2015). When students presented their

activities, it was noticed that they were excited, nervous, and happy about showing their projects to others, which makes the experience more authentic. These observations coincide as well with Ritchhart, Church and Morrison (2011), who claim that through these experiences teachers make understanding become part of “authentic intellectual activities” where students not only learn more about the content, but also understand how to use it.

### **Standard 6. Critique and Revision**

Standard 6 consists of students reflecting on their own learning progress. Attention is also given to feedback that students receive on their work from their teachers, other experts, or peers. The accurate implementation of the critique and revision stage will lead to successful reflection. Critique and revision are done through formal and summative assessments such as quizzes for evaluating students’ conceptual understanding. However, in PBL an equivalent to a final evaluation will be the ability of students to create a project that demonstrates their capacity to solve problems, critical thinking, and collaborative learning (Larmer, Mergendoller & Boss, 2015). All the projects analyzed included a tangible product or project, and therefore, they accomplished part of the criteria described for this standard. However, although teachers reported continuous feedback of students’ work, such progressive and continuous critique and revision could not be evidenced through the analysis of students’ final products, and, therefore, it is not possible to draw conclusions around it. Similar to the research reviewed for this study, this aspect for PBL seemed to be absent. This can be an indication for further research in PBL.

The implementation of the students’ voice and choice standard was not evidenced in the project analyzed. Teachers answers to question one does not reflect the participation of

students in the creation of the projects' names. Neither can be inferred pupils' intervention in the choices of activities or final products that were expected from.

### **Teachers and PBL**

Finally, in order to explore teachers' knowledge and skills in relation to PBL, they were asked: *Have you ever heard of the PBL Gold Standards? If so, what do you know about them? (Q8-interview)*. Teachers' answers are listed below:

- *Int/01/CH: The Gold Standards part no, I have heard about PBL for sure as a major part of my training but if you ask me what the Gold Standards are now, I cannot tell you what they are.*
- *Int/02/MS: No, I have not.*
- *Int/03/GP: I have heard about it. I don't really have much to say. I know those are like the steps to plan a project. We heard it here at the school. It says that we need to have a question.*
- *Int/04/DW: no, I have not. I know about Project-based learning, but not the part of the standard.*
- *Int/05/EB: To be honest, I haven't.*

One of the five teachers seemed to be somewhat familiar with PBL but not with the Gold Standards. The rest of the teachers reported not to have heard or to not know about either. According to these answers, it seems to be that the school administration needs to provide teachers with a PBL training process. The complexity of PBL might confuse teachers in fundamental aspects such as their roles in the classroom and the students' participation. Therefore, trainings are fundamental for its effective implementation.

## **Pedagogical Implications**

This study aims to understand how teachers implemented Project-Based Learning within an existing curriculum in a bilingual school on the Caribbean coast of Colombia. From the analysis conducted, some relevant pedagogical implications can be drawn. First, projects should include a driving question. Having a driving question might have an impact on students' ability to apply the acquired knowledge and understand the purpose of the content or activities developed. This can be implemented by posing a question that, in agreement with the curriculum topics, motivates students to learn more about it. For instance, showing students pictures about the topic and asking what they wonder, what they know, and what they would like to know.

Second, inquiry should not only be seen as the search for information but as a way to increase students' interest and curiosity to ask questions and persist in solving problems. Teachers can consider implementing the launch, explore, and discuss. In launch, the teacher poses a question or situation. In exploring, students should try to find a solution to the presented situation as the teacher goes around the classroom and observes students' work. In the discussion, students present their arguments and how they were able to solve them. This can also contribute to collaborative learning and is still a student-centered methodology.

Third, a formal reflection and analysis of the process should be implemented. These metacognitive processes can increase students' awareness of the successful aspects, the obstacles, and how to overcome them. Finally, the school should take into consideration providing teachers with more training in order to correctly implement PBL as a student-

centered methodology, or modify their PEI, from PBL to a more similar methodology to the current practice such as Thematic teaching.

## Chapter 5. Discussion

The main objectives of this study were to identify the characteristics of the projects designed by teachers, characterize teachers' decision-making process in incorporating and designing the projects (topics, project names, objectives, activities, materials, assessment) as they combined PBL with an existing curriculum, and to identify the challenges teachers may face when implementing PBL. These objectives were explored by triangulating the checklist analysis with the data provided by the interviews. Since the projects were analyzed on the basis of the Gold Standards criteria, the final analysis will take into account the Gold Standard elements and their similarities with the projects and processes implemented in this bilingual school.

One of the first characteristics noticed was the lack of a driving question in most projects. As seen in Table 6, only in project 3 a driving question was evidenced (How can we contribute to environmental conservation?), and the rest of the projects were mostly topic or theme based. According to Larmer, Mergendoller, and Boss, (2015), a challenging problem or question gives the project a meaningful learning purpose. Establishing a driving question can help students to understand that the knowledge acquired is necessary to solve the problem. Also, the driving question intends to awaken learners' curiosity and interest, which will contribute to developing their inquiry skills. However, in the interviews, 3 teachers claimed to use both; they might have mentioned a question before the projects, despite there being no evidence. It is essential to say that the projects analyzed from the upper grades (3rd to 5th grades) required higher production levels, both in writing and speaking. It can be inferred that knowledge was meaningful because students could apply, explain, experience, and even reflect on the content learned, as reported by

teachers. Particularly, the projects implemented from 3<sup>rd</sup> to 5<sup>th</sup> grade that did not have a driving question did have objectives set for the project. They also seemed to be challenging and at student level. They challenged students in many ways, for example, learning new academic vocabulary, delivering oral presentations, and writing more complex texts. What can be strengthened together with including explicit guiding questions in these projects is the depth and range of the issue to be researched and the data gathering tools or means to answer the guiding question.

Furthermore, teachers decisions making process in incorporating and designing the projects was characterized more closely to Thematic Teaching than to PBL, after analyzing the answers to questions 1 and 2 (see question 2 in Appendices E, J, N1, S, and X, see question 1 in Appendices H, M, Q, V, and Z.3) Q, V, Z.1, and Table 7). According to Krauss and Boss (2013), in thematic teaching, educators organize instructional activities within a theme. Similarly, to the answers in question 1, most of the teachers meet with their grade level colleagues, analyze the curriculum themes, the Common Core Standards, and choose a topic with a title and objectives for the project. PBL and Thematic teaching share common features; they both intend to get the students' attention on the content learned, and according to the pupils' age, it should be interesting to them. Both teaching methods are long-term study a unit or term, and cross-subject learning (Krauss & Boss, 2013). In contrast to thematic teaching, in PBL students should have a voice in what and how they learn. Relevance and rigor are two other differences between Thematic Teaching and PBL. The relevance of the project stands on the impact and how it can change students' opinions about the topic of study. The relevance of a project in PBL is related to the challenging questions, the examination of their environment in relation with the object of study, and

theories or conclusions inferred by students at the culmination of the product. After analyzing the projects, it can be inferred that only project 3 students may be encouraged to think through something that can require them to take an action, such as environmental conservation (see Appendix N1). For this project, according to the teacher, students conducted an investigation of the animals living before and after the school was constructed. They made assumptions of what might have happened to the animals that lived before the school was built and this construction affected them. The rest of the projects might have been interesting to students, but not necessarily life changing. For example, Project 4, Grade 4, dealt with writing fictional stories about the type of systems of governments they studied in class. Although this was a creative project, the project design did not necessarily connect systems of government to students' context or lives, and it could have included more critical thinking skills or at least, higher levels of it. Additionally, Krauss and Boss (2013), claimed that rigor makes a big difference between PBL and Thematic Teaching. The projects did not evidence many of the students' opinions but rather factual information that they had learned, again, they were mainly teacher-led.

