

Design of a Bilingual Learning Environment framed in a Pedagogical Project and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, two primary English teachers from a private school in Norte de Santander (Colombia). An Exploratory Research.

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2023 – 01

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We have no known conflict of interest to disclose.

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Abstract

After two years in a total confinement due to the pandemic, schools open their doors again to students and teachers evidencing affection in the good development of bilingual learning by intrinsic and extrinsic factors. The present study is aimed at designing a bilingual learning environment developing a pedagogical project such as the 4 C's of 21st century skills in order to improve the English teaching-learning process. The exploratory research was conducted on students from 4th grade and two English teachers at a private school in Norte de Santander. The data was collected by semi-structures interviews and surveys. As a result, two categories emerged: First, the contributions and limits of the creations of a bilingual environment in the learning and reaching process of a foreign language; second: the development 21st century skills through a Project Based Learning (PBL) framed in an appropriated learning environment for improving the learning and teaching process of a second language. The findings indicate that the design of a learning environment based on the principles proposed by favor the development of competence for life that help to face the challenges of today's society. Thus, involving a pedagogical strategy such as project pedagogy framed in an appropriate environment contributes positively and effectively the process of learning and teaching a second language.

Key words: Learning Bilingual Environments, Pedagogy by Project and 4 C's of 21st Century Skills.

Resumen

Después de dos años de confinamiento total debido a la pandemia, las escuelas vuelven a abrir sus puertas a estudiantes y profesores evidenciando dificultades en el buen desarrollo del aprendizaje bilingüe por factores intrínsecos y extrínsecos. El presente estudio tiene como objetivo diseñar un entorno de aprendizaje bilingüe desarrollando un proyecto pedagógico enmarcado en las 4 C's de habilidades del siglo XXI con el fin de mejorar el proceso de enseñanza-aprendizaje del inglés. La investigación exploratoria se realizó en alumnos de 4º grado y dos profesores de inglés en una escuela privada de Norte de Santander. Los datos se recogieron mediante entrevistas y encuestas semiestructuradas. Como resultado, surgieron dos categorías: Primero, las contribuciones y los límites de las creaciones de un entorno bilingüe en el proceso de aprendizaje y aprendizaje de una lengua extranjera; segundo: el desarrollo de las habilidades del siglo XXI a través del aprendizaje basado en proyectos (PBL) enmarcado en un entorno de aprendizaje apropiado para mejorar el proceso de aprendizaje y enseñanza de una segunda lengua. Los hallazgos indican que el diseño de un entorno de aprendizaje basado en los 7 principios propuestos por la OECD favorece el desarrollo de competencias para la vida que ayuden a afrontar los retos de la sociedad actual. Así, involucrar una estrategia pedagógica como la pedagogía de proyecto enmarcada en un entorno adecuado contribuye de manera positiva y efectiva al proceso de aprendizaje y enseñanza de una segunda lengua.

Palabras clave: Ambientes Bilingües de Aprendizaje, Pedagogía por Proyecto y 4Cs Habilidades del Siglo XXI.

INTRODUCTION

In mid-March 2020, the world was involved in one of the most tragic events for humanity, a pandemic that stopped the passage of time in several aspects and education was no exception, in fact, it was one of the most affected with the total closure of all educational institutions, universities, colleges... etc. Leading us to a virtual education in which many students did not have a quality education due to external situations, such as HUMAN RIGHTS WATCH (2021) states, "School closures caused by the coronavirus disproportionately affected children because not everyone had the opportunities, tools or access to continue learning during the pandemic".

It was evident that some of the children who had all the resources to access learning during confinement did not show that they had obtained a noticeable learning, according to an article published in BBC NEWS (2021) the United Nations has pointed out that about one billion children in the world are at risk of having a “learning loss” Significant disruption in school attendance during the covid-19 pandemic.

With the return to the presence of the students, it has become necessary the creation of a learning environment in which the objectives of each institution can be achieved, according to (Bravo et al., 2018)

"a learning environment, allows creating conditions for the active and permanent participation of students from an interactive exercise for the co-construction of knowledge, which leads to the construction of networks where the critical participation of people constitutes communities of learning with common purposes and responsibilities that allows them to identify as part of a collective" (p.6).

For this reason, the need arises to design a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes in post-Pandemic.

This research takes as a basis the problems evidenced during the first academic period of 2022, in relation to the academic regression in the process of learning a second language-English. Through direct observations and pedagogical experiences of teachers of the teaching of English as a second language, a low academic level has been demonstrated compared to the academic average of recent years. It is therefore important to carry out a project in which the causes of this problem are identified, a pilot plan is proposed and implemented to help reduce this academic decline and leveling in this second language. In this sense, this project aims to design a teaching innovative strategy, in which through the design of a Bilingual Learning Environment which will be oriented to improve the English learning processes in post-pandemic, taking as a case of fourth and fifth grade research of a private school in north Santander (Colombia).

This research project developed a mixed approach, focused on an exploratory design, since the aim of this research is to analyze and propose a teaching strategy to contribute to the problem to develop. Likewise, this research proposal will be guided by the following question: How to design a Bilingual Learning Environment involving the a Pedagogical Project and the 4 C's of 21st Century Skills in the English teaching -learning processes in a private school in Norte de Santander?

GENERAL OBJECTIVE

To design a Bilingual Learning Environment framed in the development of a Pedagogical Project involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching- learning processes: taking as a research case two English teachers from a private school in Norte de Santander (Colombia).

Specific Objectives

- To contrast the principles of bilingual learning environments and the 4C's 21-century skills with the academic factors and needs affecting the English learning and teaching processes with 4ht-grade primary learners.
- To determine contributions through the proposal of a bilingual learning environment design for improving the English teaching and learning processes with 4th-grade primary learners.

THEORETICAL FOUNDATIONS

This part of the research is divided into two sections; first: the theoretical framework; a few key concepts and definitions concerning the Bilingual Learning Environments and consequences in the process of learning a second language of the pandemic. In addition, in the second place the literature review; a compilation of the preliminary articles related to the subject of this case study which will give a solid theoretical support to this proposal and guide a better interpretation of this research problem.

Theoretical Framework

Based on the fact that this research is focused on a Bilingual Learning Environment for improving the second language learning processes in post-pandemic, this research notes some key words and definitions for this research that are organized according to the importance and relevance of this case study such as: Bilingualism, Bilingual Learning Environments, and the impact of the pandemic on the learning process. Moreover, this project takes into consideration some theoretical aspects related to the main subject such as the creation of learning environments for learning a Second Language L2 and strategies for learning and teaching (L2) in post- pandemic time.

Bilingualism

To begin with, the first concept is **Bilingualism**, in education, this concept is a necessary tool for a correct academic development, since as learners and future workers it is important to learn a second language, being bilingual has become in a necessity for people around the world, but not everybody has the same ability or capacity, according to

some authors, being bilingual means speaking more than one language, both correctly as Bloomfield (1993) states the bilingualism as the command of two languages as a native speaker. It means the capacity to speak and produce well-formed statements. In the same way, KÖKTÜRK et al, (2016) affirm that bilingualism could be reflected in a child who grew up with two languages in which the use of both languages is perfect. Nevertheless, the ability to communicate in two languages is individually different. It means that bilingualism is the capacity to communicate in both languages applying code-switching in the right situations. By the contrary, MacNamara, (1967) cited by Villalba and Martínez, (2014) affirms that a person can be qualified as bilingual if that person possesses a minimum proficiency in a language other than your mother tongue in any of the following abilities: Speaking, understanding, reading, or writing.

According to Araque and Rodriguez (2019) bilingualism is based on understanding and the socio-cultural recognition it comprises, by the tensions that have arisen since the implementation of the national of the National Bilingualism Plan (2004) and, in addition, recognizes the socio-cultural diversity characterizes the country's educational and international contexts.

Bilingual Learning Environment

The second important term is the **Bilingual Learning Environment**; creating a context in which a second language can strengthen different skills such as cognitive or productivity.

According to Araque and Rodriguez (2019) understand learning environments, one must first understand the concept of environment, which can be defined as all the factors that surround the learning process, such as the infrastructure and the socio-cultural and

psychological circumstances of the students. From this clarification, it is possible to state that the learning activities are linked to a location or environment, which in turn has specific characteristics. However, in recent decades, new pedagogical approaches have emerged.

In this way Fishman (1976) as cited by Sánchez and Tembleque, (1986) affirms that bilingual learning is a system of education in which, at a variable time and for a variable length of time and in varying proportions, simultaneously or consecutively, instruction is given in at least two languages, one of which is the pupil's first language. In the same way, according to some authors, the learning environment comprises some setting as the psychological, social, cultural, and physical in which there are created experiences and expectations among its participants. This all takes place within a physical setting that consists of various cultural and administrative norms who are primarily students, faculty and staff, engaged in this environment. (Rusticus et al., 2020; Shochet et al., 2013) cited by Rusticus, S. A., Pashootan, T., & Mah, A. (2022)

The learning process is strongly linked to the environment in which the students are immersed, in some studies the authors affirm that students can acquire more knowledge when they perceive the classroom environment more positively. It means that the learning environment can affect in a positive or negative way considering the learning process when learning a second language. Dorman & Fraser, 2009, cited by Aldridge, J. M., & Bianchet, S. (2022).

Factors involved in the virtual learning of a second language.

According to Lopez, Quesada, and Salas (2020) “the acquisition of a second language is influenced by a number of factors that strengthen or weaken it”. Those can be divided into two groups: Internal factors and external factors.

Intrinsic factors can be noted the concentration, which is the ability of the mind to control, direct and maintain attention; motivation, cognitive and affective factors, includes personal beliefs in using technology. In this way, the cognitive field includes intelligence, aptitude, and the affective field includes a variety of aspects: empathy, self-esteem, extraversion, inhibition, imitation, anxiety, attitudes, among others. The attitudes that are of particular importance because, the greater the language, the more the learner's interest in the language and its culture will be easier to learn. Another factor that has a negative influence is anxiety, affecting self- confidence or disposition to communicate. On the other hand, Roncancio and Buitrago (2018) define extrinsic factors as: the environmental factors affecting learning of English, because the person must be in an external and internal environment in turn creating a suitable environment to obtain the greatest concentration possible and acquire all the expected knowledge". From another perspective, Maheshwari (2020) mentioned in his study three factors that affected students' online learning experience: comfortable and quiet learning environment, teachers' support, and ease of using the learning platform. Likewise, the students with the lowest economic level did not have access to the internet or virtual classes, placing them at a disadvantage and negatively affecting the learning process. If there is not a good appropriation and knowledge of them, the learning process would suffer inconveniences, or the outcome would not be as expected, discouraging, and preventing students from integrating technology into their learning process.

Second language learning strategies

A strategy is a set of actions whose purpose is to achieve pre-established objectives, or to achieve the resolution of a problem. Serrat (2002) defines them as conscious and intentional activities that guide the actions to be followed to achieve certain learning

objectives. On the other hand, by Selinker (1972), defines them as central processes in this acquisition and closely linked to the concept of interlanguage.

Project Based Learning (PBL)

According to Fernandez, (2015) learning strategies can be classified into two categories: primary strategies and secondary strategies. Primary strategies are divided into cognitive and metacognitive strategies. Cognitive strategies include attentional strategies, comprehension strategies, creative strategies, memorization strategies and retrieval strategies. Metacognitive strategies are divided into self-management, planning, self-regulation, stopping, evaluation and self-regulation strategies. On the other hand secondary strategies are divided into personal strategies and environmental and time adjustment strategies. Personal strategies are divided into affective, social, communicative, avoidance, personality comprehension and motivational strategies.

The project which has its roots in the fifteenth century, however, at the beginning of the twentieth century that the projects arrived in teaching with Dewey and Kilpatrick. According to some authors, it can be defined as a set of concrete, intentional, relevant, and organized tasks, or activities in which the learner gets involved with his classmates with the help of his teacher, the aim is to integrate acquired or existing knowledge with the new students in order to solve a problem of a social topic or the interest of the student. (O.N.P.S, 2005: 9; (Champy & Étévé, 2005; Huber, 1999: 17; Bordallo and Ginestet, 1993: 132).

The Pedagogy by Project, Reverdy (2013) gave a brief history of this method, she took several authors and their contributions and she described it as follows: Project-based pedagogy has its roots in the late 19th century in the United States, where Dewey initiated the “learning by doing” method, which is to learn by doing and in action, that is, to learn by doing and not by listening like traditional pedagogy: the student must act, build projects, carry them to completion: it is learning through action. This American psychologist was the

initiator of the active methods in pedagogy and especially the method of projects. In addition, Decroly also considers that some knowledge is integrated when the student himself is discovered and expressed. Piaget also strengthened the theoretical basis of project pedagogy. Project pedagogy has thus retained from constructivism the idea that the important in learning is the activity of the subject. “Knowledge is built by the individual through his actions on objects.” Hubert, (1999: 25).

To complete this definition, Arpin and Capra (2000) supported this historical sequence, but they attached the following: the student is considered as the initiator of the pedagogy of the project, The empirical bases were then established by John Dewey who considered that action was the best way to learn and that thought must be at the service of solving life’s problems and the theoretical bases of project pedagogy were proposed by the Kilpatrick’s disciple (1918) he specified the idea of «Project-Based Learning», according to which all teaching must proceed from the experience organized through productive work and at the same time, It advocates teaching that focuses on the goals and needs of learners rather than the content of knowledge.

