

Design of a virtual strategy of continuous training addressed to bilingual teachers in reflexive learning environments

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Abstract

The growing use of technology and the development of trends in bilingualism to support learning are considerably increasing nowadays. These aspects are normally covered by continuous training strategies offered by the Minister of Education (MEN), which are characterized to be contemporary and reflexive, however, it is still observable that many educators do not put into practice what they learned in such strategies because they might be decontextualized, and are not easily adaptable to the needs of their contexts which consequently, make them unknowledgeable in how to foster learning with the correct resource management. Therefore, the current study aimed to create a virtual continuous training strategy in reflexive learning environments, that intends to support teachers in decision-making regarding resources and spaces to foster learning.

The study followed a qualitative approach, which used documental analysis to compile information about the elements to design the virtual strategy, and a functionality survey addressed to bilingual teachers from three private schools. Based on the data collected, the decisions to create the strategy were made. After the design, the strategy was verified in the validation stage by the teachers who participated in a satisfaction survey, so that adjustments could be made. The study concluded that most teachers found the strategy pertinent to enhancing their pedagogical practices, which is one of the contributions the research team expected to make.

Keywords: *Reflexive learning environments, Bilingualism, Teachers' continuous training strategies.*

Resumen

El creciente uso de la tecnología y el desarrollo de tendencias en bilingüismo para apoyar el aprendizaje están aumentando considerablemente en la actualidad. Estos aspectos normalmente son abordados por estrategias de formación continua que ofrece el Ministerio de Educación (MEN), las cuales se caracterizan por ser contemporáneas y reflexivas, sin embargo, aún se observa que muchos educadores no ponen en práctica lo aprendido en dichas estrategias porque pueden estar descontextualizados, y no son fácilmente adaptables a las necesidades de sus contextos lo que, en consecuencia, los hace poco conocedores de cómo fomentar el aprendizaje con el manejo correcto de los recursos. Por lo tanto, el presente estudio tuvo como objetivo crear una estrategia de formación continua virtual en ambientes de aprendizaje reflexivo, que pretende apoyar a los docentes en la toma de decisiones sobre recursos y espacios para fomentar el aprendizaje.

El estudio siguió un enfoque cualitativo, que utilizó el análisis documental para recopilar información sobre los elementos para diseñar la estrategia virtual y una encuesta de funcionalidad dirigida a docentes bilingües de tres escuelas privadas. En base a los datos recopilados, se tomaron las decisiones para crear la estrategia. Luego del diseño, se espera que sea verificado en la etapa de validación por otros docentes, para que se puedan realizar ajustes que lleven a conclusiones sobre su efectividad.

Palabras clave: *Ambientes de aprendizaje reflexivos, Bilingüismo, Estrategias de formación continua docente.*

1. Introduction

Pedagogical approaches and teaching and learning methods are of paramount importance for education professionals, due to changes in global dynamics, megatrends, the mass production of knowledge, and the skills necessary for 21st-century jobs. The view of learning and bilingualism has changed, and now modern educational systems work with more learner-centered approaches and standards (Diaz and Lim,2020). Therefore, schools, especially private ones, are adapting their infrastructure and curriculum to this new view. However, it has been observed in the school Campestre La Fontana Gymnasium that although it has involved effort and financial investment, teachers seem to remain in their traditional practices that do not require them to consider other spaces and didactic resources. This problem affects not only teachers 'efficiency but also students' learning process.

One way to overcome these types of problems is generally by updating their pedagogical practices in continuous training programs, such as the ones offered by the Minister of Education (MEN). Although it offers a wide range of strategies for teachers, these training programs, especially for bilingual teachers, focus on technical knowledge and do not comprise what bilingual education implies as such (Truscott, 2017). In this sense, there is a need for more spaces where teachers are allowed to learn autonomously, comprehend the nature of their contexts, and work from it consequently.

Teaching teachers how to teach presents a great challenge since it triggers new variables in the context of the teaching staff, such as teacher training, empowerment, and

professional commitment. The research coordinated by the Latin American and Caribbean Institute for Economic and Social Planning ILPES states that teacher training (initial and permanent) must consider the demands that teachers express, both in terms of content and pedagogical strategies (Ilpes-Economic Commission for Latin America, cited by Ferrada, 2017). In this sense, training programs should have a clear link between the content to be learned and the teachers' contexts' needs.

The fact that spaces in the school are not used advantageously for learning purposes might come from the idea that learning only occurs in conventional classrooms which is opposed to the basis of the concept of learning environments. They seek to provide a setting with appropriate conditions for students to develop capacities, competencies, abilities, and values through activities in which students must interact with each other (Araque, 2021). In this line of thought, bilingual learning environments have great advantages over traditional education in terms of learning a new language and outlining new requirements that must be input for the design and creation of educational material by the teaching staff.