Finally, in alignment with the last objective in this paper, when identifying the main challenges that teachers might be facing in the implementation of PBL, I have encountered the lack of training provided by the school, which can be inferred from teachers answers to question #8: **Have you ever heard of the PBL Gold Standards? If so, what do you know about them?** Even though teachers reported to have heard of PBL, they were not confidently knowledgeable of this teaching methodology. All of them had heard about PBL, but none of them about the Gold Standards. When implementing PBL, it is important that teachers have extensive learning not only in English but also in other content areas. As

a learners' centered methodology, PBL might be confusing for teachers who have not received previous or enough training in it. Teachers might or might not be aware of the importance of the students' participation in the decisions made and the impacts of authentic task implementation. However, these aspects might be difficult to achieve due to the curriculum and planning time requirements of the school. Despite this bilingual school's claim to implement PBL, teachers are required to have projects ahead of time (before the beginning of the term) and send them to parents with the topics and objectives of the projects, which does not leave much flexibility for student choice or voice in incorporating content into the curriculum, as PBL suggests. Adopting a teaching methodology as the basis for teaching in a whole school context is a massive challenge for which teachers should be provided with teacher development, space for dialogue, and time to plan. As inferred from Question 1 (see Appendices H, M, Q, V and Z1) of the interview, teachers were given time to meet and decide on projects together but the elements of teacher development and space for dialogue need to be given. This situation represents an implementation of PBL susceptible of improvement since most of the projects must be already planned without the students' perspectives, only taking into account the standards and abilities for their level.

The connection between Situated Learning and PBL in this study relates to the collaboration and socialization among the grade level teachers holding different levels of knowledge and expertise in the creation of the projects. Although the constraints of COVID-19 did not allow grade level educators to meet in person, as explained by the teachers, and experienced by myself as part of this teachers' community, I myself evidenced how new teachers, also called by Lave and Wenger (2020), as novice, entered

the community of practice and learned from the experts (more experienced teachers in the PBL implementation at school). Perhaps in non-pandemic immersed conditions, a different dynamic might have happened. A strong community of practice envisioned in Situated Learning would require time, interaction, dialogue, and teamwork. This is an area of improvement in the target school context, in which spaces for more experienced and less experienced as well as more context knowledgeable and less context knowledgeable teachers should be provided. Ideally, expert teachers not only help novice teachers to understand PBL in the school and its alignment with the curriculum standards and topics, but also novice teachers and experts collaborate with ideas for activities, artifacts, final products and assessments ideas when designing the projects.

With the previous information being said, the school can take into consideration providing teachers with more teacher development opportunities in order to implement PBL more effectively as a student-centered methodology or modify their PEI, from PBL to a more similar methodology to the current practice such as Thematic teaching.

## **Chapter 6: Conclusion**

The purpose of this study is to understand how teachers implement PBL into an existence curriculum. The main objectives were to identify the characteristics of the projects designed by teachers, characterize teachers' decision- making process in incorporating and designing the projects, and to identify the challenges that educators might encounter when implementing PBL.

Based on the research question: How do teachers implement PBL methodology within an existing elementary school curriculum in the Colombian Caribbean region? This study has concluded that due the lack of a driving question, students' voice, and teacher development opportunities in PBL, educators were not currently implementing PBL at the time of this study. Instead, this research has concluded that the current methodology implemented at this bilingual school is Thematic teaching. This study considers that PBL is a learner- centered methodology where students learn important knowledge and skills by investigating open-ended questions in order to acquire meaningful learning. Taking into consideration the previous concept, this study has concluded that the methodology being implemented in the school is more related to Thematic teaching than to PBL. When analyzing the checklist and the answers to the interview, I found that essential PBL elements were not being included in the projects such as a driving question, the role of students' decision making, and the fact that, according to the teachers' answers, no teacher development opportunities on PBL has been provided by the school administration.

Some characteristics identified in the projects included that despite not having a driving question, all projects pursued some level of inquiry, according to students' grade level. Also, four of the teacher designed projects included authentic intellectual activities,

where pupils demonstrated a meaningful understanding of the content learned. To reinforce the research element of PBL, these project should incorporate more explicit elements of research, for instance, a guiding research question and various data gathering instruments. Finally, all projects analyzed were public for an external audience, such as parents, school administration staff and other participants of the school community.

In relation to the characteristics of the teachers' decision- making process in incorporating and designing the projects, this study has also concluded that teachers collaborated with each other at their grade level teams in the design of the projects. Although there was no teacher development in PBL provided by the school at the time this study was conducted, as reported by teachers, expert teachers helped novice teachers to understand the implementation of PBL in the school community. Curricular ideas were discussed at grade level meetings for the decision making of the grade level project names. As I have already mentioned, my role as a teacher in this community allowed me to observe this procedure. To design the projects, educators made decisions based on the curriculum provided by the school, and in agreement with the grade level goals. Teacher compared the topics in the grade level curriculum and created a name that corresponded with most of the content of the term.

This study has contributed to the understanding of what PBL is, how its curricular design and decisions were implemented at a school, and implications for adjustments that can be considered for its betterment. It has also presented the constraints of its implementation in the school, and the challenges that teachers have faced by implementing it. Even though there are areas for improvement in the implementation of PBL in the target school context, it is worth highlighting that the school has taken an important step in

defining PBL as its school's core teaching methodology, considering that PBL has a lot to offer to educate students in today's challenging times. Finally, this paper might serve to encourage the school administration to provide teachers with more training in PBL, by understanding the impact of these training in teacher pedagogical competences and instructional practices.

Further researchers might consider implementing a mixed method approach that allows them to compare qualitative and quantitative data about the effectiveness of the strategies currently implemented by teachers, including a larger sample, and perhaps pre-and-post tests that could inform student learning or achievement. In this study, due to the pandemic and time constraints, it was difficult to gather other forms of quantitative data. For qualitative instruments, observations at different stages of the project will benefit the results and the veracity of the information. Further research may also consider exploring a school's experience in implementing PBL longitudinally since this can be a strong teaching methodology that benefits student learning.

### **Limitations**

Due to the impact generated by the COVID-19 pandemic, which affected in-person classes, moving them to online environments, certain conclusions about the challenges that educators might have faced had to be drawn from my experience as a teacher in this study context. As a participant and researcher of this paper, I can conclude that one of the first difficulties that teachers presented was time for projects design. At the beginning of the year, teachers start school a week before the beginning of classes. During this time, educators must meet with their grade level team and start the design of the projects. However, during this planning week, other school activities are required by the

administration staff such as meetings with the school community and parents, classroom arrangements and planning. Therefore, it is hard to include students' voices and opinions in the project's decisions. For the rest of the terms, teachers might have less time than a week, probably a day or so to present the new projects ideas and send them to parents. However, some teachers might include more students' ideas in the development of the projects due to the presence of learners in the school. In any case, teachers and students would benefit from discussing their projects and including ideas that may emerge from sharing them in class. A very important aspect of PBL is considering students voice and this can be something for the school to consider in the future.

Finally, due to my experience, it was also concluded that not receiving teacher development in PBL was considered a challenge. As a learners' centered methodology, PBL can be difficult for teachers who have not received previous or enough teacher development opportunities in it. Teachers might or might not be aware of the importance of PBL elements such as the students' participation in the decisions made and the impacts of authentic task implementation. An understanding of this methodology is extremely relevant for making the proper curricular decisions. It is a gain that institutions are including constructive and engaging methodologies as PBL, and this is an important step the target school has made in strengthening student learning process. This study provides some suggestions that may worth considering.