In this sense, Draoui and Benachaiba (2015) noted the definition of Pedagogy by Project by recompiling the other authors who defined it in the following way: Pedagogy by project is a pedagogical method centered on the learner. Instead of using a rigid lesson plan that guides the learner along a specific path of learning goals or outcomes, student-designed projects allow for an in-depth examination of a topic to be explored.” (Harris & Katz, 2001; Katz & Chard, S. 1989).

21 st Century skills

Nowadays, the educational system is focused on excellence and as teachers, it is our work to guide students and connect learning with real life and provide them with the

necessary skills to prepare them for success in life. That's why the 4Cs allow students to be proficient communicators, creators, critical thinkers, and collaborators. The National Education Association (2015) indicates that "80 percent of executives believe fusing the 4Cs would ensure that students are better prepared to enter the workforce. According to these managers, proficiency in reading, writing, and arithmetic is not sufficient if employees are unable to think critically, solve problems, collaborate, or communicate effectively." In the same way, according to Van Roekel (2008) The acquisition of these skills includes not only the students but also other groups such as teachers, leaders, administrators, it is necessary for students to integrate the 21st century skills framework 4Cs inside the classrooms since in that way, learners can be adequately prepared to face the new challenges of the digital era.

As the Partnership for 21st Century (2009) states, a focus on creativity, critical thinking, communication, and collaboration is needed to prepare students for the future. Erdoğan, (2019) states that in the following ways, as teacher we can foster these skills of students with the expectation of growth in each skill:

“-Communication and collaboration skills enables students to interact competently and respectfully with others especially across cultures, in diverse and multinational workplaces and communities in our global and digital era.

-Creative thinking skill enables students to think unconventionally, question the herd, imagine new scenarios, and produce astonishing work since many of the fastest-growing jobs and emerging industries rely on workers' creative capacity.

-Critical thinking and problem-solving skills enable students to judge the information that comes their way every day - on the Web, in the media, in homes, workplaces, etc. It empowers our students to assess the accuracy and value of information,

analyze and evaluate information, make reasoned decisions and take purposeful action.

Businesses expect employees at all levels to identify problems, think through solutions and alternatives, and explore new options if their approaches don't pan out.” (p. 115-116)

These skills are necessary inside the classrooms in order to equip learners with 4 C's century skills being prepared for the 21st century.

Learning Environment Principles

In order to carry out a lesson inside the classroom, there are some principles that as teachers it is necessary to take into consideration if the goal is to count with an appropriate learning environment, according to OECD (2017) Cano (1995), this last one considers the following principles in a physical space:

Table 1 *Learning Environment Principles*

Principle 1	Principle 2	Principle 3
It focused on the approach of one towards others, it highlights the interaction among others and the cooperative relationships with others and with the environment.	It focused on the use of resources that can guide and help learners to facilitate their learning process. When referring to learning resources we can include furniture, books, stationery material, technological devices, as well as pieces that allow experimentation and connections to nature.	The learning environment should be diverse, it means, a learning process outside the four walls of a classroom, this supports the idea of ubiquitous learning and recognizing the potential of learning in different settings, apart from the classroom.
Principle 4	Principle 5	
It is important to create spaces for relaxation and well-being, either individual or collective, since it is essential for students to feel comfortable in the space, they are acquiring knowledge, and for that it is necessary to take into consideration their different moods, expectations, and interests.	It is focused on the identity and the decision on the space arrangements which are intended to promote highly favorable environments for social coexistence and foremost, facilitate learning.	

Note. Cano (1995)

Teaching Innovative Proposal

The Pedagogy-Based Project is based on constructivism framed in a collective environment in which the student is the principal actor in fostering sustainable and meaningful task-based learning. These allow the student to be aware of his environment and at the same time be a social agent of change in a community. Likewise, this type of strategy allows to involve the student in a real context and according to the needs and problems of today's society. It is therefore that through the development of projects the student is aware of the problem that surrounds him, can identify the problem, analyze, and pose a final product or result to that problem. That is why, this study proposed design of a Bilingual Learning Environment involving a Pedagogical Project and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning process. This innovative teaching strategy is divided as follows and describes the phases and aspects to be considered to develop the strategy in class. It is based on the phases proposed by Arpin & Capra (2001) and Correa (2008) three stages (before- during – after) the learning environment should not be limited to a single moment but should be an ongoing process.

Table 2 *Features and principles for learning to design learning environments.*

FEATURES	PRINCIPLES	TOOLS	STEPS
- Have real world relevance and are not simply classroom based. - Provide complex tasks that take a significant amount of time to complete.	Principle one The learning environment recognizes the learners as its core participants.	1- How well do we embed the learning principle?	Step 1 Familiarization with the principle Step 2 Overviewing the existing situation. Step 3 Gathering the evidence Step 4 Deciding on the course of action
	Principle two The learning environment is		

- Have characterized problems that require students to define tasks and sub-tasks to be completed through multiple interpretations.	focused on the social nature of learning and actively encourage well-organized co-operative learning.	Step 5 Revisiting the situation	
-Provide students the opportunity to collaborate.	Principle three The learning professional within the learning environment are highly attuned to the learners' motivations and the key role of emotions in achievement.	2- Building on the learning principle through a spiral inquiry?	-Scanning -Sharpen the focus on a key area for change. - Developing hunches. - New learning. - New actions and checking.
- Provide students the opportunity to examine the problem from different perspectives, using a variety of resources.	Principle four The learning environment is acutely sensitive to the individual differences among the learners in it, including their prior knowledge.	3- Learners at the Centre- what do they think?	-Putting learners at the Centre – what do we do? - What do the learners think about the school and the learning they do? -Making sense of the learner responses - Where next?
- Require students to reflect on their social and individual learning experiences.	Principle five The learning environment devises programs that demand hard work and challenges all without excessive overload.		
- Require integration of content from several disciplines and lead to outcomes, beyond the specific learning objectives.	Principle six The learning environment operates with clarity of expectations and deploys assessment strategies consistent with these expectations; there is strong emphasis on formative feedback to support learning.		
- Integrate assessment into the activities, rather than employing external tests to be reflective of similar real-world assessments.			

Principle seven The learning environment strongly promotes “horizontal connectedness” across areas of knowledge and subjects as well as to the community and the wider world.	4- Teachers focused to be learning center?	Step One: What do these educator principles mean and how well do they describe our school or district? Step Two: Choose one of the educator principles as the focus for action. Step Three: Decide on strategies for putting the educator principle into action and implement them. Step Four: Take stock to decide what more needs to be done and whether the exercise should be repeated
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Note. Features and principles for learning to design learning environments. (The OECD Handbook

LITERATURE REVIEW

In this second, some preliminary studies related to this main issue of this research are shown and many authors have each provided their own views which complement and make an essential contribution to the progress of the main topic; These preliminary studies have been organized into two categories which note the most important features of this study.

The impact of the pandemic on the Second Language Learning Process

Trying to continue with the schooling process was one of the most important educational challenges during the pandemic. Meeting this challenge undoubtedly implied the use of new technologies, digital resources, and connectivity to face the new scenario and virtual classes. That is where the term homeschooling begins to take on relevance. Although we have been gradually recovering normality, there are some things that emerged during the pandemic that have remained with us forever. One of those things is homeschooling.

Accordingly, OECD, (2020). One thing we can note is that many of the technological resources we used during the quarantine are still in use today after the pandemic is almost entirely over. The use of WhatsApp groups, virtual meetings to save us time and effort to travel to the schools' facilities, as well as the use of virtual platforms that allowed us to better monitor the learning process of our students.

Pikhart and Botezat (2021) in their research affirm the massive usage of social media creates a platform to address the motivational problem in learning L2 (...) In the broad context of globalization, all visuals improve not only linguistic skills, but they also

build an international culture and the findings of his research clearly indicate that the research focuses predominantly on the positive aspects of social media in FLL, neglecting the drawbacks that it can bring or generate. In this context, it cannot be denied that technological tools have been, are and will be a medium that facilitates the learning of a second language as it facilitates interaction with managers platforms that focus on learning a second language. But on the contrary, mention should be made of the difficulties that this presents according to the educational context, especially with low-income students where they are a discriminatory means because not all have the same conditions to access these or a stable connection of internet.

Hyangeun et al (2022) explain in their research a strategy which is focused “on mixed-method research on L2 learners' engagement, readiness, and satisfaction examined how online learner readiness and learner engagement in three different dimensions (i.e., behavioral, cognitive, emotional engagement) are associated with initial and end-of-semester satisfaction”. In this sense, it is important to remark the importance of self-learning in e-learning, given that, these are key aspects for the success of online learning, although this type of learning depends on a variety of aspects that can interfere either negatively or positively, self-learning is the central axis for successful learning.

On the other hand, a variety of “studies confirm the importance of building online communities among language learners, between teachers and students, and even with parents, to combine multiple stakeholders' efforts to overcome challenges” Gao and Tao (2022). The above mentioned is a positive aspect derived from the virtual learning in the epoch of pandemic, although before this difficult stage advances were made to connect the classrooms with an educational context native of the language to learn but the advances

were very few, besides, the pandemic taught us and reaffirmed the importance of creating this type of space where the second language is the central axis of learning and its context. Additionally, this research shows a special collection which “has important implications for language teachers, language teacher educators, and educational administrators to maximize digital affordances and enhance learning and teaching in future online education”. Gao and Tao (2022). In this line, this study will be the guide to continue the research of this project, since this compilation of articles clarifies and contextualizes us on the subject addressed from other perspectives which will be taken into account to make a better analysis of our context to investigate.

Contributions to the creation of Bilingual Environments in the process of Learning a L2.

The Place of Pedagogy Based Project in the educational scope.

The educational field must adapt to the needs and new demands of this modern society, which requires the training of autonomous citizens and entrepreneurs, this is why some active pedagogies have been included in order to change the traditional patterns of education, one of which is the pedagogy by project. This topic can be highlighted in various research articles such as that of López de Sosoaga et al (2015) entitled «La enseñanza por proyectos: una metodología necesaria para los futuros docentes» The second study was developed by Richard (1994) entitled “A Constructive Learning Activity: The Project.” which sets out the different stages of the process of a project in computer science and the last study was carried out by Rouvrais, Ormond and Gillot (2005) which is called «Start-up sessions: highlighting objectives in pedagogy by projects» To explain the place of

pedagogy by project in an engineering school. Thus, in this paper, the place and usefulness of project-based pedagogy in the field of education can first be explored; then, we will present the limitations or challenges for teachers and finally the advantages of the approach of pedagogy by project in the classroom.

First, according to Rouvrais, Ormond and Gillot (2005), project-based pedagogy has gradually found its place in the educational field. In addition, educational institutions have driven different active methodologies such as project-based learning, cooperative or problem-based learning. These have become an effective tool to change traditional standards of teaching, a vertical and individual model by a model that combines individual work with groups and cooperative jobs.

In order to generate new spaces where traditional structures of education are modified to meet the needs of students and teaching strategies and one of these methodologies is project-based pedagogy, this has invaded the field of teaching at all levels giving a different educational perspective centered on the student. Richard (1994) and López de Sosoaga et al (2015).

Secondly, the project-based approach to pedagogy can be a challenge for teachers because it requires a change of mentality and new methodologies different from traditional ones and the confusion between interdisciplinary pedagogical sequences and pedagogical common between teachers. López de Sosoaga et al (2015). Similarly for learners, they are not accustomed to finishing a project, to maintaining the whole process of the whole project process. Rouvrais, Ormond and Gillot (2005). Furthermore, according to López de Sosoaga et al (2015), the roles of teachers and learners must change, they must be modified to

ensure a free and reliable environment for students and Richard (1994) reinforces this idea, He says the student is neither guided nor facilitated by the teachers, they will just be observed. In addition, in the article, certain difficulties were found during the development of his study, such as an absence in the program, difficulty of the teachers to develop it, for the creation of a new work team and pedagogical approach, that is, the lack of knowledge and commitment to the development of the new pedagogical strategy.

Finally, Richard (1994) notes that this pedagogy makes it possible to develop the capacities to work in a group, it facilitates access to sustainable knowledge, the student must rebuild himself-Even knowledge by developing the skills and competences targeted by the training provided in a motivating, meaningful, complex learning through general areas of training or areas of life experience. In addition, López de Sosoaga et al. (2015) point out that the most relevant change is in the implementation of traditional education by a cooperative and constructivist. They also add that the educational community is closer since they can participate as listeners or guides about learners. In addition, walk sessions can help students perceive and understand learning more easily, Rouvrais, Ormond and Gillot (2005).

METHOD

This chapter presents some essential aspects of this study, including the approach, the design, the study context, the population, the sample, the instruments for collecting and analyzing the data, and finally, the chronogram of the steps and activities developed during the implementation of this research; those used for the development of the study and at the same time, they facilitated the execution of the research.

The approach

This research project developed a mixed approach which is defined as “research in which the researcher collects and analyzes data, integrates findings and draws conclusions using both quantitative and qualitative approaches in a single study with the objective of understanding a research problem” Creswell (2007), the aim of this research is to design a bilingual learning environment through the implementation of a teaching innovative strategy centered in Project-Based Pedagogy, and the devolvment of 21st century skill for improving the English learning process. That is why, the necessity to explain in detail some important steps based on some qualitative aspects.