Accordingly, this study aimed to design and validate a continuous training strategy for bilingual teachers in reflexive learning environments, thereby transforming the pedagogical practices of teachers. Therefore, this qualitative research was oriented on the following research question:

- How can an effective continuing education strategy be designed in reflexive learning environments that promote professional development for in-service bilingual teachers?

According to the MABA project guidance, this study is aligned with thematic axis C, which are projects developed under educative management. In this way, the research intended to propose a solution considering the process and the references of management. In our case, from an educative management objective, the study expected to develop teachers' efficiency by teaching them how to optimize resources, spaces, and time under the concept of reflexive learning environments. The investigative approach was carried out concerning the following categories: in-service teachers' professional development, Bilingualism in Colombia, and reflexive learning environments.

Limitations in this study were produced by the lack of time. Since the MABA program is established to finish in three semesters, there was not enough time to apply the proposal, so the final stage was to validate it after a piloting.

2. Theoretical framework

This section depicts theoretical considerations as well as literature that support this study concerning reflexive learning environments, bilingualism, and in-service teacher training models. The analysis of these categories is done through a documental analysis matrix in which delimitation of documents was determined by academic sources such as the Scielo database and Universities' repositories.

For the last three years, the pandemic of Covid 19 particularly in Colombia made us aware of the issues presented not only in our public health system but also in the educational field. Little was known about online education and few contingency plans were developed, more than 50% percent of 10-year-old kids in the region were illiterate (Álvarez, 2022), not to mention the critical results concerning bilingualism (Correa, 2022). Although this global phenomenon was a sign of change, traditional pedagogical practices were evident at the time, and they are still present today, marking a tendency that has been prevailing for more than a century (Sanchez, 2018).

However, this tendency should decrease with time passing since there is a consistent evolution that require us to transform our surroundings, as Trilema (2022) states in the document of Banco Interamericano de Desarrollo (BID) *El poder del currículo para transformar la educación*, “La sociedad actual demanda una escuela transformadora, que nos permita movilizar los conocimientos adquiridos para entender el mundo y poder actuar sobre él” (p. 41). This notion allows us to think about what kind of interventions or proposals we can promote to reach such transformative schools. In the search of purchasing these ideologies, the conceptions of learning environments and reflexive pedagogy arise.

2.1 Reflexive learning environments

On one hand, the Minister of Education (MEN) (n.d) considers learning environments as the space where the necessary physical, social, human, and cultural conditions converge to generate meaningful learning. This comes with the idea that knowledge derives also in the form of interactions and experiences. These interactions are especially relevant because it clarifies that for learning to occur in this way, there must be agents involved actively in the process (Xhomaqi et al., 2019). Communication is commonly drawn in a horizontal line which means the relationship between teacher-students differs from traditional perspectives. This gives us a chance to reconsider the roles of educators and learners (Educause, n.d).

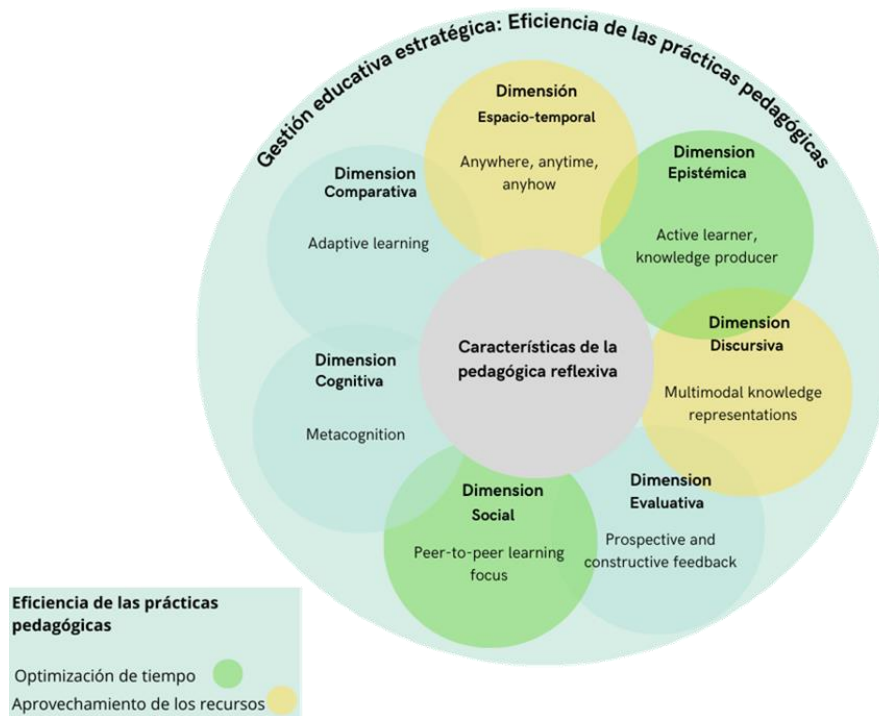
Learning environments go beyond physical or virtual spaces (Correa, 2008), the focus on the creation does not go only on infrastructure matters but also on the purpose given to such areas, even when schools have technology devices, these can be abandoned and not used due to lack of precise pedagogical approaches or school policies (Paredes & Sanabría, 2015). According to Araque (2021) nowadays it is suitable to explore learners' needs and contexts as a way of making learning possible. This process of needs analysis is proper for student-centered approaches, which also constitutes some of the principles for designing a learning environment, for instance, Bound & Chia (2020) proposed core foundations such as authenticity, alignment, future-oriented, etc., that consider what is best to make students comfortable and relevant in their process of learning.