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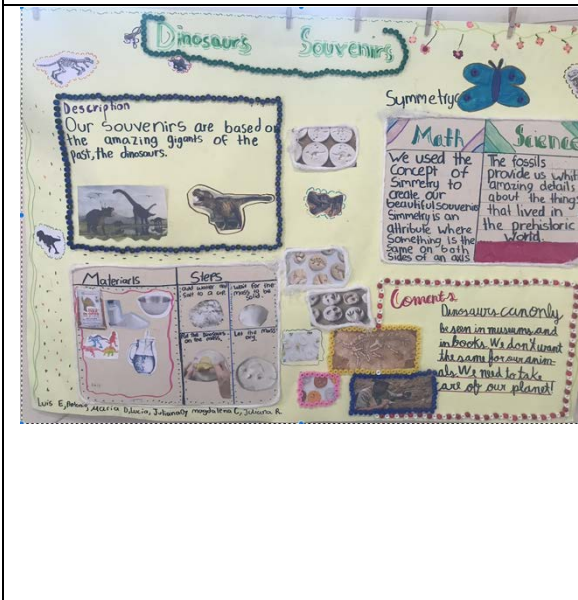
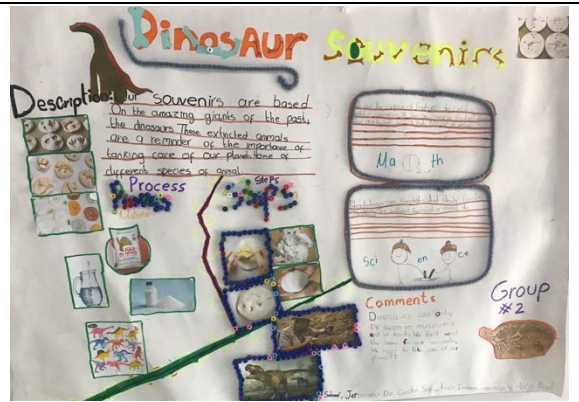
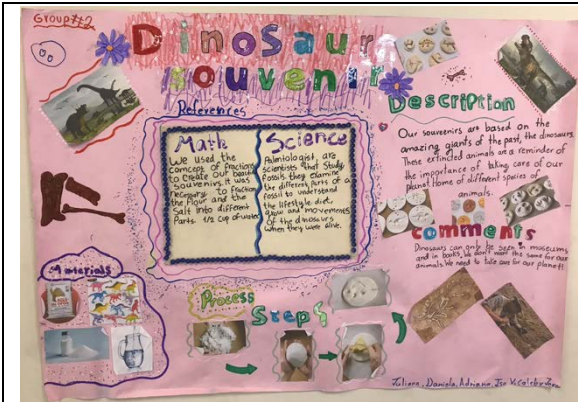
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## Appendix

Appendix A

Third-grade science sample projects



Appendix B

Fourth-grade ELA sample projects

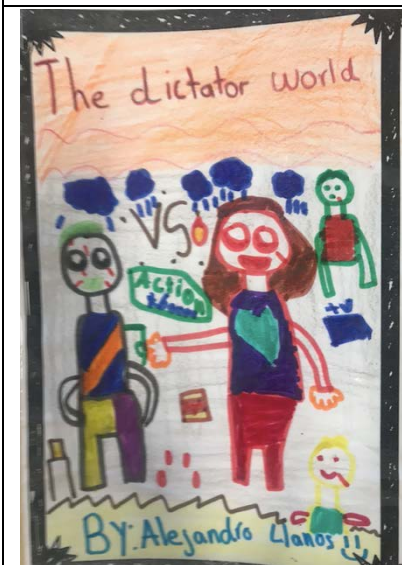


destroy the village!" Yelled Mr. Derrick

The warriors started fighting with Mr. Derrick. He used his sword to fight. Unfortunately, Mr. Derrick injured some of the warriors. The brave Manuela blocked all the attacks that Mr. Derrick made. Suddenly Mr. Derrick disappeared in the fog. "I haven't finished with you!" Cried Manuela.

Everyone in the castle calmed down. Maria Daniels who was Manuela's friend interrupted her. "We need to fight against Mr. Derrick!" Maria Daniels shouted.

Ever  
Mark  
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Mr. D  
and t  
day a  
watch  
when  
of the  
spying  
"I'm go  
Mr. Der  
All the  
Derrick. I  
he didn't  
prison.  
"AAAAHHH



In the country of Braveland Lourdes was playing with her friends in the park. Majo saw a person with a weapon. His name was Jaslot.

"I want to control Braveland to kill people that are ugly" Shouted Jaslot.

Jaslot kill Susy, Pedro, Martin and ochito with the weapon.

"Nooooooo!" Cried Lourdes.

Lourdes and her friends ran fast.

"I am tired" gaped Simon.

Jaslot ran faster than Ivan and cut him in two.

Necesa, Lourdes, Majo, Simon, pipe, Santos, Santos and Santos saw a cave and they went inside.

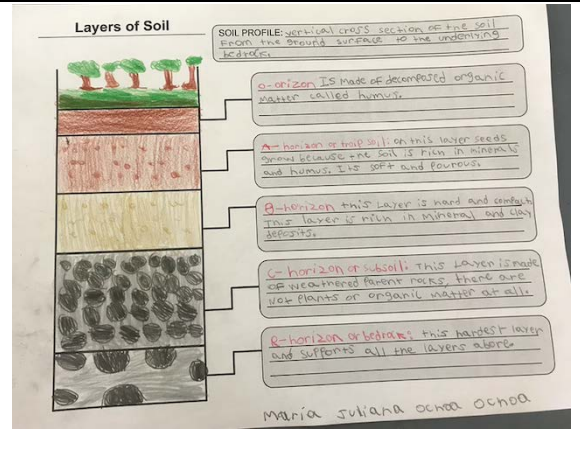
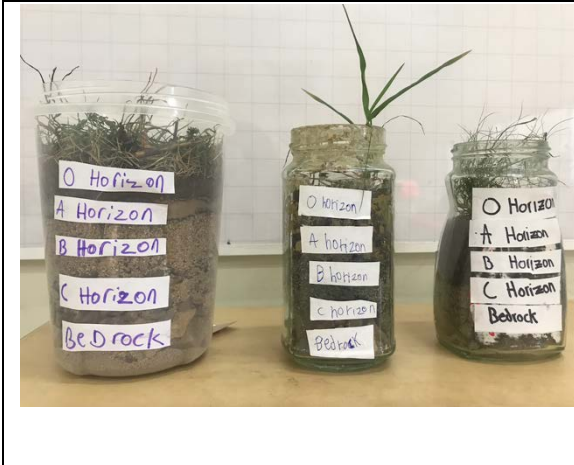
"I want to escape from Braveland because it is so dangerous!"

"You are right" exclaims Alejo.

Jaslot saw fadul sleeping while he was running and went to kill him. Jaslot

## Appendix C

### Fifth-grade science sample projects



## Appendix D

### *The interview*

Mairilis Saldarriaga Fragozo

#### **How do teachers integrate Project-Based Learning (PBL) into an existing elementary school curriculum in the Colombian Caribbean coast?**

(This question is intended to be answered in the city of Valledupar, Cesar).

Objective: This interview aims to explore the ways in which you, as a teacher, design projects for your class. Your answers will be recorded for the purpose of analysis, and they will be strictly confidential. They will only be used for research purposes, and your identity will not be revealed at any stage of the process.

This research aims to analyze, characterize, and strengthen the implementation of Project-Based Learning in our institution.

1. Describe how you design a project for your course (What process is followed?)
2. Do you design your projects based on a question or on a topic? Explain.
3. How do you align the project with the Common Core Standards?
4. Do you consider whether your projects encourage autonomy and inquiry? If so, how?
5. What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?
6. Do you include spaces for students to self-reflect on the projects? If so, how?
7. Do the projects include teacher and/or peer feedback? If so, at what stages in the process are they included?

8. Have you ever heard of the PBL Gold Standards? If so, what do you know about them

## Appendix E

### *Project 1, grade 1, Int/01/CH*

**Common Core Standard:** Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

**Objective:** To identify, recognize and differentiate the weather changes presented in every season and how they affect our culture, traditions, and lifestyles.

**Project further details:** For this project, students had to create a lapbook describing the different seasons in the world. For every season, students mentioned activities they could do, animals, weather, temperature, and celebrations.

### *Project 1, grade 1, Int/01/CH*

<b>CHECKLIST TO ANALYZE THE GOLD STANDARD ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments/ observations.</b>
<b>1</b>	<b>The project is meaningful</b>	Does the project have a driving question?		N	Project based on theme: There are four seasons in the world.