The design

An **Exploratory design** is defined as research to investigate a problem that is not clearly defined, has been under-investigated, or is otherwise poorly understood. It is conducted to have a better understanding of the existing problem but will not provide conclusive results. In addition, according to Creswell (2012) the purpose of this design is: “involves the procedure of first gathering qualitative data to explore a phenome-non, and then collecting quantitative data to

explain relationships found in the qualitative data. A popular application of this design is to explore a phenomenon, identify themes, design an instrument, and subsequently test it.”

Population

This research took place into a private school located in Norte de Santander. According to Creswell (2012) a population is a group of individuals who have the same characteristic, considering this definition, the population chosen to develop this research was English teachers.

This school has 3 teachers for teaching English as a foreign language, these are professionals in the English language. In addition, each has a level between B1 and C1 according to the CECRL. In addition, the teachers are competent in all fields, they are characterized by their capabilities and the pedagogical, professional, and attitudinal skills for teaching a foreign language.

Sample

Taking into account the purpose of this research and the sampling strategies proposed by Patton (1990), a sample by criteria was used "All cases that meet a certain criterion; useful for qualitative measurement" which was composed by two English teachers that accomplish with the necessary criteria in order to carry out this project such as: they both work in a private school as English teachers, the population to whom they teach is primary school, those private schools are located in Norte de Santander, their curriculum is similar.

Also, this project had the participation of students of each group of the professor selected to do the analysis, they were considered to identify the academic factors and needs that affected the learning process in a foreign language and the possible contributions of the strategy proposed in this study.

Moreover, the selection of the sample was voluntary and at the same time allowed teachers and students to choose openly without any pressure; in the same way, the protocol documents were presented (a letter of permission ([Appendix B](#)) to participants and it was their choice to be part of the process.

Also, as an additional way, we counted the participation of one group: from 4th grade with 18 students, between the ages of 8- and 9-year-old. All of them are students from Instituto Salesiano San Juan Bosco located in Cúcuta Norte de Santander, a private school in the urban area.

Also, as an additional way, we counted the participation of one group: from 4th grade with 18 students, between the ages of 8- and 9-year-old. All of them are students from Cúcuta Norte de Santander, a private school in the urban area.

Instruments

Two types of instruments were adopted to collect data: first, two interviews with participant teachers; Second: two questionnaires to identify the academic factors and needs that affected the learning- teaching process in a foreign language and possible contributions of the strategy proposed.

Semi- structured interview

The technique includes conducting interviews. To this end, a type 4 semi-directional interview was used, an interview focusing on experiences and effects, taking into account the people involved. In addition, according to Eureval (2010) “The semi- structured interview is a qualitative technique of gathering information to focus the discourse of the interviewees around themes defined previously and recorded in an interview guide.”

Three interviews were implemented, the first one was directed to each participating teacher, it is intended to know the academic factors from the perspective of the teacher that could affect the process of learning the foreign language, (See [Appendix C](#)). In addition, during the conduct of this type of interview allows us to ask new questions through the emergence of doubts to reach the objective of the interview. The second interview was in order to recognize the elements recognize the effectiveness of the elements that make up the design proposal of the bilingual learning environment, (See [Appendix D](#)) and finally interview was applied to the sample too with the aims to identify the possible contributions or changes in the process of teaching learning with the implementation of the strategy proposed in this project, (See [Appendix E](#)).

Surveys

The second data collection technique was the execution of two surveys. Salès (2006) quoting from Matalon (1962) states that the survey is “a questioning method” in which participants share their knowledge or views in such a way that it measures spontaneous responses. The first one was directed to the two English teachers; its objective was to know the most remarkable aspects that are involved during the different stages of

the approach of the pedagogy by project and 21st century skills in the English learning process from the perspective and experience of the teachers, (See [Appendix F](#)). The second survey required the participation of the students of each English teacher participant in order to know the learners' perspectives on Project Pedagogy, 21st century skills and its contributions in the learning process, (See [Appendix G](#)).

Table 3 *Applied Instruments*

Instrument	Objective	Time	Participant
Interview 1	To identify the factors and academic needs that affected the learning process in a foreign language.	1 session / 30 minutes	English teacher 1
Interview 2	To determine the contributions of the creation of Bilingual Environments in the learning and teaching process of a foreign Language.	1 session / 30 minutes	English teachers 2
Interview 3	To detail the contributions of Project- Based Pedagogy and the 4 C's of 21 st Century Skills in the learning and teaching process of a Foreign Language	1 session / 30 minutes before implying the innovate strategy	English teachers 3
Survey 1	To identify the factors and academic needs that affected the learning process in a foreign language among learners from the student's perspective	1 session / 30 minutes	Students
Survey 2	To determine in detail, the contributions of Project-Based Pedagogy and the 4 C's of 21 st Century Skills in the learning and teaching process of a Foreign Language From the teacher's experiences	1 session / 30 minutes before implying the innovate strategy	English teachers

Data coding

In order to carry out the process of codification of the information the MAXQDA software was used, considering the 9 steps that Hatch (2002) established in the type of typological analysis, in this way the information was codified. First, all administered instruments were added to the document system. To follow the process, we read all the information in order to recognize the data. Then we started to select each part of information taking into account the ideas and so we gave a code and sub-codes according to the theme to which the concertante question referred.

Data collection was an essential phase of the research process to obtain useful and concrete information to help provide a response to the analysis proposed for this project. In this sense, we have completed this indispensable, and we had to respect a series of steps:

First, in order to get in touch with the field, the following protocols were followed, such as a letter of authorization, which was sent to both participants by WhatsApp, and through this document, the purpose of the study was presented and other aspects that justified the involvement of teachers as participants in the purpose of granting us the corresponding permission to access the field, and thus, to carry out the data collection phase of our project. Likewise, in order to protect the collected information and that it does not influence any way in his personal or social life, as this stipulated in the consent, the collected information will be used for the analysis of the study and for its protection, their names are pseudonyms to protect their image and name. This project will refer to the participants as follows: Participant 1 **Alberto** or P1 and Participant 2 **Carla** or P2.

Date analysis

By observing the data obtained which were collected through the instruments such as interviews and questionnaires, some relevant themes and codes and sub-codes arose, as the following figure (1) shows and those were organized according to relevance to our project, figure (2). Taking to account the bilingual environment as a central topic of this analysis and some other

aspects such as contributions, limitations, pedagogical spaces, development of skills, teaching strategies as sub-categories.

Figure 1 Codes and sub-codes

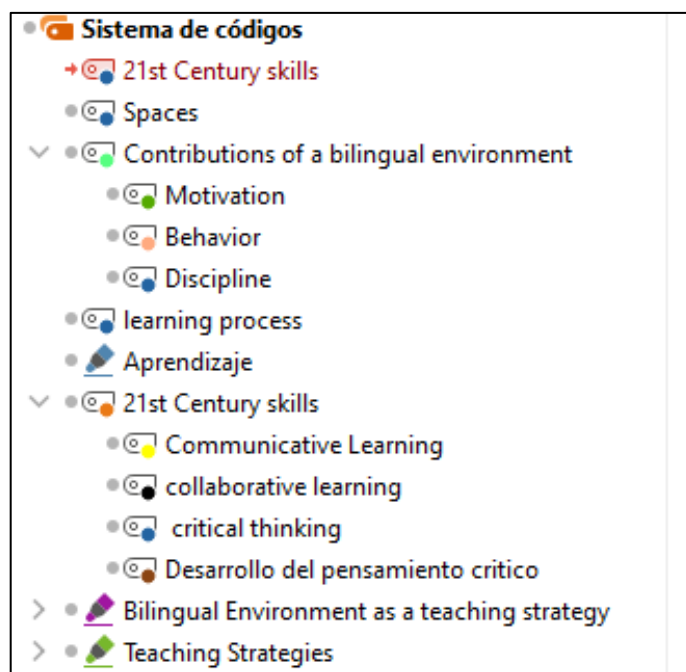
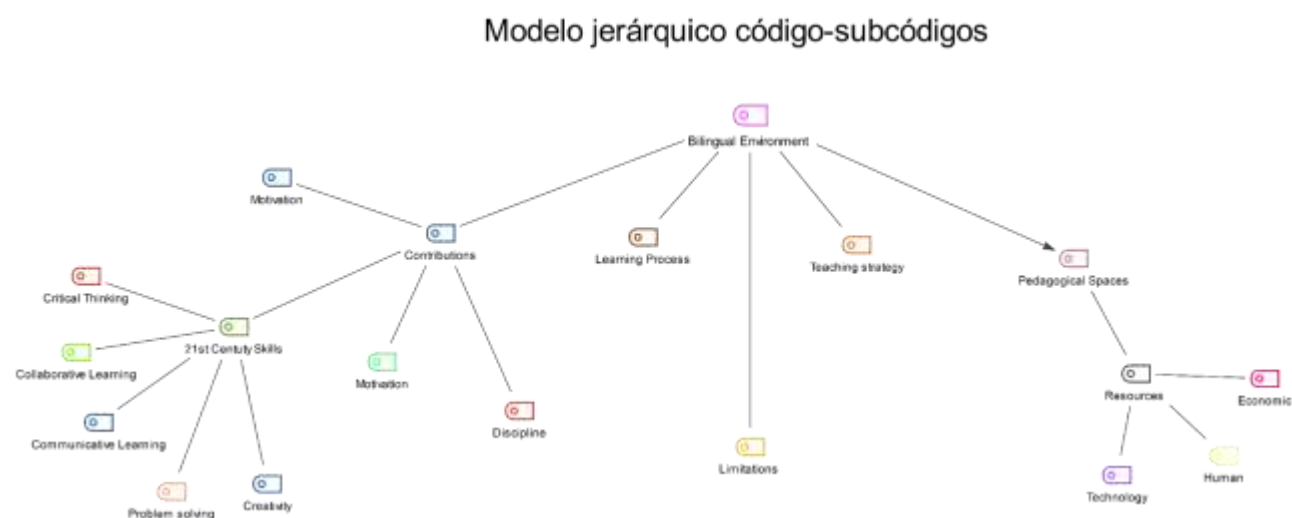


Figure 2 Hierarchic map of codes



Then, we started to select each part of information considering the ideas and so we gave a code and sub-codes according to the theme to which the concertante question referred. Each instrument had each instrument was related to one or two specific objectives which in turn intended to answer the guiding question of the project, as illustrated in (table 4).

Table 4 *Line relationship: objectives, instruments, and codification*

TITTLE	CORE QUESTION	PRINCIPAL OBJECTIVE	SPECIFIC OBJECTIVES	INSTRUMENTS	CATEGORIES	CODES AND SUB-CODES
Design of a Bilingual Learning Environment framed in a Pedagogical Project and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, two teachers from a private school in Norte de Santander (Colombia). An Exploratory Research.	How to design a Bilingual Learning Environment framed in a Pedagogical Project and the 4 C's of 21st Century Skills in English teaching - learning processes in a private school in Norte de Santander?	To design a Bilingual Learning Environment framed in the development of a Pedagogical Project articulated with the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching-learning process, taking as a research case two English teachers from a private school in Norte de Santander (Colombia).	To identify the academic factors and needs that affected the learning process in a foreign language.	Teacher Interview	The academic factors and needs that affected the Second Language Learning Process.	LEARNING PROCESS. - Autonomy - Irresponsibility - Motivation INADEQUATE ENVIRONMENTS. TECHNOLOGICAL RESOURCES TEACHING STRATEGIES - boring and monotonous classes
			To determine the contributions of the creation of Bilingual Environments in the learning and teaching process of a Foreign Language.	Student questionnaire		ECONOMIC FACTOR CONTRIBUTIONS OF A BILINGUAL ENVIRONMENT - Motivation - Behavior - Discipline PEDAGOGICAL SPACES - Economic resources - Technological resources - Human resources LIMITATIONS
			To detail the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language	Teacher Interview	The contributions and limits of the creations of a bilingual environment in the learning and reaching process of a foreign language.	21 ST CENTURY SKILLS - Critical thinking - Collaborative learning - Communicative learning - Problem solving - Creativity PROJECT BASED LEARNING - Responsibility - collaborative work - autonomy - motivation - facilitate for learning a second language. - new learning construction - encourage curiosity. - research spirit development
				Teacher questionnaire	The contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language framed in an appropriated learning environment	
				Student questionnaire		

Validation and pilotage process of the instruments

The validation of instruments is a very important stage because it allows us to evaluate with internal or external expert the instruments and its suitability and coherence in relation to the relevance between the objectives and the nature of the research. In this particular case due to the multiple inconveniences with the direct tutor and its limited availability of time, it was decided to appoint a master with specialization in research and who is also currently a tutor in different projects at a public university in the region.

Related to the pilotage, in a voluntary decision and following the privacy protocols, two English teachers were selected in the primary section of two private schools, which comply with characteristics similar to those of the participants selected to implement the instruments. Similarly, with students targeted for survey. The letter and consent was sent and to be signed were sent via a WhatsApp to the Institution, teachers (See Appendix G). and parents (See Appendix H). The interviews and surveys with the participants for the pilotage were scheduled according to the availability of time of their schedules and the interview transcripts (See Appendix I) and survey results will be an important contribution to evaluate the pertinence of the questions with the objective of the project as well as if it is necessary to make changes or adjustments to the same (See Appendix J), all framed in our main project objective and question.