Designing learning environments involves not only small-scale objectives such as changing teachers' pedagogical practices but also school policies and curricula. In an aim for transforming the traditional perspectives of schooling, Cope and Kalantzis (2017) suggest that major changes in learning environments start by moving from a didactic pedagogy to a reflexive pedagogy. Following the authors, this pedagogy responds to the new demands of the construction of a society that constantly reflects and, the use of technology as support of and for learning. This type of pedagogy is characterized by presenting 7 e-learning affordances: Ubiquitous learning, active knowledge making, multimodal meaning, recursive feedback, collaborative intelligence, metacognition and differentiated learning (Cope & Kalantzis, 2017).

From this, it can be implied that reflexive pedagogy attends mainly technology-mediated education, however, this study considers the potential of forming educators in this current trend as applicable to any other type of learning environment apart from virtual ones, remarking the fact that there is also classroom and community environments (Araque, 2021).

Teacher training constitutes one of the practices in strategic educational management. According to Pozner (2000) cited in Farfán and Reyes (2017), one of the fundamental characteristics of strategic educational management is teachers' continuous professional development which consists of creating spaces for reflection, ongoing training, rethinking, communication, and to generate exchange networks of experiences in a professional development plan. Given that the current study follows the axis C educational management, the purpose of making teachers' pedagogical practices is proper of this axis. Therefore, it is pertinent to illustrate the correlation between this purpose and what reflexive learning environments have to offer.

Figure 1. *Correlation between reflexive pedagogy and educational management*



Note: Own creation with information from Cope & Kalantzis, 2017.

The figure indicates how the main thematic content of the strategy, reflexive learning environments, responds to the objective of enhancing the pedagogical practices in a way where teachers might learn how to optimize time and take advantage of resources by acknowledging what they can do, based on what reflexive pedagogy suggests. For instance, when teachers are aware that learning is ubiquitous, they might start considering other spaces to create a learning environment rather than the classroom. In this way, there is a smart use of resources that the school provides.

In literature it is common to find the duty of transforming learning environments attributed to educators, to whom the space is disposed so that they have educative objectives (García-Chato, 2014 as cited in Castro, 2019). To do so, teachers are requested to create environments under certain conditions, characteristics, and more concerns that

only knowledgeable individuals manage, in other words, people who are educated in these matters.

2.2 Bilingualism in Colombia

There is a reasonable thought about the existing gap between the content provided to bilingual teachers in Colombia and their practices. The *suggested curriculum, guide N° 22 of basic standards and competencies*, etc., are documents that might be normally decontextualized and do not represent what bilingual education implies. The analysis made by Cobo, Ramos, and Gonzáles (2020), affirms there is a lack of certainty regarding the type of bilingualism the country desires to adopt, considering that English is instructed as a foreign language in public institutions while it is a second language for bilingual ones, and Spanish as a second language for communities that speak indigenous languages.

Likewise, Gómez Sará (2017) states the current policies from the National Bilingual Program (PNB) involve monoglossic and hegemonic ideologies; monoglossic because English and Spanish are understood by learners as two separate linguistic codes, and hegemonic as it does not acknowledge indigenous languages that some students already speak, privileging English and Spanish instructional methods. These beliefs are not only found in public schools, but private institutions also might label themselves as bilingual schools, even though they use different approaches for teaching English and Spanish, often provoking conflicts (Hammel, 2008 as cited in Bettney, 2022), and classify subject areas based on what language is suitable to instruct through (De Mejía, 2020). So, there is a need for both public and private schools to update their knowledge of current conceptions and trends of what bilingualism represents.