		Does the question have an experiential purpose?		N	Non experiential purpose was demonstrated in the project. Students are not able to experience situations out of their context such as season changes. Mostly, students could not see or feel how fall, winter, or spring feel like.
		Is the driving question/theme adequate for students' cognitive and language proficiency level?	Y		Most of the words are part of the sight words, simple structures such as “in spring I can ... flowers, I love spring. Summer, the sun is shining...”

**Interview question 2**

<p><b>Q2: Do you design your projects based on a question or on a topic? Explain.</b></p> <p><b>Natural unit:</b></p> <p><i>I think more of a topic. Yeah, in this case, if I use the most recent terms as the example, it was not the</i></p>	<p><b>Central theme</b></p> <p>The teacher prefers to use themes instead of questions. It seems that</p>
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<p><i>answer to a question. Yes, it was questions like How can you care for our planet earth? But it was not, the whole project was not directed to a single question.</i></p>	<p>he/she used questions but there was not one main driving question.</p>
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**Appendix F**

*Checklist Items 2 and 3 Related to Question 4*

Item #	Checklist item	Specific	Evidenced		Comments/ observations.
2	<b>The project sustains inquiry</b>	Does it motivate students to research an issue or answer a question? (Does the project encourage learning about something students do not know or do not know enough?)	Y		Spring, fall and winter are out of our Colombian context, therefore, students had to gather information from their teachers, pictures and videos shown by the teacher.
3	<b>The project involves</b>	<ul style="list-style-type: none"> <li>• Are the tasks and materials used in the project related to reality (e.g.,</li> </ul>		N	Final project was a booklet, students are not learning the essential skills they might need to experience the activities they

	<b>real-world issues</b>	preparing budgets, writing letters to editors, doing surveys)?			would like to do in the different seasons.
		<ul style="list-style-type: none"> <li>Does the project call for any kind of action or change from students?</li> </ul>		N	Not evidenced.
<b>Interview question 4</b>					

<p><b>Q4: Do you consider whether your projects encourage autonomy and inquiry? If so, how?</b></p> <p><b>Natural Unit/ Teacher's answer.</b></p> <p><i>I think... my goal was to encourage autonomy, independent thinking, to encourage personal opinions, and production of their own language and ideas I give them options to choose from and I give them the building blocks for the words and then I ask them to create their individual thoughts, their individual sentences, so each student has an opportunity in their own small ways, to express their own thoughts and to express their own opinions. Maybe they care more about plants, maybe they care more about pandas, ... children... a little bit they can follow their interest with the limited vocabulary.</i></p>	<p><b>Central theme/ Researcher interpretation.</b></p> <p>Teacher focuses on developing more autonomy or independence by giving students chunks of language for them to complete with their own ideas.</p>
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## Appendix G

*Checklist Items 4 and 5 Related to Questions 6 and 7.*

Item #	Checklist item	Specific	Evidenced		Comments/ observations.
4	<b>The project engages students in self-reflection</b>	Are there questions or activities that engage students in self-reflection while developing the project?		N	Not observed.
5	<b>The project provides spaces for feedback</b>	Does the project encourage self-evaluation?		N	Not observed.
		Does the project provide space/opportunities for teacher feedback or peer feedback?		N	Not observed.
<b>Interview questions 6 and 7</b>					

<p><b>Q6: Do you include spaces/opportunities for students to self-reflect on the projects? If so, how?</b></p> <p><b>Natural Unit:</b></p> <p><i>Umm, not formally, the real answer is no. Not in a formal way. Informally I think the project was interesting to them because they were talkative about it in Spanish, but they just don't have the vocabulary in English, so I think we did a good job selecting the project because I think It was interesting and relevant in some way to all of them. So, I could tell they liked it, you know they could go to work quickly on it but a reflection like, do we formally deeply ask what they thought of it, no.</i></p>	<p><b>Central theme:</b></p> <p>The teacher does not provide students with a formal self-reflection due to students' English level. She also related self-reflection to motivation.</p>
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<p><b>Q7: Do the projects include teacher and/or peer feedback? If so, at what stages in the process are they included?</b></p> <p><b>Natural Unit:</b></p> <p><i>yeah, we had activities and work in the class that is based on the projects so there were some evaluations along the way. Umm, there were evaluations of their writing, their verbal participation, and engagement with the project. Also, we had a grade for just the overall connection. You know, did they internalize the information and turn it around... so yeah, those along the way. But peer feedback, are you talking about one student reviewing another student? no, that, I've been trying that like you correct somebody else's work but it really confuses them and upsets them so far, so I try it once and I want to try again because I think is a good idea, you know, you rotate it the paper and you check the work of the person next to you. But right now, that upsets them.</i></p>	<p><b>Central Theme:</b></p> <p>Most of the feedback from the teacher was given through “activities and work”. These types of activities were oral, written and motivational. Peer feedback was not given because of the students’ negative reaction to it.</p>
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## Appendix H

Checklist Item 7 Related to Questions 3 and 1.

Item #	Checklist item	Specific	Evidenced		Comments/ Observations
7	<b>The project goal is aligned to the Common Core Standards for the level</b>	Is the project goal connected to the expected standard?	Y		For this project, students wrote informative sentences that provide information about the seasons. They also represented them with drawings.
<b>Interview questions 3 and 1</b>					
<b>Q3: How do you align the project with the Common Core Standards?</b>  <b>Natural Unit:</b>  <i>Ummm... Basically, did I look at the project and the list of Common Core Standards? not exactly but it aligns with my curriculum. if the topics in journeys for term 2 and it also align with the social studies curriculum that I was given.</i>			<b>Central theme:</b>  <b>Q3:</b> The teacher mentioned that she does not necessarily look at the standards (Common Core Standards), she follows the curriculum given by the school (Journeys).		

<p><b>Q1: Describe how you design a project for your course (What process is followed?)</b></p> <p><i>Okay the three-subjects teachers get together and identify projects for the term and we coordinate so that Spanish, science, and social students, all ideas can synchronize on one general project topic. For this semester, our project had to do with the planets and earth, so this term was led more by the math and science side and so I believe math and science are doing more with the actual solar system and the planets. After the three of us agree on this overall term project, then we individualize it for the material of our courses.</i></p>	<p><b>Central theme:</b></p> <p><b>Q1:</b> Teacher 1 explained that Spanish, math and English teachers meet to discuss ideas about the term project. After they have selected a topic, based on their curriculums, they start breaking it down into lesson plans, which includes resources.</p>
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## Appendix I

Checklist Item 6 Related to Questions 5 and 8.

Item #	Checklist item	Specific	Evidenced		Comments/ Objectives
6	<p><b>There are spaces/opportunities to make students' projects visible (if included the project description or guidelines)</b></p>	<p>Do students share, present, or exhibit their final products?</p>	Y		<p>For this period, students presented their projects to parents in the Students Led Conference.</p>
<b>Interview questions 5 and 8</b>					
<p><b>Q5: What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?</b></p> <p><b>Natural Unit:</b></p> <p><i>aha, aha... so yeah, we use the High-frequency words. we use the grammar and vocabulary that they're learning like I and we, we use the actions verbs, we use the vocabulary for animals and colors, and trees and plants and flowers, we use the basis and we're practicing how to make a complete sentence, we just scaffold basically with the parts that they already know.</i></p>			<p><b>Central theme:</b></p> <p>First, the teacher provides vocabulary and context for students to understand. After that she scaffolds students to build sentences. "I can go to the beach"</p> <p>"The weather is hot". Samples taken from the booklet.</p>		

<p><b>Q8: Have you ever heard of the PBL Gold Standards? If so, what do you know about them?</b></p> <p><b>Natural Unit:</b></p> <p><i>The Gold Standards part, no I have heard about PBL for sure as a major part of my training but if you ask me what the Gold Standards are now, I cannot tell you what they are.</i></p>	<p><b>Central theme:</b></p> <p>The teacher has heard about Project Based Learning, but not about the Gold Standards.</p>
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**Project 2, grade 2, Int/02/MS:**

**Common Core Standard:** Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

**Objective:** To collaboratively construct and subsequently write a description of a community mockup.

**Project further details:** For this project, students were expected to construct a mockup of their community. This community should represent the city places such as the school, the streets, and hospitals among other important areas. The teacher suggested that students should write a short-leveled description of the process.