Analyze pilotage results of the instruments.

Observing the different opinions of the interviews we reached an important point to improve, before starting the interview, the subject matter should be contextualized to investigate in detail the proposal that is to be implemented since teachers do not know certain terms of the innovative proposal and this hinders the development of some

questions. In general, it is evident that the questions should be complemented to give more depth and respond to the needs for our research. After a modification and correction in the questions it is necessary a second revision of the expert before being applied to the trainees selected by the project.

Table 5 *Analyze pilotage results of the instruments.*

Instrument	Objective	Category (thematic, patterns identified in the data obtained)
Interview 1	To identify the factors and academic needs that affected the learning process in a foreign language.	From the teaching perspective and take into account the transcript of the interview can be highlighted that this instrument attempts to respond to one of the specific objectives focused on possible academic factors that affected the process of learning- teaching English. In this sense, the principal results collected in the pilotage shows us some relevant factor that interfered in this problem and in the return to the presence has been evidenced shortcomings in learning with respect to those issues seen in virtually, its favorable performance has decreased compared to that of other years. At times it was shown that factors such as lack of resources, over-support by parents in carrying out activities, connection problems, lack of commitment by students.
Interview 2	To determine the contributions of the creation of Bilingual Environments in the learning and teaching process of a foreign Language.	According to the answers of our interviewees converge on the need to create appropriate bilingual environments for the teaching of English, where the student is the center of learning and innovative and active strategies are implemented. These environments help motivate and improve not only academically the student but also develop communicative skills in a way that could put them into use in different contexts. On the other hand, one of the difficulties is that it must involve a complex degree of responsibility, know how to take advantage of spaces and that sometimes there are students who tend to be easily distracted.
Interview 3	To detail the contributions of Project-Based	The interview does not make any sense as the participants do not know these skills and do not apply them in their classes. We can only highlight

	Pedagogy and the 4 C's of 21 st Century Skills in the learning and teaching process of a Foreign Language	the importance of teamwork and the development of critical thinking in different activities.
Survey 1	To identify the factors and academic needs that affected the learning process in a foreign language among learners from the student's perspective	From the perspective of the students the survey shows some academic factors and materials that affected the process of learning English such as lack of motivation, lack of clear explanations from teachers, distractions and lack of an environment conducive to learning, lack of guidance in class, among others. Similarly, 75% of participants' report having problems of adaptability to the presence by various factors, among them we highlight: with a 50 % of the participants affirm that they do not remember the topics seen during pandemic, a 25% the explanations of the teachers are very complex to understand and a 25% the difficulty to resume the rhythm of face-to-face study.
Survey 2	To determine in detail, the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language from the teacher's experiences	This survey will be implemented during of the development of this proposal.

Research design for the analysis of results

The procedure followed to implement the data collection analysis process involves certain steps to obtain information on the issues that our project aims to resolve. In this way we can highlight the following methodology.

In a first moment, we considered the nature of our project and we decided to implement the data analysis technique called «Typological analysis», which Hatch (2002) notes the definition of LeCompte & Preissle (1993) which describe typological analysis as “dividing everything observed into groups or categories on the basis of a canon to disaggregate the whole phenomenon under study”.

This analytical technique has been chosen as it allows us to easily identify the categories in which we will need to conduct the analysis taking into account the research questions and objectives as the basis for the creation of the general categories. In addition, this process is part of the 9 steps that are described by Hatch (2002), which in our project will be implemented in order to obtain an analysis that meets the characteristics required of academic research. Also, allows us to make a careful selection of repetitive models in order to consolidate the information to have an understanding of the information. In addition, it allows us to establish the relationship between them. At the same time, analysis makes it easier for us to determine whether the elements in each category are relevant and related to the theoretical basis of our research in order to give them a more academic and theoretical support.

Progress of the project and proposal

This research is divided into two very important parts, first part is the general project and second is the proposal, which must be developed in a progressive way to obtain a few results and thus reach the objectives proposed in this research and this project has been developed in phases, in which each one is specified certain aspects to deepen, as shown in the (table 6).

Table 6 *Project's progress*

Project Faces	Criteria or Characteristics	Project's progress
Formulation of the project:		
Planning Stage	Introduction, formulation of the problem, general and specific objective, guiding question, among others.	Done 100%
	Theoretical and conceptual framework: Previous studies and key concepts	Done 100%
Executing stage	Methodology: Instrument selection, coding and analysis of the information collected	In process 70%*
	Results Findings of data collected and analyzed.	In process 50%*
Publication stage	Final foundation project outcomes	In process 50%*

The first two faces are completed but the third part is in process, since the instruments were designed to be applied in two stages during the implementation of the proposal, before and after the implementation of the proposal. Likewise, it is for the above reason that the stage of results is at 50% since they were made with preliminary data and even missing or completed with the data collected after implement the proposal.

**This percentage belongs to data exploration, problem identification and design development*

on the other hand, the proposal of the seismic of the environment is carried out in stages, which are made to measure the corrections or orientations of the tutors, as shown in (Table 7).

Table 7 *Proposal's progress*

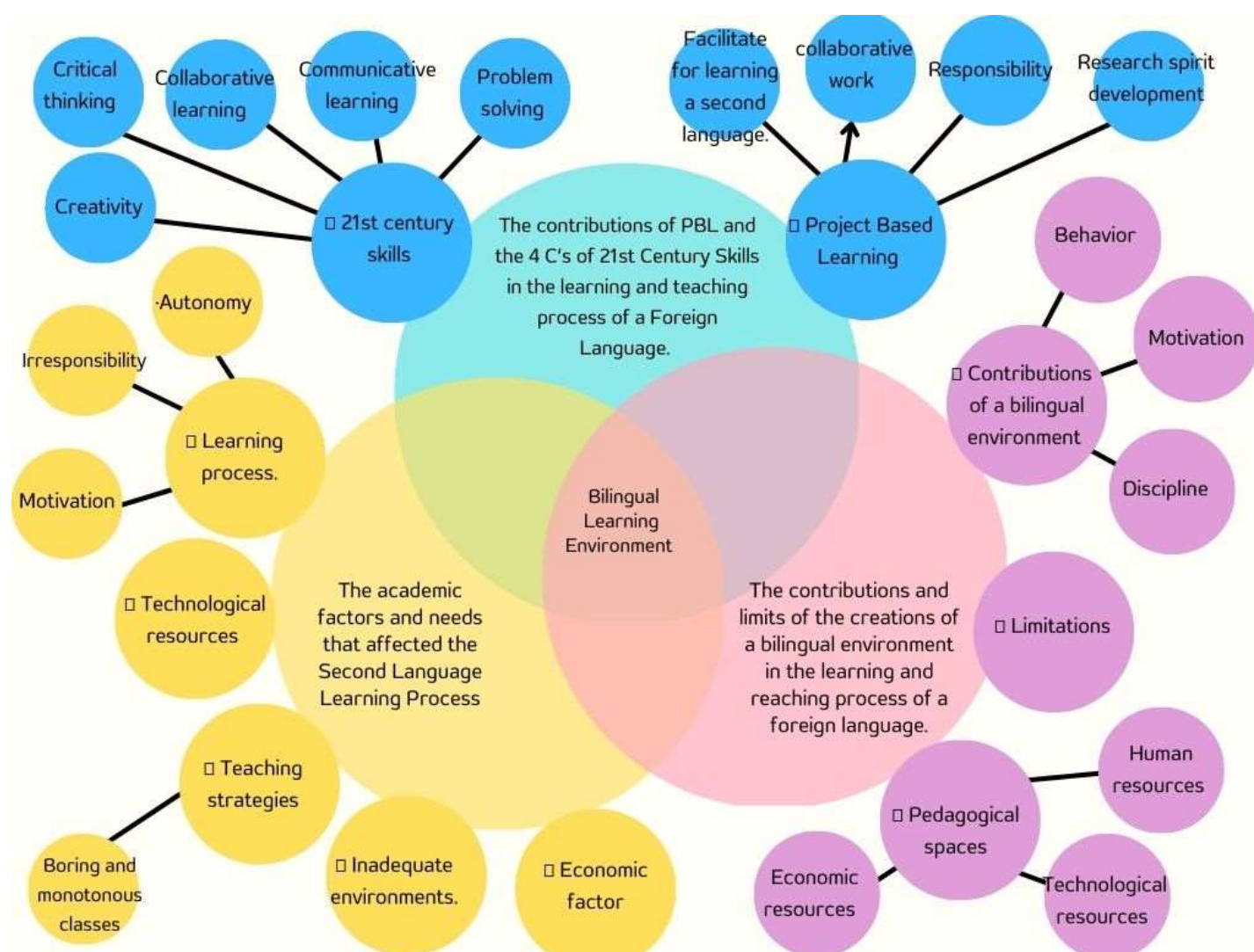
Proposal Faces	Proposal's progress
Problem identification	Done 100%
Recording information	Done 100%
Selection Authors and basic theories	Done 100%
First draft	Done 100%
Expert evaluation	Done 100%
Corrections	Done 100%
Peer review and evaluation	Done 100%
Final product	Done 100%
Implementation of the proposal	In process 50%*
Analysis de las contributions and limitations of the proposal	In process 50%*

**This percentage belongs to data exploration, problem identification and design development*

RESULTS AND CONSIDERATIONS

In this line, those codes were organized the information according to relevance to our project. Taking to account the Bilingual Learning Environment as a central topic of this analysis and the most important categories and some other aspects such as contributions, limitations, pedagogical spaces, development of skills, teaching strategies as sub-categories, as shown in the (figure 3).

Figure 3 Visual representation of objective Categories and Sub - categories



In this context, we decided to organize the data in relation to the research questions and objectives of the study and as a result, three categories emerged: First, academic factors and needs that affected the Second Language Learning Process; second, the contributions and limits of the creations of a bilingual environment in the learning and reaching process of a foreign language; and finally: the development 21st century skills through Projects Based Learning (PBL) framed in an appropriated learning environment for improving the learning and teaching process of a second language.

Academic factors and needs that affected a Foreign Language learning process.

Our first specific objective is focused on two key elements: factors and needs which teachers and student identified as drawbacks, affecting in a negative way in the process of learning a second language during the pandemic period, which was the initial focus of this problem to analyze. In this sense and based on the findings obtained through the instruments applied, we can observe some important codes such as:

Learning process, in which there are some instincts factors as the autonomy, irresponsibility and motivation, according to Juárez-Díaz, C., & Perales, M. (2021) in their research, due to the insufficient training and the abrupt change to the ERT (emergency remote teaching) and the use of ICTs they noticed that students were not able to learn autonomously. In the same way, motivation was one of the important factors for students since the social accompaniment generates a productive community of learning. It increases encouragement and cooperation to learn (Garrison et al., 2001, as cited in Juárez-Díaz, C., & Perales, M. 2021) evidencing demotivation due to the virtual classes generating excessive physical and mental fatigue.

In the same way, there are some extrinsic factors as the inadequate environments, teaching strategies, economic factors, and the technological resources, according to Maheshwari (2020) there exist three factors that affect students' online learning experience: comfortable and quiet learning environment, teachers' support, and ease of using the learning platform. Besides, it is important to highlight that not all students counted with the necessary technological resources to accomplish with their educational process, in this way the economic factor plays an important role since without this tool's education became in a limited privilege. Likewise, the learning environment plays another important role when learning a second language, according to Roncancio and Buitrago (2018) the environmental factors are those who let students acquire knowledge in a correct or incorrect way, for that reason it is essential to create a suitable environment to obtain the greatest concentration possible and acquire all the expected knowledge.

Table 8 *Contrast principles – academics needs and analyzed context.*

Principles Learning environment	Needs and academic difficulties	The context stakeholders
Principle one The learning environment recognizes the learners as its core participants.	-The attitudes that are of particular importance because, the greater the language, the more the learner's interest in the language and its culture will be easier to learn.	During the pandemic the learning center was lost, the student; this was negatively and positively influenced by their family environment, being they who took their place displacing the student of the formative process.
Principle two The learning environment is focused on the social nature of learning and actively encourage well-organized co-operative learning.	-The cognitive field includes intelligence, aptitude, and the affective field includes a variety of aspects: empathy, self-esteem, extraversion, inhibition, imitation, anxiety, attitudes, among others	The learning process has variables, students learn and assimilate concepts differently, not all accepted and assimilated virtuality responsibly and autonomously.

Principle three

The learning professional within the learning environment are highly attuned to the learners' motivations and the key role of emotions in achievement.

-The ability of the mind to control, direct and maintain attention; motivation, cognitive and affective factors, includes personal beliefs in using technology.

The flexibility of the virtual mode and the level of demand and responsibility greatly affected the process of teaching English as there was no deepening and appropriation of what was learned. This includes students and teachers because in cases where teachers did not use technological tools in the best way.

Principle four

The learning environment is acutely sensitive to the individual differences among the learners in it, including their prior knowledge.

-Another factor that has a negative influence is anxiety, affecting self-confidence or disposition to communicate

stress and patience related to confinement caused frustration in some students affecting the learning process and to this we add teachers with overburdened methods of autonomous work, without proper explanation or guidance, this led to the learning process being negatively affected

Principle five

The learning environment devises programs that demand hard work and challenges all without excessive overload.