Although public and private institutions may have these ideologies in common, other aspects regarding bilingualism make them differ. For instance, according to quantitative data from a study carried out by Cárdenas & Miranda in Cali (2014), in professional bilingual teacher development concerns, there is more assistance of teachers from public schools with 66,7% compared to 40,9% of teachers from private schools, these last ones majorly representing teachers that are getting a bachelor's degree in language teaching at the moment, rather than attending continuous professional development. Another aspect to highlight from the study is teachers' language proficiency, while only 17% of bilingual teachers from public schools have the language proficiency required, there is 40% in private institutions. Nevertheless, the percentage of bilingual teachers with the required proficiency working in the private field is still considerably low, and these results show how the reality of schools differs from the standards and policies made by the PNB (Cárdenas & Miranda, 2014).

The fact that there are bilingual teachers with a language proficiency lower than the required level creates in schools, especially private schools, such determination to consider hiring foreign teachers as the best option that can meet their standards. In this sense, the perspective of bilingualism in Colombia provokes a sequence of conditions that affect not only learners but also educators, and solutions to these problems might be seen by starting changes in the insights of stakeholders.

2.3 In-service teachers' professional development strategies

Minister of education (2013) defines in-service teachers' training as:

Todas las acciones formativas realizadas por el educador desde que comienza su ejercicio profesional (...) en tanto, no sólo cubre las demandas de la proyección profesional del educador, sino que, plantea nuevos desafíos que exigen conocimientos más profundos, especializados y actualizados, así como saberes complementarios que favorezcan la atención a las exigencias de la educación en contexto (p.88).

In-service teachers' training is also known as continuous professional development, characterized by learning, updating, and consolidating abilities, conceptions, and disciplines whose relevance is perceived when educators can correlate their experiences to improve their practices. In this way, training programs should embrace reflexive and critical components that promote in professionals the need to reflect on their performance. As Perrenoud (2001) affirms, reflexive practices are not part of competencies in teacher training as such, but as an essential position that facilitates the construction of new knowledge. The reflexive component suggested goes in accordance to what MEN (n.d) describes about bilingual teachers' continuous development in *Lineamientos curriculares: Lenguas extranjeras*, "se espera que cualquier programa de desarrollo profesional docente tenga como resultado cambios en conductas observables (...) estos cambios se logran con base en la reflexión sobre experiencias y la relación entre teoría y práctica" (p.43).

Additionally, MEN (2013) present four units of teacher's professional development that this study adapted to four main questions: What is the teacher training intended to? Who is trained? Where is the training taking place? What are they trained in? These questions were taken into consideration when designing the training strategy, as they

indicate the significance, the population to whom it is designed, the modality, and the content.

Some strategies and programs for continuous professional development that can be found, are the ones proposed by MEN, which come in the form of courses with different modalities and purposes such as pedagogical updating, evaluation and assessment, and leadership. For bilingual teachers specifically, within the PNB, there is a strategy called *Inspiring teachers* that aims to train and guide educators in their pedagogical practices (MEN, 2022). However, one of the most notorious programs is *Todos a aprender*.

Mesa Técnica Nacional, a curricular committee formed in 2020 is in charge of the design of the content and strategies of the current *Todos a aprender* program which is developed through handbooks of math and language, *in situs* support, didactic guidance for teachers, and a virtual campus that contend videos, forums, self-learning documents as a response to the pandemic (MEN, 2022). In view of searching for the most convenient way to address the training strategy for teachers, this study chose virtual modality as the medium to make autodidactic instruction possible and considering teachers' time and location limits, since "continuing professional development (CPD) should be available to all teachers, regardless of their level of qualifications and geographical location" (UNESCO, 2020, p.52).

Another consideration of this proposal is that it is specially done for a reflexive aim. Commonly bilingual teachers' education programs tend to focus on the technical training of foreign standardized methodologies, where teachers are rather informed than educated and their autonomy is left behind (Truscott, 2017; Viera & Moreira, 2008 as cited by Fandiño, 2017). As a result of this, teachers are required to adapt the context and their student's learning needs to this preconceived knowledge and not vice versa. In this way, there is a

need for implementing models that comprise formative research, autonomy, collaborative learning, and critical reflection. For instance, the next studies have focused on the development of these aspects through varied methods:

From an international range, a consortium constituted by aid agencies from Britain, Australia, Denmark, and Norway carried out a collaborative project for developing pedagogical abilities and reflective practices for in-service teachers under UNICEF's site, where learning was from a distance modality, using modules, so teachers did not have to move from their places and at the same time, could be able to contextualize their knowledge (Higgins et al., 2016 as cited by Lall, 2021).