**Appendix J**

*Project 2, Grade 2, Int/02/MS*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments</b>
<b>1</b>	<b>The project is meaningful</b>	Does the project have a driving question?		N	Questions were not evidenced in the project.
		Does the question have an experiential purpose?	Y		Students had to build by themselves, along with the teacher's help, a mockup of the city.
		Is the driving question adequate for students'	Y		Despite not being a question, the theme name was adequate for

		cognitive and language proficiency levels?			2nd-grade level in this bilingual private school.
<b>Interview question 2</b>					
<b>Q2: Do you design your projects based on a question or on a topic? Explain.</b>  <b>Natural unit:</b>  <i>Well, both. Questions about specific topic, The project should be designed around answering a question related to a topic.</i>			<b>Central theme:</b>  Although the question was not evidenced in the project, according to the teacher answer, he might ask questions related to the topic before presenting it to the students.		

**Appendix K**

*Checklist Items 2 and 3 Related to Question 4.*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
Ite m #	Checklist item	Specific	Evidenced		Comments
2	<b>The project sustains inquiry</b>	Does it motivate students to research an issue or answer a question? (Does the project encourage learning about something	Y		Students needed to look at Google Streets, talk to their parents and ask them about important places in the city. Also, they learned structures of language such as writing sentences in

		students do not know or do not know enough?)			past tense and implementing vocabulary learned.
3	<b>The project involves real-world issues</b>	1) Are the tasks and materials used in the project related to reality (e.g., preparing budgets, writing letters to editors, doing surveys)?	Y		Creativity is part of the 21st-century skills, and students create mockups in this project.
		2) Does the project call for any kind of action or change from students?	Y		It is expected for students to learn and respect the community places and jobs.
<b>Interview question 4</b>					

<p><b>Q4: Do you consider whether your projects encourage autonomy and inquiry? If so, how?</b></p> <p><b>Natural unit:</b></p> <p><i>yes, students should be able to look for information using the resources given like their English books. I also like them to interview people in the community like their parents, family, teachers, and even other students. Sometimes I come up with resources different from the book, like using Google in the classroom.</i></p>	<p><b>Central theme</b></p> <p>Teacher encourages students to look for information using their English book and resources created for them using Google.</p> <p>After the teacher mentioned these Google, I asked him what kind of resources he was using in Google, to what he answered Youtube, Google maps, and Kahoot. It is important to mention that at this age, students are not allowed to bring any type of technological devices to school due to school policies.</p>
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**Appendix L**

*Checklist Items 4 and 5 Related to Questions 6 and 7.*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments/ observations</b>
4	<b>The project</b>	Are there questions or activities that engage		N	Not observed.

	<b>engages students in self-reflection</b>	students in self-reflection while developing the project?			
<b>5</b>	<b>The project provides spaces for feedback</b>	Does the project encourage self-evaluation?	Y		With the teacher's scaffolding, students wrote one or two sentences describing how they felt working as a group, what went well and what went wrong.
		Does the project provide space/opportunities for teacher feedback or peer feedback?	Y		Grammatical corrections.
<b>Interview questions 6 and 7</b>					

<p><b>Q6: Do you include spaces/opportunities for students to self-reflect on the projects? If so, how?</b></p> <p><b>Natural unit:</b></p> <p><i>Yes, mostly verbal since their English level is low, I encourage them to talk about their progress and behavior in the project. For this project, it was such a challenge to have them write at least 2 or 4 sentences, some of them did it perfectly, but some of them still need help.</i></p>	<p><b>Central theme</b></p> <p>Q6: It is easier for students to talk about their reflection than to write about them.</p> <p>The teacher tries to encourage them to do both.</p>
<p><b>Q7: Do the projects include teacher and/or peer feedback? If so, at what stages in the process are they included?</b></p> <p><b>Natural unit:</b></p> <p><i>Sure, constantly, because of their age I'm constantly supervising them and helping them stay on English.</i></p>	<p><b>Central theme:</b></p> <p>Q7: Due to the students' age, the teacher provides constant scaffolding.</p>

**Appendix M**

*Checklist Item 7 Related to Questions 3 and 1.*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments/ observations</b>
7	<b>The project goal is aligned to the Common Core Standards for the level</b>	Is the project goal connected to the expected standard?	Y		For this project, students wrote an explanation of the process implementing the vocabulary and structures learned.
<b>Interview questions 3 and 1</b>					
<b>Q3: How do you align the project with the Common Core Standards?</b>  <b>Natural unit:</b> <i>By using the standards as a guide to design the questions and the project.</i>			<b>Central theme:</b>  <b>Q3:</b> Projects are aligned to standards.		
<b>Q1: Describe how you design a project for your course (What process is followed?)</b>  <b>Natural unit:</b> <i>First, I look at what the standards are for them then try to think of something that will be fun and</i>			<b>Central theme:</b>  <b>Q1:</b> The teacher designs the projects based on the standards, interesting and meaningful aspects for the students to keep them motivated.		

<i>meaningful for the students, so that they stay engaged and excited throughout the project.</i>	
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**Appendix N**

*Checklist Items 6 and 5 Related to Questions 5 and 8.*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTS IN THE PROJECTS</b>				
Item #	Checklist item	Specific	Evidenced	Comments/observation
<b>6</b>	<b>There are spaces/opportunities to make students' projects visible (if included in the project description or guidelines)</b>	Do students share, present, or exhibit their final products?	Y	Students presented this project to their parents in the Students' Led Conference.
<b>Interview questions 5 and 8</b>				
<b>Q5: What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?</b>  <b>Natural unit:</b>			<b>Central theme:</b>  <b>Q5:</b> Teacher scaffolds students by getting them familiarized with the vocabulary and activating previous knowledge.	

<p><i>We socialize the vocabulary first; I show them videos and images to get them familiarized with the topic. I listen to them to see what they know.</i></p>	
<p><b>Q8: Have you ever heard of the PBL Gold Standards? If so, what do you know about them?</b></p> <p><b>Natural unit:</b></p> <p><i>No, I have not.</i></p>	<p><b>Central theme:</b></p> <p><b>Q8:</b> Teacher has never heard of the PBL Gold Standards.</p>

**Project 3, grade 3, Int/03/GP**

**Common Core Standard:** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.1 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

**Objective:**

**Project further details:** in this project, students had to produce dinosaurs' souvenirs to represent the importance of the animals we have nowadays.

**Appendix N1**

*Checklist Item 1 and 5 Related to Question 2.*

<p style="text-align: center;"><b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b></p>				
<p><b>Item #</b></p>	<p><b>Checklist item</b></p>	<p><b>Specific</b></p>	<p><b>Evidenced</b></p>	<p><b>Comments</b></p>

<b>1</b>	<b>The project is meaningful</b>	Does the project have a driving question?	Y		How can we contribute to environmental conservation?
		Does the question have an experiential purpose?	Y		The experiential purpose was to create posters and fossil samples using realia.
		Is the driving question adequate for students' cognitive and language proficiency levels?	Y		At this level, students were using more adjectives, whole sentences, and applying science vocabulary to describe the dinosaurs.

### Interview question 2

<p><b>Q2: Do you design your projects based on a question or on a topic? Explain.</b></p> <p><b>Natural unit:</b></p> <p><i>I have to say both because I start with the topics and then I plan a question, like a problem.</i></p>	<p><b>Central theme</b></p> <p>The teacher focuses the question on a topic related to the curriculum.</p>
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### Appendix O

Checklist Items 2 and 3 Related to Question 4.