-A comfortable and quiet learning environment, teachers' support, and ease of using the learning platform

Different type of interruptions of the family environment, inadequate environment, interrupt the learning process

Principle six

The learning environment operates with clarity of expectations and deploys assessment strategies consistent with these expectations; there is strong emphasis on formative feedback to support learning.

-The environmental factors affecting learning of English because the person must be in an external and internal environment in turn creating a suitable environment to obtain the greatest concentration possible and acquire all the expected knowledge.

The teacher's strategies with lack of commitment and clarity in their explanations, absence of corrections and follow-up to learning processes

Principle seven

The learning environment strongly promotes "horizontal connectedness" across areas of knowledge and subjects as well as to

- The students with the lowest economic level did not have access to the internet or virtual classes, placing them at a disadvantage and negatively

The lack of commitment on the part of government entities to equip technology teams and the low economic level of some students interrupted the

the community and the wider world.

affecting the learning process

normal development of virtual classes

The contributions and limits of the creations of a bilingual environment in the learning and reaching process a Foreign Language

The second category is guided by the second main objective of this research: “to determine the contributions of the creation of Bilingual Environments in the learning and teaching process of a Foreign Language”. This category presents three emerging codes; the first one is Contributions of a bilingual environment, in this code, the following sub codes can be highlighted: motivation, behavior and discipline. The second one is Pedagogical spaces, where we can find: economic resources, technological resources, and human resources; finally, the third code is limitations.

Participants’ written responses to the interviews highlight the importance of the codes found in the categories. Particularly in the second category one of the most important codes is motivation. According with the participants’ answers “students respond positively to most of the activities developed in the classroom. This is evidence of motivation on the part of the students. As mentioned in the Theoretical Foundations of this research, motivation is one of the intrinsic factors involved in the virtual learning of a second language. The attitudes that are of particular importance because, the greater the language, the more the learner’s interest in the language and its culture will be easier to learn. Attitude is closely linked to motivation.

Another very important emerging codes are related to behavior and discipline. According with the participants’ answers the implementation of a bilingual learning

environment will influence in a positive way students' behavior and consequently discipline and the classroom environment would be more enjoyable.

There are other factors involved in the virtual learning of a second language. these were also cited theoretical foundations and are the extrinsic factors and they are related to the codes, those are Economic resources, technological resources, and human resources.

Roncancio and Buitrago (2018) define this term as “It's the environmental factors affecting learning of English, because the person must be in an external and internal environment in turn creating a suitable environment to obtain the greatest concentration possible and acquire all the expected knowledge”. In this second group the following should be highlighted: technological tools for learning such as available resources (internet access, technical support), the infrastructure, economic aspects, academic environments, social - demographic factors, academic institutional factors, among others. According to the participants' written responses, the only space where the teaching-learning process takes place is the classroom. This is due to the lack of a better infrastructure that would allow to have places other than the classroom to develop the English classes. On the other hand, the classroom is not an appropriate space. There is overcrowding and there are no didactic resources to enhance the teaching process. All above demonstrates a lack of economic resources that result in a negative factor in the virtual learning of a second language.

In the General Education Law (1994), learning a foreign language is recognized as an important and mandatory aspect of education. In addition, the Bilingualism Law (2013) complement the General Education Law and make emphasis in how meaningful it is EFL and the development of language skills and emphasizes that public and private entities must be qualified for this task.

According to Sipra (2013) The use of bilingualism has an important role in teaching and learning L2 at intermediate level. Moreover, the use of bilingualism in EFL classes does not reduce students' exposure and capacity to communicate well in L2 rather it substantiates English language learning, and it is an immense source of motivation for the EFL learners. It has no adverse effect on learning as long as it is used with considerable restraint.

In addition, Ordóñez (2011) in her study he concludes the implementation of bilingual learning environments changed the nature and characteristics of the language learning environments in the school and the teachers' conceptions of language, language learning, and their role as teachers. These changes helped students improve their skills in Spanish and English and their ways of learning. The results describe in detail the new environments and what both teachers and students achieved in the process, which includes pedagogical, linguistic, pragmatic, attitudinal, and metacognitive learning.

Finally, Veliyeva (2015) states that bilingual individuals who have a chance to study in a foreign language have wider outlook, more cultural awareness and they are more outgoing which is essential nowadays. What is more, bilingual individuals educated in a foreign language have more career opportunities and can work in many other countries.

21st century skills through PBL: An appropriate articulation between a BLE and the Teaching and Learning Processes.

The main question guiding this research is focused on design of a Bilingual Learning Environment framed in tow important pedagogical aspect, first PBL and second 21st century skills as a teaching strategy for learning process in a second language. That is why the third category responds to this question and a specific objective of this research.

Projects-Based Learning (PBL) as a teaching strategy

According with the perspective of the participating teachers, the project method is a teaching strategy because it focuses on the actionable approach that takes the student as a social and active actor of his learning where he can build his knowledge, allowing the exploration of dams and the construction of new knowledge through the experimentation as well as favors the teaching of a second language for its proficiency evaluation, since this is used throughout the process, which is focused on the process and not the final product.

In this way and considering the point of view of the participating teachers and their extensive experience, we have described the most important aspects of the PBL as a teaching strategy. In this context, negative and positive factors include:

Two negative factors according to the analysis of the teacher 1 interview are: shortcomings in learning with respect to those issues seen in virtually, its favorable performance has decreased compared to that of other years. On the other hand, it can be marked lack of resources, over-support by parents in carrying out activities, connection problems, lack of commitment by students.

One of the first positive contributions is the responsibility that students develop when carrying out the project's approach, since they take care of their own educational proposal. Also, they must organize themselves and design specific and elementary tasks between the members of the group, promoting group work, to have better results at the end of the project and on the outline to the foreign language. According to the interpretation of the teacher's interview 2, "These environments help motivate and improve not only academically the student but also develop communicative skills in a way that could put them into use in different contexts". In this way, students can obtain meaningful learning to the objectives proposed in the project, as well as allow them to advance in their learning process, enabling more active learning, in which the student learns by doing and in turn facilitates the learning

process. According to Vive.(2021) some of the contributions of Bilingual Environments in the process of Learning a L2 are: greater ability to socialize because they know how to express themselves in two languages and, therefore, can communicate with a greater number of people.

Other element that emerges from the data obtained is the autonomy of learners, which is achieved when they reflect on how to highlight their project, so that the activities developed by the students are favorable for the learning of the participants based on their pedagogical project. In relation to autonomy, one has independence as another advantage of this pedagogical practice since they have the opportunity to propose the activities. However, it is necessary to take into account the suggestions that the teacher gives considering that this is the role he plays in this type of approach, in other words, he is an observer and a guide throughout the development of the project.

According to Wurdinger et al. (2007, p151) describes PBL as a teaching method where teachers guide students through a problem-solving process. That includes identifying a problem, developing a plan, testing the plan against reality, and reflecting on the plan while in the process of designing and completing a project. That is how teachers can improve students' academic performance, and in the same way, develop the necessary skills as the critical thinking, collaboration, communication, and creativity in order to reach an enhancement in the learning and teaching process of a second language.

“According to the Glossary of Education Reform, a learning environment refers to the diverse physical locations, contexts, and cultures in which students learn. Since students may learn in a wide variety of settings, such as outside-of-school locations and outdoor environments, the term is often used as a more accurate or preferred alternative to classroom, which has more limited and traditional connotations” Araque (2021).

With this in mind, it is also important to highlight the relevance of an effective learning environment in order to teach and learn a second language, students can develop their skills in a better way being in a space where they can interact, communicate and learn with a direct and indirect influence on student learning as the motivation, the engagement in what is being taught etc. “This means the environment is seen as an enriched and dynamic space for learning that involves not just a physical space but also actions, experiences, attitudes and socio-affective conditions, hence multiple relationships with the environment and the participants are produced. Such relationships are permeated by cultural heritage well as educational proposals.” Araque (2021).

It is also important to highlight the voices of the students, according to the surveys conducted with them, it can be pointed out that from the perspective of the students the survey shows some academic factors and materials that affected the process of learning English such as lack of motivation, lack of clear explanations from teachers, distractions and lack of an environment conducive to learning, lack of guidance in class, among others. Similarly, 75% of participants’ report having problems of adaptability to the presence by various factors, among them we highlight: with a 50 % of the participants affirm that they do not remember the topics seen during pandemic, a 25% the explanations of the teachers are very complex to understand and a 25% the difficulty to resume the rhythm of face-to-face study.

Finally, a very important aspect comes to light from the information collected, according to the participants, students develop an investigative spirit, which is fundamental in the education of the future, creating curious minds that are interested in research.

The development 21st century skills with 4ht-grade primary learners.

In the light of the results and codes that emerged from this category, we find some sub-codes that support this analysis, among them we have critical thinking, creativity, collaborative learning, communicative learning and solving problems. According to the information we can say that the development of these competences have a positive impact on the learning process and teaching, since this allows to transfer the learning of knowledge and procedures acquired in a specific situation to a completely new situation, allows students to prepare for life and its challenges, gives them tools to solve everyday life cases and solve everyday problems of their social and school environment.

In this way, it has been found that the development of 21st century skills guarantee meaningful learning for students, since they must be responsible for their learning and construction through the tasks that will result in what they have proposed and expected at the start of a project. After Proulx (2004), he argues that “the learner is therefore active in learning and is the principal agent of learning.” In addition, Dewey (1899) stated that with the pedagogy of experience, one learns, if he experiences it and does so, that learning will be more meaningful, lasting, and useful in real life for learners.

According to Van Roekel (2008) the acquisition of these skills includes not only the students but also other groups such as teachers, leaders, administrators, it is necessary for students to integrate the 21st century skills framework 4Cs inside the classrooms since in that way, learners can be adequately prepared to face the new challenges of the digital era. As ending the interpretation of categories, it is important to introduce what you call “A guide to design a bilingual learning environment.”

GUIDE OR INSTRUCTIVE FOR THE BILINGUAL LEARNING ENVIRONMENT

This project presents a proposal to organize and improve the development of the final projects of synthesis of each period, which shows step by step the elaboration and planning of these projects, in which it has as central axis the students, framed in the 7 principles for the creation of a suitable bilingual environment. Similarly, this environment is divided into three phases and each one responds to specific characteristics that are sought to develop in students.

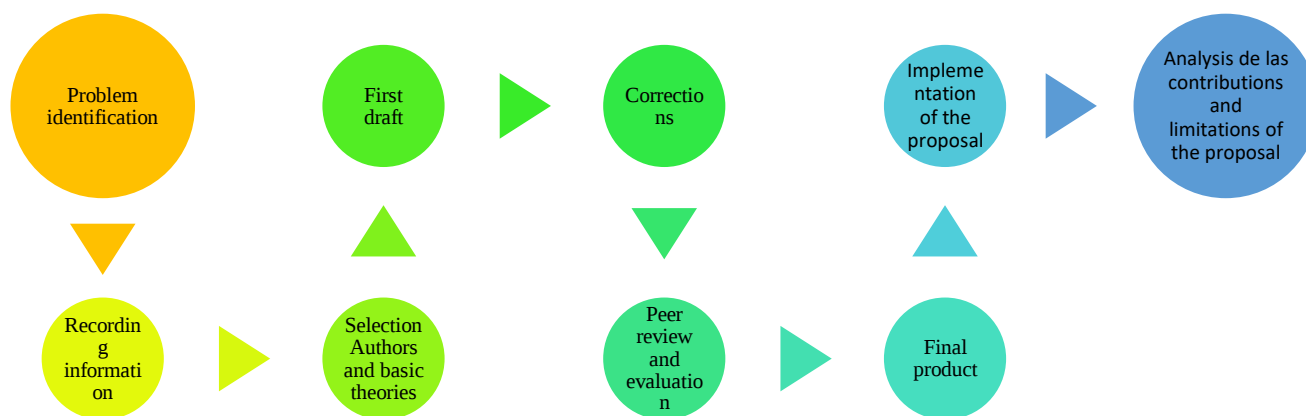
Figure 4 *Instructive conceptual scheme*



Elaboration process - guide or instructive for the Design

The first step was the initial observation of the problem, identifying the needs and factors to be improved in the teaching of English, then instruments are elaborated to know the context and collect information to help the construction of this improvement plan. As a second important step is an exhaustive consultation of authors who support the proposal and the prepared template, a first draft is made to be evaluated by experts in the subject, Likewise, with the relevant corrections, an evaluation is carried out that contains a series of aspects to be evaluated and is made known to English teachers so that from their experience they can evaluate its coherence, usefulness and practicality.

Figure 5. *Elaboration guide process*



In the following link you can find the first draft of our instructive about the pedagogical proposal , Design of a Bilingual Learning Environment involving a Pedagogical Project and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving foreign Language Learning process.

[“BUILDING LEARNING FOR LIFE”](#)

DISCUSSION

The main contribution of this study is the instructive which contains a brief explanation of the characteristics, principles, tools, and steps to follow to create a Bilingual Learning Environment. This pedagogical proposal raises the design of a Bilingual Learning Environment framed in the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning process.