In a closer range, in Argentina, Lecumberry, Astudillo and Orlando (2019) proposed a face-to-face course divided in three modules, where teachers received tutoring from experts and built knowledge by discussing and working with co-workers, where they had the opportunity to reflect upon their own practices. Although the modality differs from the one this strategy considers, it highlights the importance of finding ways to invite teachers to work collaboratively.

Concerning national research, there is a study conducted by Mendioroz, Rivero and Aguilera (2019), a training program for teachers of three different schools to be instructed in emergent methodologies to respond to their learners' necessities with AC (Alta capacidad). The training program was categorized into four stages. Starting from diagnostic interviews, going through workshops, questioning, solution planning and application. All this considering teachers' independence and educational realities. Although this qualitative study might not describe in detail the process during the teacher training program, it takes into account the validity of their proposal in the participants' practices. Due to the time

limit of the research, the validity of the strategy is done through professionals' perspectives and external guidelines.

Additional to this, another important aspect to take into account is the time involved. This is a strategy intended for in-service teachers. Mosquera and Pinzón (2021) considered in their study the participants' available time as fundamental, so it was offered a completely self-study virtual program through Moodle. Content came in the form of videos, readings and complementary study material. This program was divided into 5 workshops. The workshops at the same time included a single competence to be developed and a final evaluation where content is tested. Although the program is thought to be for autonomous learning, it also involves the support of a tutor. The strategy designed in this study does not consider a tutor's direction but multimodal texts and a variety of digital resources as it is completely autodidactic.

In conclusion, the previous literature pointed out different considerations and procedures regarding designing new proposals for teacher training. These proposals can come in various formats and constitute the result of seeking what is best to solve issues regarding pedagogical practices. Some studies are described and carried out more in detail than others as each of them differs in context and limitations.

3. Method

This chapter describes the research design which includes the type of study, the contexts where it took place and the data collection techniques.

3.1 Type of study

Since the reality observed of the current study was determined as a problem related to social approaches, that might be visible in other alike contexts, the research followed a qualitative approach with an intervention focus. Qualitative research approach allows us to create a rich description of the phenomena and gather subjective data including thoughts and perceptions from participants (Vishnevsky & Beanlands, 2004). This was suitable, in the sense that, as this study considered participants' opinions from two surveys, no numerical data as such was taken into account but perceptions.

Additionally, this research is aligned to an intervention focus, which in words of Gilgun & Sands (2012), “the design and development of interventions build upon in-depth understandings of problematic situations for the purposes of changing them” (p. 350). In other words, it serves to transform reality through reflection, awareness, and empowerment of individuals and through the design of innovative solutions to solve educational problems. This gives us a great understanding of how intervention studies work based on the reality we desired to change.

The intentionality of the research was to propose an academic solution in terms of teacher's pedagogical practices efficiency which covers the aspects of optimization of resources and time. Therefore, this research carried out a pilotage training in reflexive learning environments, addressed to bilingual teachers. In that way, the main aim was to

provide a complete guide and training to bilingual teachers at schools in Colombia in pursuit of a notable improvement in their English lessons.

3.2 Context and participants

Here we need to describe the population from a macro, meso and micro level since the proposal needs to reach these three levels. The bigger population to whom the plan was addressed is bilingual teachers in Colombia. Specifically, in-service teachers, in other words, the teachers that are working at the moment in an institution. The target context consisted of seventeen teachers from three bilingual private schools in Villavicencio with similar characteristics. Thanks to the preliminary survey, we compiled the next information about our participants:

Table 1. *Participants of the study*

#	Age	Work experience	Level of study	Grades
17	21-53	3months*- 6 years	76,5% undergraduate	Preschool-high school

Note: *At the moment of survey application

The seventeen teachers consist of a very diverse group. In terms of age, it oscillates between 21 to 53 years old. There is a great difference in work experience, the minimum is 3 months, and the maximum is 6 years. Regarding the level of study, 76,5% of teachers have an undergraduate degree, from which there are degrees that are not precisely about language education but others like law and philosophy. Finally, the type of students these teachers are working with goes from preschoolers to high schoolers.

As the target context is private schools, these institutions manage students from a higher socioeconomical status than the average. Therefore, the schools count on facilities, technological resources and didactic materials that are not from some public school. These schools' conditions are what in a certain mode, evidence the problem, since the problematic does not concern the lack of physical material and space but about the lack of use.

3.3 Data collection procedures

The data collection techniques were chosen based on the nature of our project, that is, we purposely chose the ones that seem suitable to accomplish each one of our research objectives. The research was conducted under the following general and specific objectives.

General objective

- To design a strategy for continuing education in reflexive learning environments that contributes to the professional development of in-service bilingual teachers.