Item #	Checklist item	Specific	Evidenced	Comments
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2	<b>The project sustains inquiry</b>	Does it motivate students to research an issue or answer a question? (Does the project encourage learning about something students do not know or do not know enough?)	Y	Students needed to research dinosaurs, fossils, and paleontology. Besides, they were required to apply the knowledge learned in classrooms, such as symmetry, 2D and 3D shapes, and relate it to science topics.
3	<b>The project involves real-world issues</b>	1) Are the tasks and materials used in the project related to reality (e.g., preparing budgets, writing letters to editors, doing surveys)?	Y	Students had to create souvenirs and sell them.
		2) Does the project call for any action or change from students?	Y	For this project students research the importance of the animals' environment, and what helps them to take care and respect animals and their habitats.
<b>Interview question 4</b>				

<p><b>Q4: Do you consider whether your projects encourage autonomy and inquiry? If so, how?</b></p> <p><b>Natural unit:</b></p> <p><i>yeah, I consider that we do that. I bring them the topics, and I bring materials for them to explore.</i></p> <p><i>Can I give an example? We were working with the constellations 2 weeks ago and there was a project how the constellations help us in our daily life and they came up with good ideas, but they didn't know the name of the constellations and didn't give it to them so I gave them materials, and they were interested about the zodiac, the greek methodology and all of that. they were accountable for their knowledge. I encourage them to explore the topics they were interested in.</i></p>	<p><b>Central theme</b></p> <p>The teacher encourages inquiry and autonomy through leveled materials that students should use to find information.</p>
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**Appendix P**

*Checklist Items 4 and 5 Related to Questions 6 and 7.*

Item #	Checklist item	Specific	Evidenced		Comments
4	<b>The project engages</b>	Are there questions or activities that engage students in self-	Y		Students reflect at the end of the project presentations.

	<b>students in self-reflection</b>	reflection while developing the project?			
5	<b>The project provides spaces/opportunities for feedback</b>	Does the project encourage self-evaluation?	Y		At the end of the presentations, the teacher asked them three questions: How did they feel? What was their favorite part and what could have gone better?
		Does the project provide space/opportunities for teacher feedback or peer feedback?	Y		Both teacher and Peers.
<b>Interview questions 6 and 7</b>					
<b>Q6: Do you include spaces/opportunities for students to self-reflect on the projects? If so, how?</b> <b>Natural unit:</b> <i>During the project, I'm always monitoring, and at the end, I always try to do self-evaluation. they have to write. Because if I do it orally they might not be honest because of the other students. But when they are writing I like that because I'm telling them nobody else</i>			<b>Central theme</b> <b>Q6:</b> The teacher prefers students to write their reflection since she considers that having this information in private might help students to be honest about it. She encourages students to give positive comments.		

<p><i>is going to read it. It is only for miss Gina, you can be honest. so they say how they feel, they might say what they did not understand. at the end of the project I also ask the other students what they think about their peers' process. But you know, I have third graders so I have to encourage them to always say something positive and if they have something bad or mean to say, then keep it. try to say something nice, because everybody is making a big effort to speak in front of the class or to present something.</i></p>	
<p><b>Q7: Do the projects include teacher and/or peer feedback? If so, at what stages in the process are they included?</b></p> <p><b>Natural unit:</b></p> <p><i>Mostly at the end and I don't really use grades with them like I don't tell them "you have a 90%" cuz I feel like at that age they don't need to know that. But I try to tell them what went well, what can be improved... I don't give attention to the number, that's something for the parents. They are not doing much peers', but they should.</i></p>	<p><b>Central theme:</b></p> <p><b>Q7:</b> The teacher provides feedback at the end of the process. Peer feedback is not common in her classes.</p>

**Appendix Q**

*Checklist Item 7 Related to Questions 3 and 1.*

Item #	Checklist item	Specific	Evidenced		Comments
7	<p><b>The project goal is aligned to the Common Core Standards for the level</b></p>	<p>Is the project goal connected to the expected standard?</p>	Y		
<b>Interview questions 3 and 1</b>					
<p><b>Q3: How do you align the project with the Common Core Standards?</b></p> <p><b>Natural unit:</b></p> <ul style="list-style-type: none"> <li><i>Well, you know that we follow the common core for the curriculum so when I'm planning and I'm taking the projects, I'm using the common cores.</i></li> </ul>			<p><b>Central Theme:</b></p> <p><b>Q3:</b> The teacher aligns projects and planning with the Common Core Standards.</p>		
<p><b>Q1: Describe how you design a project for your course (What process is followed?)</b></p> <p><b>Natural unit:</b></p> <ul style="list-style-type: none"> <li><i>Ok, first of all, I need to check my curriculum at the beginning of the year when I'm planning, so I have an idea or an overview of the topics that I have for the year so I can start planning that project. As you know, science is easier to plan because they talk about daily</i></li> </ul>			<p><b>Central theme:</b></p> <p><b>Q1:</b> She first checks the curriculum and topics and aligns them with her ideas for the projects. Afterwards, she shows students her ideas and asks them questions about the topic. She finally mixes her</p>		

<p><i>life problems, situations so every term I try to pick topics that would be fun for the kids or they would have more questions about it... so I pick that topic. So when in the class I try to ask them questions like a real problem, so according to that, I start planning the project. So I let them pick what we are gonna do. I try to guide them.</i></p>	<p>ideas and the kids to create a project.</p>
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**Appendix R**

*Checklist Item 6 Related to Questions 5 and 8.*

Item #	Checklist item	Specific	Evidenced		Comments
<b>6</b>	<b>There are spaces/opportunities to make students' projects visible (if included in the project description or guidelines)</b>	Do students share, present, or exhibit their final products?	Y		Students present and sell their products at the math and science fair.
<b>Interview questions 5 and 8</b>					

<p><b>Q5: What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?</b></p> <p><b>Natural unit:</b></p> <ul style="list-style-type: none"> <li>• <i>Once I'm planning the groups, I know that some students can be leaders, and that works for me. I don't differentiate the groups. I have a leader, I try to make a good match because I try to mix the leaders, with the very shy students and I encourage them all to work as a team. Sometimes I use the word "mini-teachers" so if any of my students have a question, I encourage them to look for the "mini-teachers" and see if they can help them. Sometimes it's easier for them to understand their friends than the teacher.</i></li> </ul>	<p><b>Central Theme:</b></p> <p><b>Q5:</b> The teacher uses collaborative learning and strategically sets students groups. Each group has leaders or "mini teachers" that help the rest of the students to understand better.</p>
<p><b>Q8: Have you ever heard of the PBL Gold Standards? If so, what do you know about them?</b></p> <p><b>Natural unit:</b></p> <p><i>I have heard about it. I don't really have much to say. I know those are like the steps to plan a project. We heard it here at the school. It says that we need to have a question.</i></p>	<p><b>Central theme:</b></p> <p><b>Q8:</b> The school gave information about PBL, she thinks PBL Gold standards are steps to plan the projects. She is aware that projects should have a question.</p>

*Project 4, grade 4, Int/03/DW*

**Common Core Standard:** Write narratives to develop real or imagined experiences or events using effective techniques, descriptive details, and clear event sequences.

**Objective:** create a fictional story with a central character that has a conflict within a government type chosen by the student.

**Project further details:** for this project, students wrote a fictional story based on one of the types of governments learned in social studies.

**Appendix S**

*Checklist Item 1 Related to Question 2.*

<b>CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE PROJECTS</b>					
<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments</b>
<b>1</b>	<b>The project is meaningful</b>	Does the project have a driving question?		N	Questions were not evidenced in the project.
		Does the question have an experiential purpose?	Y		The whole story was handwritten, created, and drawn by the students.
		Is the driving question adequate for students' cognitive and language proficiency levels?	Y		Despite not being a question, the theme name was adequate for 4th-grade level in this bilingual private school. Project instructions were not evidenced in the project.
<b>Interview question 2</b>					
<b>Q2: Do you design your projects based on a question or on a topic? Explain.</b>			<b>Central theme:</b>		
<b>Natural unit:</b>			The teacher focuses on a question that develops skills.		