In the teaching process there are variables that can affect positively or negatively the teaching process and many times those responsible for this to happen falls on the policies or on the teachers themselves since they do not sign or create suitable environments for this process teaching, We overlook key aspects for a true immersion in a second language, ignoring in minority cases existing in our classrooms and we want to force teaching without starting from a contextualization of our population.

Hamel (2016) mentioned in her paper some reason about distancing from bilingualism, in an indigenous context, one of them is cultural discrimination against minority citizens in different contexts, social, political and educational and how to impose the dominant language on their cultures, without analyzing the cultural consequences, this is a clear example of what some co-citizens live today, are rejected and catapulted by social egoism, There is the importance of creating ambulatories that strengthen these minorities, from the classroom can make a conversion in which education part or relate these cultural, social or economic environments. We have standards to meet educative but the quality, inclusion and cultural diversity of our environment or context must also prevail.

Another important aspect of this distancing from “*bilingualism is that the design and implementation of successful bilingual programs turned out to be much more difficult and*

complex than some optimistic perspectives projected a few decades ago.” Hamel (2016). This is a reality in most schools, bilingual policies are raised in a general way, are not contextualized, is based on an international standardization forgotten the contextualization of reality, the real environment of students and teachers. Many times, these policies do not have full coverage as it is believed, the reality is totally different and national policies generalize, lack a follow-up route and efficiency of these national bilingual plans, all educational planners are aware of their compliance and coverage. The next step is to raise the awareness of teachers and train them to develop these plans, which from our role frame strategies where learning environments are appropriate and strengthen the teaching process learning a foreign language.

The importance of bilingualism lies in the great potential for human development on the part of the students. The learning of a second language becomes a determining factor and advantages in the cognitive, academic, and cultural development of a person. According to Ardila, (2012)

“Some of the advantages are an increase in mental flexibility; a greater development of cognitive functions related to attention and inhibition; the use of a larger number of cognitive strategies for the solution of problems; an increase in the so-called metalinguistic consciousness; and a better ability to communicate.”

LIMITATIONS

This study presented a significant number of disadvantages during the different stages of research development that made the process difficult. Also, those interrupted the normal course of the study, among them we can name the following:

- ✓ The time and availability of the schedules of the participant teachers, since this is one of the most common because of their work, however, thanks to their kindness and commitment to training future research teachers, they have given us virtual spaces that have enabled the development of data collection.
- ✓ Lack of knowledge or of commitment to clarity on the main theme of the project and inexperience in the field of research to make a good process of analysis of the subject to be developed in the research. Although this has complicated the analysis process, the researchers with the tutor's guide and detailed recommendations explaining the step-by-step approach have facilitated this data collection and analysis process.
- ✓ Lack of knowledge about software use, which has made the process of selecting and organizing data slower. However, with additional guidance and training on it, they facilitated the work of data coding.
- ✓ The discovery of unnecessary information collected from instruments, slowing down the selection of information important for data analysis. In some cases, the absence of knowledge on the topic addressed by the participants, this limited the results the analysis of the expected preliminary data.
- ✓ The short time of the master's degree to carry out the entire investigative process, since in this particular case the academic calendar for the execution of the project does not agree with the final term of this master's, However the project has the possibility to continue and be applied for a better analysis, since a researcher of the group for personal reasons must perform one more semester, allowing us to carry out in full the project in the next semester.

CONCLUSIONS

This article presented an exploratory study focused on a pedagogical proposal design of a Bilingual Learning Environment involving a Pedagogical Project and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving foreign Language Learning processes. In this way, both the question that guided this project and the main objective were developed in the same line, it is therefore possible to say that this paper describes and makes a compilation of elements, characteristics and steps related to the design of a bilingual learning environment.

The guiding objective of this research was to design a bilingual learning environment framed in the development of a Pedagogical Project involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching- learning processes. This objective was achieved through the development of two very important stages, the general project and second is the proposal itself. As far as the project is concerned, we address aspects such as results and considerations. In this part we emphasize in the academic factors and needs that affected the second language learning process; the contributions and limits of the creations of a bilingual environment in the learning and reaching process of a foreign language; and finally, the development 21st century skills through Projects-Based Learning (PBL) framed in an appropriated learning environment for improving the learning and teaching process of a second language. Regarding on the proposal a guide or instructive for the bilingual learning environment was suggested taking into account the elaboration process and an instructive.

IMPLICATIONS FOR FURTHER RESEARCH

Due to the short period for the research to the setbacks presented by the calendars of the participants and the development of the project, this article collected, presented, and analyzed preliminary information. In the same way, the pedagogical proposal was designed together with an example to be put into practice at a future stage of the project, which will be carried out in the next semester and the results will be presented by one of the current researchers, as personal problems delay the academic process of the present master.

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APPENDIXES

Appendix A

This project proposes a guide that explains step by step a template for the development of the final projects of synthesis that are implemented at the end of each academic period.

ENVIRONMENT PHASES	CHARACTERISTICS	DESCRIPTION
BEGINNING / PROJECT PREPARATION	Environment Characteristics and principles.	Establish the organization of the classroom or different places or pedagogic spaces where the projects will be rolled out, take into account the principles mentioned by Cano (1995) and The OECD Handbook for Innovative Learning Environments page 23 - 42)
	Thematic to address	Topics to be developed
	Project title	Creative and striking title for the student.
	Objective	Define the project goal or proposition
	Public	Describe the grade and age of students, participants involved
DEVELOPMENT / ELABORATION	Time	Establish the approximate time for project development in phases or in total project time.
	Define motivation / origin	Analyze the needs of the students and whether it is possible that the project originates in the curiosity and doubts of the students themselves.
	Material / resources	Determine the material necessary for the development of the project

	Teacher Role	Specify the responsibilities and role of the teacher in this process.
	Learner Role	Specify the responsibilities and role of the students in this process.
	Activities	specify in detail the different activities to be developed during the project. Those activities should be focused on the development of the 4 c's 21 st century skills.
	4 c's 21 st century skills developed	Describe the competences, skills developed with the realization of the pedagogical project.
	Transverse axis	If it is possible to work with other areas should specify the role it fulfils and how they are involved in the project.
	Limitations	Specify possible inconveniences or obstacles that may interrupt the development of the project, just as a plan must be established for the project to be carried out.
REALIZATION / CLOSURE	Final product	The expected final product should be described which students will creatively make a presentation or exhibition as a final activity. Establish how students will evaluate the process of developing the pedagogical project. Considering the following types of assessments:
	Evaluation	Formative Evaluation Co -evaluation Auto – evaluation Hetero – evaluation

General Observations

Add comments on the different stages of the project, aspects to be highlighted or improved.

Evidence drive folder

https://drive.google.com/drive/folders/1Z5Xt0ZLgVegHKukc-Hk-F-i2tDst5rl9?usp=share_link

Appendix A: Consent form the Educational Institution



Módulo en Ambientes Bilingües de Aprendizaje - AABA

Consentimiento informado para el desarrollo de proyecto de grado

Respetado Padre Luis Mauricio Cuadros, Rector del Instituto Salesiano San Juan Bosco, Cúcuta, Norte de Santander, en el marco del proyecto de grado titulado, Diseño de un Ambiente Bilingüe de Aprendizaje orientado a mejorar los procesos de aprendizaje de segunda lengua en postpandemia, tomando como contexto de investigación estudiantes de cuarto y quinto grado de dos colegios privados de Norte de Santander (Colombia), el cual será presentado por el grupo de maestranzas conformado por María José Contreras Montoya y Nathaly Ardila Márquez. Solicitamos por medio de este consentimiento informado, su aval para llevar a cabo el proyecto en este ámbito educativo. Asimismo, expresamos nuestra intencionalidad de invitar a miembros de la comunidad para que, a través de los instrumentos a implementar, se realice el proceso de recolección de la información pertinente para los objetivos propuestos y durante los próximos meses del año en curso, por supuesto, en consideración de los principios éticos y el desarrollo integral del proyecto.

A continuación, se presentan los componentes que contextualizan el proyecto:

- Objetivo principal:**
Diseñar un Ambiente Bilingüe de Aprendizaje orientado a mejorar los procesos de aprendizaje de segunda lengua en postpandemia, tomando como caso de investigación estudiantes de cuarto y quinto grado de dos colegios privados de Norte de Santander (Colombia).
- Participantes por conocer en el proyecto** (Estudiantes de cuarto grado del presente año del Instituto Salesiano San Juan Bosco, Cúcuta).
- Beneficios al participar en el proyecto:**
En tanto que el proyecto responde a un proceso formativo de indagación, los miembros de la comunidad contribuyen significativamente mediante su participación voluntaria y su disposición para responder las preguntas, formular e instrumentar que se han diseñado para cumplir el objetivo del proyecto. La recolección de la información se llevará a cabo durante los próximos meses del año en curso y el beneficio se verá reflejado igualmente, en términos de los objetivos del proyecto.
- Principios éticos para el manejo de la información:**
El desarrollo del proyecto garantiza por parte del grupo de maestranzas un manejo ético e integral de la información mediante: (a) el uso anonimato de los nombres de los participantes, a través de seudónimos y/o una codificación para identificar el número de participantes y su rol en la comunidad educativa; (b) la recolección e interpretación de la información en el marco de la maestría con fines académicos e investigativos; (c) manejo ético de información audiovisual enfocada en los datos y no en las imágenes de los participantes; (d) recolección de la información a través de entrevistas, cuestionarios, observación directa en clase de inglés, encuesta, notas de campo, análisis de documentos como evaluaciones y trabajos elaborados por los estudiantes.

Rodríguez, S.M. (2022). Formato elaborado para el programa Módulo en Ambientes Bilingües de Aprendizaje, USTA.



5. Divulgación de resultados: los resultados del proyecto serán divulgados en la comunidad académica de la Facultad de Educación de la USTA, la maestría, y el Centro de Recursos para el Aprendizaje y la Investigación CRAI de acceso institucional y virtual. Considerando que el fin del proyecto es académico e investigativo para el avance y la transferencia del conocimiento, el reporte final y sus resultados son susceptibles de ser socializados en eventos académicos y científicos mediante ponencias y/o publicaciones del ámbito global, así como organizaciones con fines educativos.

6. Aclaraciones acerca del proyecto: Preguntas, solicitudes o inquietudes pueden ser referidas a los maestranzas María José Contreras Montoya y Nathaly Ardila Márquez, por medio del siguiente contacto:

mariccontreras@ustadistancia.edu.co - 3143908888
nathalyardila@ustadistancia.edu.co - 3183677066

Agradecemos de antemano su atención y colaboración para el desarrollo del proyecto mencionado. Para tal fin, solicitamos su firma y aprobación en el siguiente apartado:

Firma y aprobación del consentimiento informado

- ✓ He leído el formato, conozco el objetivo, los fines y el tipo de información requerida según los instrumentos presentados, para lo cual decido participar voluntariamente, habiendo aclarado dudas e inquietudes.
- ✓ Conozco los criterios éticos para el manejo de confidencialidad de nombres e imágenes audiovisuales.
- ✓ Conozco los términos de divulgación de los resultados del proyecto en la comunidad educativa y escenarios académicos para la socialización y publicación en los Archivos Institucionales de la Universidad Santo Tomás, la maestría y otros contextos o eventos con fines académicos e investigativos.
- ✓ Valido mi aval mediante mi firma y datos de contacto.



P. Luis Mauricio Cuadros
Padre Rector del Instituto Salesiano San Juan Bosco
Cúcuta, Norte de Santander.

Rodríguez, S.M. (2022). Formato elaborado para el programa Módulo en Ambientes Bilingües de Aprendizaje, USTA.

Appendix B: Instruments - Interview # 1

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from a private school in Norte de Santander (Colombia). An Exploratory Research.

Guía de entrevista Preguntas
Piloteo # 1

Ficha técnica

Hello, we are Nathaly Ardila Márquez, Maria José Contreras Montoya and Mauricio De Jesus Hernandez Henao, we are students of the second semester, Master in Bilingual Learning Environment, enrolled in the course Research Project. First, thank you for agreeing to answer this interview.

Then, we will have the opportunity to develop the first individual and anonymous interview concerning the research project Which aims to design a Bilingual Learning Environment framed in the development of Pedagogical Projects involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching- learning process, taking as a research case two

English teachers from two private schools in Norte de Santander (Colombia).

The duration of this interview will not exceed 30 minutes. This interview will be guided by one of the specific objectives and aims to identify the factors and academic needs that affected the learning process in a foreign language.

It should also be noted that the answers you provide as a participant will be kept in the strictest confidentiality and will only be used for the analysis of our problem to be developed. In addition, your identity will be absolutely anonymous by using pseudonyms not to reveal your identity. For greater comfort and understanding both questions and answers will be in Spanish.

Título:	19 de noviembre	
Horas:	9:30 am	
Lugar y modalidad (online y otro específico):	Virtual, llamado por Meet	
Nombre del entrevistado:	Nathaly Ardila Márquez	
Nombre del entrevistador:	Carla y Sophie / Profesoras de inglés de la escuela primaria de un colegio privado	
Objetivo de la entrevista:	To identify the factors and academic needs that affected the learning process in a foreign language	
Duración de la entrevista (tiempo aproximado):	20 minutos	

Appendix C: Interview # 2

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from a private school in Norte de Santander (Colombia). An Exploratory Research.