Specific objectives

1. To recognize in the literature the elements that constitute: A. reflective learning environments, B. bilingualism, C. Continuous professional development strategies in education.
2. To investigate the relevance of a continuing education strategy based on the views of various institutions.
3. To structure a teacher training strategy around reflective learning environments considering the results of the cross-analysis.
4. To validate the training strategy by experts.

Table 2 shows the data collection techniques, the purpose and time of application:

Table 2. *Description of data collection techniques*

Data collection technique	Time of application	Purpose
Document Analysis	April 1 st to May 7 th The time for this analysis was pre-established, but new documents were found after the date.	To recognize in the literature aspects of reflexive learning environments and bilingualism in Colombia for content development, and instructional design of strategies.
Functionality Survey	May 7 th to May 20 th The seventeen participants took around 2 weeks to answer the survey.	To investigate the pertinence of the training strategy as well as its components based on participants' opinions.
Satisfaction Survey	September 19 th Applied after pilotage	To compile the satisfaction level of participants after the pilotage of the training strategy.

Document analysis

Document analysis is a technique proper of qualitative studies that review and analyze the information contained in documents and secondary sources related to a research topic or problem. As described by Bowen (2009), G:

“Document analysis is a systematic procedure for reviewing or evaluating documents both printed and electronic (computer based and Internet- transmitted) material. Like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted to elicit meaning, gain understanding, and develop empirical knowledge” (p.).

To carry out the document analysis, we designed a matrix, that described the type of document, the source, a summary, and a description of the usefulness. The matrix also is divided into the category of analysis we previously considered: Reflexive learning environments, bilingualism and continuous professional development. The first two categories were analyzed in terms of content development for the strategy, that means, most of them were about theory and concepts. Around the 32 documents that were analyzed, the ones that belonged to continuous professional development emphasized instructional design.

Surveys

Surveys make it possible to collect information from a broad sample of the population to learn about their opinions, attitudes and behaviors in regard to a specific topic. They can be used in both quantitative and qualitative studies, and their design and application must be rigorous to guarantee the validity and reliability of the results (Creswell, 2013).

The first one was a functionality survey that was used to collect teachers' prior knowledge, expectations and educational experience regarding reflexive learning environments. Because of the easy applicability that virtual surveys can offer, we designed

it using google forms (see appendix). It consisted of 15 questions divided into the three categories of analysis. Seventeen teachers from three private bilingual schools in Villavicencio answered the survey. Among the questions, ones were related to prior knowledge and other ones to examine the pertinence, both groups of questions belonging to the categories of reflexive learning environments and bilingualism. Questions implied in the category of training strategy, sought to inspect teachers' preferences regarding instructional design elements such as: material/resources, activities, time, evaluation etc.

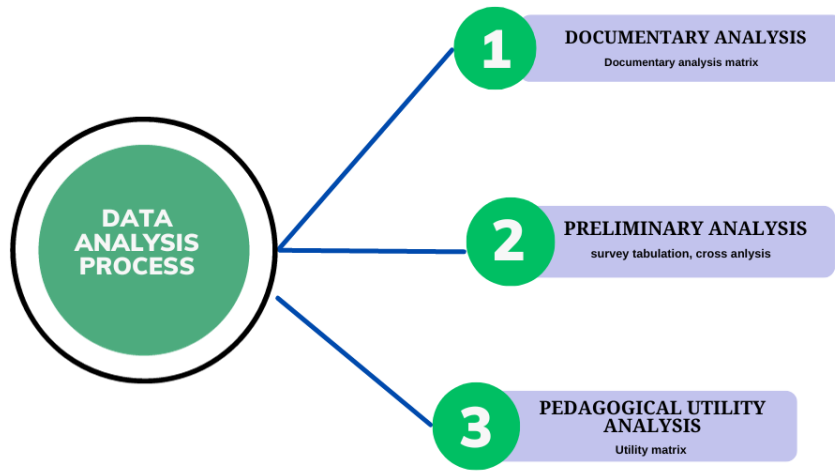
The second type of survey applied for was a satisfaction survey (see appendix 3). Satisfaction surveys are generally carried out to assess quality of service (Cullen, 2001). In our case, the survey, which was applied using google forms as well, served us to get an overview of the utility in the first version of our design in techno pedagogical terms. The questions were made based on a Likert scale, so answers depicted different levels of satisfaction with the course. From the 14 questions, some of them asked about pedagogical items such as learning, objectives, activities, and didactic resources. Some others look to answer the technicality of the virtual platform where the training strategy worked such as the access process. Since ten teachers participated in the pilotage, the same ten teachers answered this survey. The number of participants decreased, and the results were used to create a formal strategical plan as the next chapter presents.