<p><i>in social studies, it's a question and in English is usually a project, a topic, or a skill. For example, in social studies, this last term it was what does Colombia look like? what is the composition of Colombia? so that composition includes the culture, the region, the landscapes. And in English, our topic or skill was, how does somebody write poetry? This could be a question but for me, that is more like a skill.</i></p>	
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## Appendix T

*Checklist Items 2 and 3 Related to Question 4.*

Item #	Checklist item	Specific	Evidenced	Comments
2	<b>The project sustains inquiry</b>	Does it motivate students to research an issue or answer a question? (Does the project encourage learning about something students do not know or do not know enough?)	Y	Students needed to gather information about types of government. Also, they learned structures of language such as writing sentences in past tense and implementing vocabulary.

3	<b>The project involves real-world issues</b>	1) Are the tasks and materials used in the project related to reality (e.g., preparing budgets, writing letters to editors, doing surveys)?	Y		According to Krauss and Boss (2013), writing a book overlap with language art and becoming a writer.
		2) Does the project call to any kind of action or change from students?		N	Mainly demonstration of grammatical structures knowledge.

#### Interview question 4

<p><b>Q4: Do you consider whether your projects encourage autonomy and inquiry? If so, how?</b></p> <p><b>Natural unit:</b></p> <p><i>There is autonomy on the productions side but give them that... in these schools where students are still learning English as a second language, there is still quite a bit of a need for meeting the teacher so there is a collaborative effort with myself and the students to reflect over the work, edit the work, to see what the mistakes are, and so I need to have a talk with each individual student... that's two times each in a week</i></p>	<p><b>Central theme:</b></p> <p>Q4: Teacher included autonomy, but he considers that due to the students' level, teacher and students' support is needed. He likes to provide each student spaces for asking questions and checking on progress. On the other hand, inquiry is not very common in his classes due to students' low reading level.</p>
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<p><i>but they do the production part ... that is alone. For me this last one (inquiry), not so much. the inquiry at a 4th-grade level, I would like to go a lot more than what I have been. A lot of it depends on their reading level, they need to pull out information so for them to be able to investigate... if I present sources and then they read them, find information depending on their reading English skills.</i></p>	
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**Appendix U**

*Checklist Items 4 and 5 Related to Questions 6 And 7.*

Item #	Checklist item	Specific	Evidenced		Comments
4	<b>The project engages students in self-reflection</b>	Are there questions or activities that engage students in self-reflection while developing the project?		N	Not observed.
5	<b>The project provides spaces/opportunities for feedback</b>	Does the project encourage self-evaluation?		N	Not observed
		Does the project provide space/opportunities for teacher feedback or peer feedback?		N	Not observed

Interview questions 6 and 7	
<p><b>Q6: Do you include spaces for students to self-reflect on the projects? If so, how?</b></p> <p><b>Natural unit:</b></p> <p><i>yeah, a lot of it right now is verbal, so when I meet with each one, with their writing, I ask them to read their work to me, tell me what it means, why they chose to write it this way, and then, sometimes we do partner work, they'll ask someone else these questions, the same questions for example, what was your fav poem, why did you like this poem ... it's a self-reflection done with another person. kind of an interview process with another person.</i></p>	<p><b>Central theme:</b></p> <p><b>Q6: Although not reflected on students' projects, according to teacher's answer in the interview, self-reflection is done individually with the teacher and with a partner as an interview.</b></p>
<p><b>Q7: Do the projects include teacher and/or peer feedback? If so, at what stages in the process are they included?</b></p> <p><i>oh, yeah, constantly because without it, is easy for them to end up in a different direction. and especially with the work on English.</i></p>	<p><b>Central theme:</b></p> <p><b>Q7: Teacher feedback and monitoring is constantly done to redirect students' attention.</b></p>

## Appendix V

Checklist Item 7 Related to Questions 1 and 3.

Item #	Checklist item	Specific	Evidenced	Comments

7	<b>The project goal is aligned to the Common Core Standards for the level</b>	Is the project goal connected to the expected standard?	Y		For this project, students wrote a story, using descriptions and sequences.
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**Interview questions 1 and 3**

<p><b>Q1: Describe how you design a project for your course (What process is followed?)</b></p> <p><b>Natural unit:</b></p> <p><i>I generally start with thinking about what are the skills someone will need to do in order to be able to produce a work. So let's say for example, if the project is a book, a display, I think what I'd like them to be able to show on it ... what are the skills necessary for someone to be able to do this. For example, building a house, what skills do they need to have, like how to take measures, how to use the tools. In doing a project I need them to know how to make complex sentences, imbalance using different word choices... in social studies how to write informational pictures, how to find relevant information... and from there, teach the skills. After that, I make a timeline so that'd be my learning plan for the semester and then break down the skills into</i></p>	<p><b>Central theme:</b></p> <p>Q1: Teacher firstly thinks about the skills needed for producing the content and finally he creates a timeline that will help him organize the planning.</p>
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<p><i>different weeks so I have an idea of what I would be teaching each week.</i></p>	
<p><b>Q3: How do you align the project with the Common Core Standards?</b></p> <p><b>Natural unit:</b></p> <p><i>Actually, I usually start with the common core standards. I read the ccs during each semester but have a glee before each semester .. because that's how I decide what I will be teaching so the first step of planning is what I need them to do for the new project. I think of what are the skills necessary to do ... what are the skills, that's what I look at the ccs. I usually find a way to group them and then, those will be divided into weeks.</i></p>	<p><b>Central theme:</b></p> <p><b>Q3:</b> The standards help him to establish the topics and the abilities that will be necessary developed to work on the projects.</p>

**Appendix W**

*Checklist Item 6 and 5 Related to Questions 5 and 8.*

<b>Item #</b>	<b>Checklist item</b>	<b>Specific</b>	<b>Evidenced</b>		<b>Comments</b>
<b>6</b>	<b>There are spaces/opportunities to make students'</b>	Do students share, present,	Y		Students presented this project throughout different

	<b>projects visible (if included in the project description or guidelines)</b>	or exhibit their final products?		meetings with other upper-primary graders.
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**Interview questions 5 and 8**

<p><b>Q5: What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?</b></p> <p><b>Natural unit:</b></p> <p><i>I will teach a lot of vocabulary before ... the vocabulary words I need to know, usually with a lot of images, a lot of word acting, a lot of sentence stars, so for a lot of students who need more instructions I use English outlines for them to be able to understand how to write a sentence... I do a lot of modeling. So for example, when writing there is a time when they don't even sit at their desk, they sit really close to me and I'd model the thinking process, how does someone think in English, write in English, so that will walk someone through do it all out loud. And then I do it the second time, to see if they are able to follow the process and think through English writing and speaking.</i></p>	<p><b>Central theme:</b></p> <p><b>Q5:</b> Using activities, the teacher gets students familiarized with the necessary vocabulary. He also uses sentence starters, modeling writing and the thinking out loud process when sitting with students individually.</p>
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<p><b>Q8: Have you ever heard of the PBL Gold Standards? If so, what do you know about them?</b></p> <p><b>Natural unit:</b></p> <p><i>no, I have not. I know about Project-based learning, but not the part of the standard.</i></p>	<p><b>Central theme:</b></p> <p><b>Q8:</b> He has heard about Projects-Based but not about the Gold Standards.</p>
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***Project 5, grade 5, Int/05/EB:***

**Common Core Standard:**

- Model erosion of Earth materials and collection of these materials as part of the process that leads to soil (e.g., water moving sand in a playground area and depositing this sand in another area).
- Use or build models to simulate the effects of how wind and water shape and reshape the land (e.g., erosion, sedimentation, deposition, glaciation).
- Examine materials that compose soil (i.e., sand, clay, humus, gravel, water) and describe these on the basis of their properties (i.e., color, luster, granularity, texture, mass relative to size, particle size, ability to absorb water, pore space, ability to compact).

**Objective:** Students will examine materials that compose soil (i.e; sand, clay, humus, gravel, water) and explain how fossils can be used to make inferences about past life, climate, geology, and environments.

**Project further details:** For this project, students used a jar, rocks, sand, and grass to represent the layers of soil. Besides, they drew and wrote a description of each layer of soil.