Guía de entrevista Preguntas
Piloteo # 2

Ficha técnica

Hello, we are Nathaly Ardila Márquez, Maria José Contreras Montoya and Mauricio De Jesus Hernandez Henao, we are students of the second semester, Master in Bilingual Learning Environment, enrolled in the course Research Project. First, thank you for agreeing to answer this interview.

Then, we will have the opportunity to develop the first individual and anonymous interview concerning the research project Which aims to design a Bilingual Learning Environment framed in the development of Pedagogical Projects involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching- learning process, taking as a research case two

English teachers from two private schools in Norte de Santander (Colombia).

The duration of this interview will not exceed 30 minutes. This interview will be guided by one of the specific objectives which aims to determine the contributions of the creation of Bilingual Environments in the learning and teaching process of a Foreign Language.

It should also be noted that the answers you provide as a participant will be kept in the strictest confidentiality and will only be used for the analysis of our problem to be developed. In addition, your identity will be absolutely anonymous by using pseudonyms not to reveal your identity. For greater comfort and understanding both questions and answers will be in Spanish.

Título:	20 de noviembre	
Horas:	2:30 pm	
Lugar y modalidad (online y otro específico):	Virtual, llamado por Meet	
Nombre del entrevistado:	Maria José Contreras Montoya	
Nombre del entrevistador:	Carla y Sophie / Profesoras de inglés de la escuela primaria de un colegio privado	
Objetivo de la entrevista:	To determine the contributions of the creation of Bilingual Environments in the learning and teaching process of a Foreign Language	

Duración de la entrevista (tiempo aproximado):	30 minutos	
Preguntas	Respuestas	Observaciones
1. Do you consider it important or pertinent to implement a bilingual learning environment in 4 grades of your school?		
2. Do you think that students could have better results in their grades if a bilingual learning environment is implemented?		
3. Do you think the implementation of a bilingual learning environment will influence student behavior?		
4. Do you think that the motivation of your students will improve if a bilingual learning environment is implemented?		
5. What difficulties might there be in implementing a bilingual learning environment?		
6. What would be the main benefit of implementing a bilingual learning environment?		
Closing To finish our interview, do you have anything to add regarding the topic discussed during the interview?		Thank you for taking the time to respond to this conversation. We got a lot of detailed information during our conversation, which will contribute to the development and analysis of our research. Thank you for this friendly and kind meeting.

Appendix D: Interview # 3

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from a private school in Norte de Santander (Colombia). An Exploratory Research.

Guía de entrevista Preguntas
Piloteo # 3

Ficha técnica

Hello, we are Nathaly Ardila Márquez, Maria José Contreras Montoya and Mauricio De Jesus Hernandez Henao, we are students of the second semester, Master in Bilingual Learning Environment, enrolled in the course Research Project. First, thank you for agreeing to answer this interview.

Then, we will have the opportunity to develop the first individual and anonymous interview concerning the research project Which aims to design a Bilingual Learning Environment framed in the development of Pedagogical Projects involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching- learning process, taking as a research case two

English teachers from two private schools in Norte de Santander (Colombia).

The duration of this interview will not exceed 30 minutes. This interview will be guided by the main objective which aims to detail the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language.

It should also be noted that the answers you provide as a participant will be kept in the strictest confidentiality and will only be used for the analysis of our problem to be developed. In addition, your identity will be absolutely anonymous by using pseudonyms not to reveal your identity. For greater comfort and understanding both questions and answers will be in Spanish.

Fecha:	22 de noviembre	
Hora:	2:30 am	
Lugar y modalidad (Grupal y otro específico):	Virtual, llamado por Meet. Bogotá.	
Nombre del entrevistador:	Mauricio De Jesus Hernandez Henao	
Nombre del entrevistado:	Celia y Sophie - Profesoras de inglés de la sección primaria en un colegio privado.	
Objetivo de la entrevista:	To detail the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language	

Duración de la entrevista (tiempo aproximado)	30 minutos	
Preguntas	Respuestas	Observaciones
1. Do you consider that the 4cs of 21st century education are included in the development of your classes?		
2. Do you think that students could have better results with implementation of a strategy based on the 4cs of 21st century education?		
3. How do you develop critical thinking in your students?		
4. How do you help your students be more creative and innovators?		
5. How do you prepare activities that involve collaborative learning in your classes?		
6. How do you privilege communicative learning in your classes?		
Closing To finish our interview, do you have anything to add regarding the topic discussed during the interview?		Thank you for taking the time to respond to this conversation. We got a lot of detailed information during our conversation, which will contribute to the development and analysis of our research. Thank you for this friendly and kind meeting.

Appendix E: Survey teachers

SURVEY # 2 FOR ENGLISH TEACHERS

Nathaly Ardila Márquez, Maria José Contreras Montoya and Mauricio De Jesus Hernandez Henao, who are students of the second semester, Master in Bilingual Learning Environment, enrolled in the course Research Project. First, thank you for agreeing to answer this survey.

In this context and as part of the validation of our project "*Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from a private school in Norte de Santander (Colombia). An Exploratory Research*". That is why, we are collecting information steps that help us analyze some essential factors for this innovative strategy.

In this context, the aim of this survey is to determine in detail the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language From the teacher's experiences. For greater comfort and

understanding both questions and answers will be in Spanish. This questionnaire will take 20 minutes.

1. Was an improvement in the learning process evident?
yes _____ no _____
2. Did the students respond to the applied strategy in a satisfactory way?
yes _____ no _____
3. skills were evidenced during the development of the project?
yes _____ no _____
4. Was the critical thinking evidenced during the activities assessed?
yes _____ no _____
5. Was the increase in your creativity reflected during the process?
yes _____ no _____
6. Was there collaborative work during the learning process?
yes _____ no _____

Appendix F: Survey students

SURVEY # 1 FOR LEARNERS.

Nathaly Ardila Márquez, Maria José Contreras Montoya and Mauricio De Jesus Hernandez Henao, who are students of the second semester, Master in Bilingual Learning Environment, enrolled in the course Research Project. First, thank you for agreeing to answer this survey.

In this context and as part of the validation of our project *"Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from a private school in Norte de Santander (Colombia). An Exploratory Research"*. That is why, we are collecting information steps that help us analyze some essential factors for this innovative strategy.

In this context, the aim of this survey is to identify the factors and academic needs that affected the learning process in a foreign language among learners. From the student's perspective. For greater comfort and understanding both questions and answers will be in Spanish. This questionnaire will take 20 minutes.

1. ¿Te resulta fácil hacer las actividades en la asignatura de inglés?

- Falta de un ambiente acorde para el aprendizaje, sin distractores
- Falta de autonomía y responsabilidad en las tareas asignadas.
- Otro

5. ¿Ha tenido problemas para adaptarse a los nuevos temas en inglés después de la pandemia?

Si ____ no ____

6. En este retorno a clases cuál de las siguientes opciones le ha parecido más difícil?

- Las clases presenciales son más complicadas
- Las evaluaciones son más difíciles que las virtuales
- Las explicaciones de los docentes no son claras
- No me acuerdo de temas vistos durante los dos años y eso dificulta el aprendizaje de los nuevos temas

Si ____ no ____

2. ¿Cree que el proceso de aprendizaje bilingüe durante la pandemia fue satisfactorio?

Si ____ no ____

3. ¿Cree que su aprendizaje mejoró durante la pandemia o durante la virtualidad?

Si ____ no ____

4. ¿Cuál fue el inconveniente o factor que impidió que las clases virtuales no se desarrollaran con normalidad? Varias respuestas son válidas.

- Mala conexión a internet
- Falta de orientación en casa en las tareas a desarrollar en inglés
- Poca explicación de los docentes en las tareas a desarrollar
- Falta de equipos tecnológicos
- Falta de interés por el área de inglés
- Falta de motivación para aprender de manera virtual
- Falta de tiempo para desarrollar las actividades

- Retomar el ritmo de estudio presencial, ya que es más exigente y de responsabilidad.
- Los nuevos temas son más complicados.
- Varias respuestas son válidas.

7. ¿Se aplican los proyectos en el área de inglés?

Si ____ no ____

8. ¿Te gusta trabajar en proyectos en el área de inglés?

Si ____ no ____

9. ¿Qué es lo que más gusta de trabajar con proyectos en clase? Varias respuestas son válidas.

- El trabajo en grupo
- El descubrir nuevas cosas, un nuevo aprendizaje
- Me permite explorar mi creatividad
- Es divertido y dinámico
- Me permite imaginar y crear nuevos conceptos y cosas.
- Me permite compartir ideas y experiencias con mis compañeros

Appendix G: Consent form of teacher's pilotage participants

FORMATO DE CONSENTIMIENTO

Yo: **Nancy Yolima Hernández G.**, identificada con la cédula de ciudadanía número 1054427530 de Durania, en calidad de Docente de Inglés de primaria, vinculado con una institución educativa privada ubicada en Cúcuta, Norte de Santander a través de este documento, manifiesto que fui informado suficientemente en relación con el objetivo de la investigación, el procedimiento de mi participación y los beneficios implicados en el proyecto de investigación:

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from two private schools in Norte de Santander (Colombia). An Exploratory Research.

El cual está a cargo de los investigadores

Mauricio De Jesus Hernandez Henao, María José Contreras Montoya, y Nathaly Ardila

Procedimiento de participación

Previo su autorización y el consentimiento de la institución, usted participará de acuerdo con la planificación del proyecto de la siguiente forma:

Docente: será partícipe de la validación de los instrumentos para el proyecto, se realizará una prueba piloto según su disponibilidad en el mes de noviembre. En la cual deberá responder a tres entrevistas de una duración máxima de 30 minutos, para su facilidad esta puede ser programada a través de un encuentro virtual y en español.

Fecha de la participación: Mes de noviembre.

Participación Voluntaria

Mi participación en este estudio es completamente voluntaria, en caso de negarme a participar o decidir retirarme, esto no me generará, ni tendrá consecuencias a nivel institucional, ni académico, ni social.

Confidencialidad

La información suministrada por la organización será confidencial. Los resultados podrán ser publicados o presentados en reuniones o eventos con fines académicos sin revelar su nombre o datos de identificación.

FORMATO CARTA INFORMADO

Parramona 24 de octubre

Señora
Nancy Yolima Hernández G.
DOCENTE DE INGLÉS

La ciudad:

Cordial saludo,

Por medio de la presente, en su calidad de docente de inglés de primaria me permito solicitarle autorización y consentimiento para participar activamente en la prueba piloto del proyecto de investigación titulado:

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from two private schools in Norte de Santander (Colombia). An Exploratory Research.

El cual está a cargo de los investigadores

Mauricio De Jesus Hernandez Henao, María José Contreras Montoya, y Nathaly Ardila

Este proyecto se lleva a cabo como requisito de grado para optar al título de Magister en Ambientes Bilingües de Aprendizaje de los investigadores por parte de la Universidad Santo Tomás.

El objetivo general del proyecto es:

To design a Bilingual Learning Environment framed in the development of Pedagogical Projects involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching-learning process, taking as a research case two English teachers from a private school in Norte de Santander (Colombia).

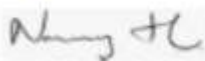
Procedimiento de participación

Previo su autorización y el consentimiento de la institución, usted participará de acuerdo con la planificación del proyecto de la siguiente forma:

Docente: será partícipe de la validación de los instrumentos para el proyecto, se realizará una prueba piloto según su disponibilidad en el mes de noviembre. En la cual

Aquí mismo, declaro que fui informado suficientemente y comprendo que tengo derecho a recibir respuesta sobre cualquier inquietud institucional que se presente antes, durante y después de su ejecución y a acceder a los resultados de la información recibida. En consecuencia, **me permito informar que consiento, de forma libre y espontánea, mi participación en el desarrollo del proyecto de investigación.**

En constancia de lo anterior, firmo el presente documento, en la ciudad de Parramona, el día 1, del mes noviembre de 2022,

Firma: 
Nombre: **Nancy Yolima Hernández G.**
Cargo: **Docente de Inglés sección primaria**
C. C. No. **1054427530** de Durania.



FORMATO DE CONSENTIMIENTO

Yo: **PAULA GELVES**, identificado(a) con la cédula de ciudadanía número 10944281393 de Pamplona, en calidad de Docente de Inglés de primaria, vinculada con una institución educativa privada ubicada en Pamplona Norte de Santander a través de este documento, manifiesto que fui informado suficientemente en relación con el objetivo de la investigación, el procedimiento de mi participación y los beneficios implicados en el proyecto de investigación.

Design of a Bilingual Learning Environment Involving the Pedagogical Projects and the 4 Cs of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from two private schools in Norte de Santander (Colombia). An Explanatory Research.

El cual está a cargo de los investigadores

Mauricio De Jesus Hernandez Henao, María José Contreras Montoya, y Nathaly Ardila

Procedimiento de participación

Previo su autorización y el consentimiento de la institución, usted participará de acuerdo con la planificación del proyecto de la siguiente forma:

Docente: será parte de la validación de los instrumentos para el proyecto, se realizará una prueba piloto según su disponibilidad en el mes de noviembre. En la cual deberá responder a tres entrevistas de una duración máxima de 30 minutos, para su facilidad esta puede ser programada a través de un encuentro virtual y en español.

Fecha de la participación: Mes de noviembre.