4. Data Analysis and findings

The nature of the problem observed was social, which led this study to follow a qualitative approach and an emphasis on intervention practices that can promote changes. Therefore, the aim was to design a virtual continuous teacher training strategy in reflexive learning environments. This strategy is specifically an autonomous virtual learning environment for teachers.

As the approach is qualitative, the data gathered through the techniques were mostly descriptive, however, there is supportive numerical data that came from the surveys applied to the participants. The research team worked collaboratively throughout the research process, but one member had direct contact with the participants of the study which made it easier for us to proceed. The analysis was carried out following a series of phases aligned with projects from MABA thematic axis C educational management. The phases of data analysis as well as the elements used in this study are shown in the next figure:

Figure 2. *Data analysis phases of this study*



Note: Own creation

First, we carried out a documentary analysis, which was also part of the data collection techniques. Here the theoretical foundations for our design were revised, as well as the elements that composed it. Some documents were more pertinent than others, and these ones were cross analyzed with the data collected in the functionality survey. This analysis was named preliminary. Considering this information, the first design of the virtual strategy began. Having the virtual environment structured, we continued with the pilotage, and after that, we applied the satisfaction survey to the teachers who participated in the pilotage. The data collected from this last survey was analyzed using a pedagogical utility matrix based on one proposed by Badilla (2019). Finally, we used a RICE matrix to turn all the information given into strategic decision-making, which compiled the conclusions for the strategic projection of our teacher training course.

4.1 Preliminary analysis

According to the research objective, whose aim is to answer the question: How can an effective continuing education strategy be designed in reflexive learning environments

that promote professional development for in-service bilingual teachers? We can infer that the analysis was made specifically to find or determine the elements or components that constitute our proposal.

This research used a deductive approach for data analysis. The deductive approach for analyzing qualitative data comprises theory or prearranged frameworks of analysis, instead of emerging themes or categories from the data collected (Burnard et al, 2018). Since the research question is related to the design of a virtual environment and the elements that constitute it, we bear in mind some components of learning virtual spaces proposed by Rodriguez (n.d) as shows the next table:

Table 3. *Elements of analysis of this study*

Research question	Elements for designing virtual environments (Rodriguez, n.d)	Emergent elements
How can an effective continuing education strategy be designed in reflective learning environments that promote professional development for in-service bilingual teachers?	Objectives	Time
	Model of instructional design	Content
	Methodology	Relevance

	Activities	
	Evaluation	

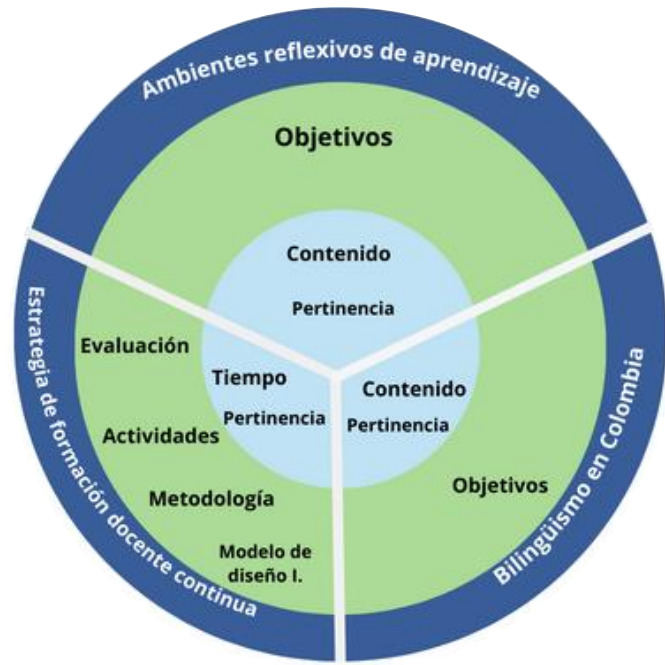
These elements are part of the preliminary analysis, and although most of them are pre-established, they are also the result of the documentary analysis and the functionality survey, this, with the aim of turning the three big categories of reflexive learning environments, bilingualism and continuous professional development strategies, into elements of analysis that can answer the research question, as it shows the next figure:

Figure 3. *The process of categorization*

Design of a virtual strategy of continuous training addressed to bilingual teachers in reflexive learning environments

- Referentes teóricos
- Categorías de análisis
- Categorías emergentes

How can an effective continuing education strategy be designed in reflexive learning environments that promote professional development for in-service bilingual teachers?



The elements of analysis were classified in accordance with the three main categories, in which reflexive learning environments and bilingualism determined aspects such as the objectives of the strategy and content, while teachers' training strategies defined most of the subcategories about the design as such.