**Appendix X**

*Checklist of Project 5, grade 5, Int/05/EB*

**CHECKLIST TO ANALYZE THE ELEMENTS IMPLEMENTED IN THE  
PROJECTS**

Item #	Checklist item	Specific	Evidenced		Comments
1	The project is meaningful	Does the project have a driving question?		N	Not evidenced in the project.
		Does the question have an experiential purpose?	Y		Field trips were necessary for this project, for students to gather the materials and observe what the soil layers look like.
		Is the driving question/theme adequate for students' cognitive and language proficiency level?	Y		New words were introduced such as “bedrock, horizon, layer, soil, organic matter...” Also, students started getting familiarized with the soil layers and how to differentiate each layer.
<b>Interview question 2</b>					
<b>Q2: Do you design your projects based on a question or on a topic? Explain.</b>  <b>Natural unit:</b>  <i>It's based mainly on the topics, and how they connect to each other. We also take into account</i>			<b>Central theme:</b>  <b>Q2:</b> Projects are mainly focused on topics.		

<i>in what ways this project is applicable to real life situations.</i>	
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**Appendix Y**

*Checklist Items 2 and 3 Related to Question 4.*

Item #	Checklist item	Specific	Evidenced		Comments
2	<b>The project sustains inquiry</b>	Does it motivate students to research an issue or answer a question? (Does the project encourage learning about something students do not know or do not know enough?)	Y		For this project, students needed to learn about the soil layers, and their differences, concepts, and appearance.
3	<b>The project involves real-world issues</b>	1) Are the tasks and materials used in the project related to reality (e.g., preparing budgets, writing letters to editors, making surveys)?	Y		Authentic because students had to go outside to observe the soil and recreate it using materials from itself. This is also an ability that a geologist might need.

		2) Does the project call to any kind of action or change from students?		N	Mainly conceptual work/learning.
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**Interview question 4**

<p><b>Q4: Do you consider whether your projects encourage autonomy and inquiry? If so, how?</b></p> <p><b>Natural unit:</b></p> <p><i>I guess they do. When we plan the project we match the content that needs to be taught with the appropriate instructional strategies. We expect our students to apply independently what they have learned to a real-life situation, they are also expected to share their experiences and understandings through written publications, videos, or presentations of their outcomes.</i></p>	<p><b>Central theme</b></p> <p><b>Q4:</b> Teacher expects students to apply the abilities taught through content, in real life.</p>
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**Appendix Z**

*Checklist Items 4 and 5 Related to Questions 6 and 7.*

Item #	Checklist item	Specific	Evidenced	Comments
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4	<b>The project engages students in self-reflection</b>	Are there questions or activities that engage students in self-reflection while developing the project?		N	Not observed in the project.
5	<b>The project provides spaces/opportunities for feedback</b>	Does the project encourage self-evaluation?		N	Not evidenced in the project
		Does the project provide space/opportunities for teacher feedback or peer feedback?		N	Not evidenced in the project
<b>Interview questions 6 and 7</b>					
<b>Q6: Do you include spaces/opportunities for students to self-reflect on the projects? If so, how?</b>  <b>Natural unit:</b>  <i>As the project progresses, we as teachers try to find opportunities to let the students ask questions, clarify doubts and also to ask questions that will deepen students' thinking, while also finding ways to connect previous or new knowledge and skills. Mostly at the end.</i>			<b>Central theme:</b>  <b>Q6:</b> Self-reflection is done through interaction with the teacher when clarifying doubts. He helps them reflect on their thinking process, having them make connections with previous and new knowledge.		
<b>Q7: Do the projects include teacher and/or peer feedback? If so, at what stages in the process are they included?</b>  <i>Yeah! During the execution of the projects and at the closure stage, at the end when they have like finished all the task... at the activities. At the end they received their teachers' feedback</i>			<b>Central theme:</b>  <b>Q7:</b> Teacher feedback during the execution of the projects and at the end. Peer feedback is		

<p><i>and their peers. When they are doing peer feedback, they sit in groups and they are assigned roles. So for example, in the case the leader is not focused on his or her role, the rest of the group can help him to direct his/her attention again on task... that's a way they receive and provide feedback. The same with some activities... if they are not achieving the goal of the project, so in that way they as partners can provide feedback.</i></p>	<p>provided through collaborative learning in groups.</p>
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**Appendix Z.1**

*Checklist Item 7 Related to Questions 1 and 3.*

Item #	Checklist item	Specific	Evidenced		Comments
7	<b>The project goal is aligned to the Common Core Standards for the level</b>	Is the project goal connected to the expected standard?	Y		Students modeled erosion and collected materials, built models that represented the layers of soil, and examined materials that compose soil.
<b>Interview questions 1 and 3</b>					
<b>Q1: Describe how you design a project for your course (What process is followed?)</b>  <b>Natural unit:</b>			<b>Central theme:</b>  <b>Q1:</b> The teacher first checks the Common Core Standard and topics. Then, he meets with his grade team		

<p><i>First I check the common core standard and topics. Then as a group with the English, Spanish and Art teacher we check the topics and see in what ways they link to each other and how they can be applied to a real-life situation. Choose a theme, a title and set the objectives and the outcomes.</i></p>	<p>and, based on the topics and the abilities students might need to apply in real life situations, they make a decision about the theme, title and the objectives.</p>
<p><b>Q3: How do you align the project with the Common Core Standards?</b></p> <p><b>Natural unit:</b></p> <p><i>I try to align the project with the common core standards by adapting the goals to a possible real-life situation.</i></p>	<p><b>Central theme:</b></p> <p><b>Q3:</b> He aligns the projects with the common core thinking about the skills needed to develop in the projects that will help students in real life situations.</p>

## Appendix Z.2

*Checklist Items 6 Related to Questions 5 and 8.*

Item #	Checklist item	Specific	Evidenced		Comments
6	<p><b>There are spaces/opportunities to make students' projects visible (if</b></p>	<p>Do students share, present, or exhibit their final products?</p>	Y		<p>This project was presented to parents, partners, and teachers</p>

	<p><b>included the project description or guidelines)</b></p>			<p>(Students Led Conference)</p>
<p><b>Interview questions 5 and 8</b></p>				
<p><b>Q5: What kind of strategies do you usually use to scaffold students' learning in the projects, so they can achieve expected outcomes?</b></p> <p><b>Natural unit:</b></p> <p><i>I use modeling the activities as a strategy, I try to give as many examples as possible. Incorporate realia. Having a real-life example can help students recognize what you're talking about. Make predictions. By connecting contextual details and prior knowledge. Break large tasks into smaller steps.</i></p>		<p><b>Central theme:</b></p> <p><b>Q5:</b> Strategies used by the teacher include modeling, real-life examples, making predictions, and breaking down long tasks.</p>		
<p><b>Q8: Have you ever heard of the PBL Gold Standards? If so, what do you know about them?</b></p> <p><b>Natural unit:</b></p> <p><i>To be honest, I haven't.</i></p>		<p><b>Central theme:</b></p> <p><b>Q8:</b> He has not heard about PBL Gold Standards.</p>		

## **Author' Biography**

Mairilis Saldarriaga Fragozo, the author of this study, is an English and Spanish teacher from Valledupar, Cesar. She has a bachelor's degree in teaching English and Spanish at Universidad Popular del Cesar. She has been working in private schools as an English teacher in elementary and high school for six years in her hometown. In 2020 she started to study her specialization in teaching English at Universidad del Norte, in Barranquilla and graduated in 2021. She continued her studies in the same field to obtain her master's and finished her thesis in 2023.

Mairilis feels passionate about teaching. In 2022 she moved to North Carolina to work in a Spanish immersion program. Currently, she lives in Asheville, North Carolina with her husband, and she works as a homeroom teacher at a public school, teaching Spanish to 4th graders.

In her current job, Mairilis will be coursing the LETRS program for two years. This program helps teachers to understand the functionality and structure of the English language and facilitates teaching English foundational to advance skills.

In her 28s, she understands that education changes life and that teachers have the power to contribute to these changes. She believes there is hope in education and works hard to become a better teacher for her students.