Participación Voluntaria

Mi participación en este estudio es completamente voluntaria, en caso de negarme a participar o decidir retirarme, esto no me generará, ni tendrá consecuencias a nivel institucional, ni académico, ni social.

Confidencialidad

La información suministrada por la organización será confidencial. Los resultados podrán ser publicados o presentados en reuniones o eventos con fines académicos sin revelar su nombre o datos de identificación.

FORMATO CARTA INFORMADO

Pamplona 24 de octubre

Señora
Paula Gelves
DOCENTE DE INGLÉS

La ciudad

Cordial saludo

Por medio de la presente, en su calidad de docente de Inglés de primaria me permito solicitarle autorización y consentimiento para participar activamente en la prueba piloto del proyecto de investigación titulado:

Design of a Bilingual Learning Environment Involving the Pedagogical Projects and the 4 Cs of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from two private schools in Norte de Santander (Colombia). An Explanatory Research.

El cual está a cargo de los investigadores

Mauricio De Jesus Hernandez Henao, María José Contreras Montoya, y Nathaly Ardila

Este proyecto se lleva a cabo como requisito de grado para optar al título de Magister en Ambientes Bilingües de Aprendizaje de los investigadores por parte de la Universidad Santo Tomás.

El objetivo general del proyecto es:

To design a Bilingual Learning Environment framed in the development of Pedagogical Projects involving the 4 Cs of 21st Century Skills as a teaching strategy aimed at improving English teaching-learning process, taking as a research case two English teachers from a private school in Norte de Santander (Colombia).

Procedimiento de participación

Previo su autorización y el consentimiento de la institución, usted participará de acuerdo con la planificación del proyecto de la siguiente forma:

Docentes: será parte de la validación de los instrumentos para el proyecto, se realizará una prueba piloto según su disponibilidad en el mes de noviembre. En la cual

Añí mismo, declaro que fui informado suficientemente y comprendo que tengo derecho a recibir respuesta sobre cualquier inquietud institucional que se presente antes, durante y después de su ejecución y a acceder a los resultados de la información recolectada. En consecuencia, **me permito informar que consiento, de forma libre y espontánea, mi participación en el desarrollo del proyecto de investigación.**

En constancia de lo anterior, firmo el presente documento, en la ciudad de Pamplona, el día 28, del mes octubre de 2022,

Firma:

Nombre Paula Gelves

Cargo: Docente de Inglés según primaria
C. C. No. 10944281393 de Pamplona

Appendix H: Consent form parents of the student participants in the pilotage.

FORMATO DE CONSENTIMIENTO

Yo: Humyl María Fernanda Fabón Becerra, identificada con la cédula de ciudadanía número 1127056048 de Villa del Rosario, en calidad de progenitora de Andrea Sofia Veramendi Fabón, identificada con la tarjeta de identidad número 1090524727 de Cúcuta, a través de este documento, manifiesto que fui informado suficientemente y el objetivo de la investigación, el procedimiento de participación y beneficios implicados en la participación de nuestro hijo(a) y/o la comunidad académica de la institución, en el proyecto de investigación:

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from two private schools in Norte de Santander (Colombia). An Exploratory Research.

El cual está a cargo de los investigadores

Mauricio De Jesus Hernandez Henao, María José Contreras Montoya, y Nathaly Artila

Procedimiento de participación

Encuesta

Participación Voluntaria

La participación de nuestro hijo(a) o representado en este estudio es completamente voluntaria, si él o ella se negara a participar o decidiera retirarse, esto no le generará ningún inconveniente, ni tendrá consecuencias a nivel institucional, ni académico, ni social.

Confidencialidad

La información suministrada por nuestro hijo(a) o representado será confidencial. Los resultados podrán ser publicados o presentados en reuniones o eventos con fines académicos sin revelar su nombre o datos de identificación. Se mantendrán los cuestionarios y en general cualquier registro en un sitio seguro. En bases de datos, todos los participantes serán identificados por un código que será usado para referirse a cada uno.

Así mismo, declaramos que fuimos informados suficientemente y comprendemos que tenemos derecho a recibir respuesta sobre cualquier inquietud que tengamos sobre dicha investigación, antes, durante y después de su ejecución

y a acceder a los resultados de la información recabada. Considerando que los derechos que mi hijo(a) o representado tiene en calidad de participante de dicho estudio, a los cuales hemos hecho alusión previamente, constituyen compromisos del equipo de investigación responsable del mismo, nos permitimos informar que consentimos, de forma libre y espontánea, la participación de nuestro hijo(a) o representado en el mismo.

Este consentimiento no inhibe el derecho que tiene mi hijo(a) o representado de ser informado(a) suficientemente y comprender el alcance de su participación y a ofrecer su asentimiento informado para participar en el estudio de manera libre y espontánea, por lo que entiendo que mi firma en este formato no obliga su participación.

En constancia de lo anterior, firmamos el presente documento, en la ciudad de Cúcuta, el día 20, del mes de noviembre de 2022.

Padre, acudiente o representante legal del menor:

Firma: Humyl María

Nombre Humyl María Fernanda Veramendi Becerra

C. C. No. 1127056048 de Villa del Rosario

FORMATO DE CONSENTIMIENTO

Yo: Carmen Sofia Ardia Rorinad, identificada en calidad de progenitora de Luzmila Moreno Ardia, identificada a través de este documento, manifiesto que fui informado suficientemente y el objetivo de la investigación, el procedimiento de participación y beneficios implicados en la participación de nuestro hijo(a) y/o la comunidad académica de la institución, en el proyecto de investigación:

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from two private schools in Norte de Santander (Colombia). An Exploratory Research.

El cual está a cargo de los investigadores

Mauricio De Jesus Hernandez Henao, María José Contreras Montoya, y Nathaly Artila

Procedimiento de participación

Encuesta

Participación Voluntaria

La participación de nuestro hijo(a) o representado en este estudio es completamente voluntaria, si él o ella se negara a participar o decidiera retirarse, esto no le generará ningún inconveniente, ni tendrá consecuencias a nivel institucional, ni académico, ni social.

Confidencialidad

La información suministrada por nuestro hijo(a) o representado será confidencial. Los resultados podrán ser publicados o presentados en reuniones o eventos con fines académicos sin revelar su nombre o datos de identificación. Se mantendrán los cuestionarios y en general cualquier registro en un sitio seguro. En bases de datos, todos los participantes serán identificados por un código que será usado para referirse a cada uno.

Así mismo, declaramos que fuimos informados suficientemente y comprendemos que tenemos derecho a recibir respuesta sobre cualquier inquietud que tengamos sobre dicha investigación, antes, durante y después de su ejecución y a acceder a los resultados de la información recabada. Considerando que los derechos que mi hijo(a) o representado tiene en calidad de participante de dicho

estudio, a los cuales hemos hecho alusión previamente, constituyen compromisos del equipo de investigación responsable del mismo, nos permitimos informar que consentimos, de forma libre y espontánea, la participación de nuestro hijo(a) o representado en el mismo.

Este consentimiento no inhibe el derecho que tiene mi hijo(a) o representado de ser informado(a) suficientemente y comprender el alcance de su participación y a ofrecer su asentimiento informado para participar en el estudio de manera libre y espontánea, por lo que entiendo que mi firma en este formato no obliga su participación.

En constancia de lo anterior, firmamos el presente documento, en la ciudad de Cúcuta, el día 18, del mes de noviembre de 2022.

Padre, acudiente o representante legal del menor:

Firma: Carmen Sofia

Nombre Carmen Sofia Ardia

C. C. No. 5.604.345 de Charalá

Appendix I: Interview transcripts

Design of a Bilingual Learning Environment involving the Pedagogical Projects and the 4 C's of 21st Century Skills as a teaching strategy aimed at improving Second Language Learning processes, teachers from a private school in Norte de Santander (Colombia). An Exploratory Research.

Guía de entrevista Preguntas
Pilotage # 3

Ficha técnica

Hello, we are Nathaly Ardila Márquez, Maria José Contreras Montoya and Mauricio De Jesus Hernandez Henao, we are students of the second semester, Master in Bilingual Learning Environment, enrolled in the course Research Project. First, thank you for agreeing to answer this interview.

Then, we will have the opportunity to develop the first individual and anonymous interview concerning the research project Which aims to design a Bilingual Learning Environment framed in the development of Pedagogical Projects involving the 4 C's of 21st Century Skills as a teaching strategy aimed at improving English teaching- learning process, taking as a research case two

English teachers from two private schools in Norte de Santander (Colombia).

The duration of this interview will not exceed 30 minutes. This interview will be guided by the main objective which aims to detail the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language.

It should also be noted that the answers you provide as a participant will be kept in the strictest confidentiality and will only be used for the analysis of our problem to be developed. In addition, your identity will be absolutely anonymous by using pseudonyms not to reveal your identity. For greater comfort and understanding both questions and answers will be in Spanish.

Fecha:	21 de noviembre	
Hora:	2:30 pm	
Lugar y modalidad (local y otro espacio):	Virtual, llamado por Meet	
Nombre del entrevistador:	Mauricio De Jesus Hernandez Henao	
Nombre del entrevistado:	Celia y Soledad / Profesoras de inglés de la escuela primaria en un colegio privado.	Ingles PE
Objetivo de la entrevista:	To detail the contributions of Project-Based Pedagogy and the 4 C's of 21st Century Skills in the learning and teaching process of a Foreign Language.	

Duración de la entrevista (tiempo aproximado):	30 minutos	
Preguntas	Respuestas	Observaciones
1. Do you consider that the 4cs of 21st century education are included in the development of your classes?	Si hablamos de las cuatro competencias básicas, si.	
2. Do you think that students could have better results with implementation of a strategy based on the 4cs of 21st century education?	No lo conozco.	
3. How do you develop critical thinking in your students?	Por medio de lecturas comprensivas sobre cuentos, relatos o historias cortas que ellos ya están familiarizados.	
4. How do you help your students be more creative and innovative?	Por medio de proyectos desarrollados en mis estudiantes su creatividad.	
5. How do you prepare activities that involve collaborative learning in your classes?	Si, algunas actividades están basadas en el aprendizaje colaborativo por medio de actividades grupales que involucran el trabajar juntos.	
6. How do you privilege communicative learning in your classes?	Por medio de la participación constante en roles, role plays o presentación de proyectos.	
Closing	no	Thank you for taking the time to respond to this conversation. We got a lot of detailed information during our conversation, which will contribute to the development and analysis of our research. Thank you for this friendly and kind meeting.
To finish our interview, do you have anything to add regarding the topic discussed during the interview?		

SURVEY statistical analys...

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Pilotage # 2 P2.docx

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Pilotage # 3 P2.docx

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Appendix J: Analysis of the results of the survey

1. ¿Te resulta fácil hacer las actividades en la asignatura de inglés?
4 respuestas



2. ¿Ome que el proceso de aprendizaje bilingüe durante pandemia fue satisfactorio?
4 respuestas



3. ¿Ome que su aprendizaje mejoró durante la pandemia o durante virtualidad?
4 respuestas

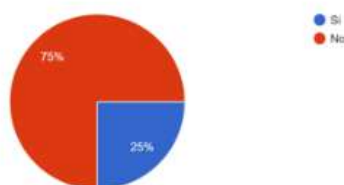


4. ¿Cuál fue el inconveniente o factor que impidió que las clases virtuales no se desarrollaran con normalidad?
8 respuestas



5. ¿Ha tenido problemas para adaptarse a los nuevos temas en inglés después de la pandemia?

4 respuestas



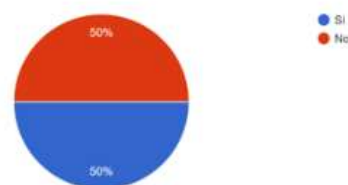
6. En este retorno a clases cual de las siguientes opciones le ha parecido más difícil?

4 respuestas



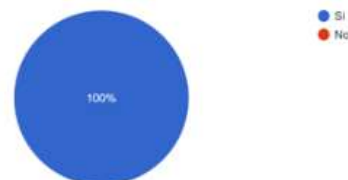
7. ¿Se aplican los proyectos en el área de inglés?

4 respuestas



8. ¿Te gusta trabajar proyectos en el área de Inglés?

4 respuestas



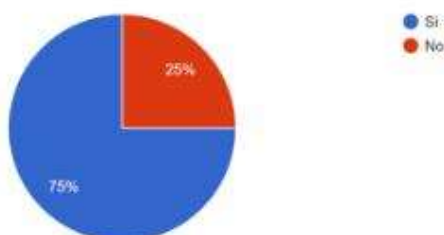
9. Qué es lo que más gusta de trabajar con proyectos en clase?

4 respuestas



10. Crees que desarrollar proyectos en clase desarrolla habilidades que te pueden ayudar a solucionar problemas de la vida real, de tu entorno?

4 respuestas



Appendix K

Proposal of the design a Bilingual Learning Environment framed PBL and 4 C's of 21st Century Skills as a teaching strategy.

https://drive.google.com/drive/folders/1sbqg-mtFsJlZPuQoEaOAAw6A4WD3vrG6?usp=share_link

Appendix L

Infographic of categories and codes

https://drive.google.com/file/d/1GQhSD1U-kG1a-fSDRgluDISYpu_iYEUX/view?usp=share_link