Table 4. *Elements of design discussed in the survey*

Category of analysis	Functionality survey	Element of design
Reflexive learning environments	<p>Question: When you read the concept "reflexive learning environments", which words do you consider to be the most related to the term?</p> <p>To determine prior knowledge</p> <p>Result</p> <p>64,7% could answer the correct question, 35,2% could not.</p>	Objectives
Bilingualism	<p>Question: Do you know about new trends, innovative strategies in bilingual education, that seek to improve the learning of your students of a second language?</p> <p>To determine prior knowledge</p> <p>Result</p> <p>58,8% of participants affirm knowing bilingualism trends, and 41.2% deny it.</p>	
Continuous professional development strategies	<p>Question: Within a period of 1 month, how many hours would you consider are enough to complete a virtual and autonomous learning course?</p> <p>Result</p> <p>41,2% chose 16 hours, 35,3% 24 hours, and 23,6% 6 hours.</p>	Time

	<p>Question: According to independent learning, what activities do you consider to be the most appropriate within a virtual course?</p> <p>Result</p> <p>47,1 voted for online questionnaires, 41,2% for readings and 11,8% forums.</p>	<p>Activities</p>
	<p>Question: According to cooperative learning, which activities do you consider to be the most appropriate within a virtual course?</p> <p>Result</p> <p>41,2% selected video presentations, 23,5% mind maps design, 17,6% poster creation and the other 17,6% creation of podcasts.</p> <p>Question: According to collaborative learning, which activities do you consider to be the most suitable within a virtual course?</p> <p>Result</p> <p>82,4% chose forum and 17,6% video analysis.</p>	<p>Activities</p>
	<p>Question: How do you consider learning to be conveniently evaluated within a virtual course aimed at teachers?</p> <p>Result</p> <p>47,1% selected final socialization with a reflection forum, 29,4% individual or group practice project and 23,5% auto diagnosis.</p>	<p>Evaluation</p>

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These are generally the elements that the data from the survey could provide, and other ones like content, and methodology were principally defined by the documentary analysis. We could find some other data from the survey like relevance but this one is not an element of design as such. However, we consider this aspect important since it supports the need of our proposal, so it is discussed as well in this section.

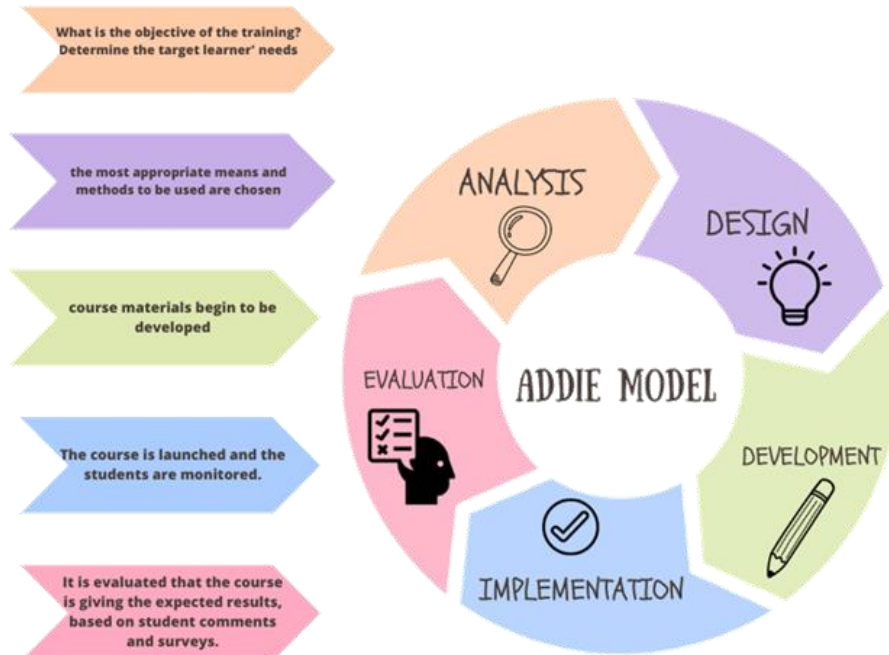
4.2 Synthesis: Initial findings

The table above shows a fragment of the data collected from surveys, which was cross analyzed with data from documentary analysis. We discussed the findings from this triangulation process here.

4.2.1 Model of instructional design

Bearing in mind that the research question starts with “How” implicates the description of a process, in this case, the process of design and its components. This study decided to pursue the ADDIE model suggested by Rodriguez (n.d) which stands for Analysis, design, development, implementation, and evaluation.

Figure 4. *Addie model*



Note: Own creation

Rodriguez (n.d) explains that in the first phase, the analysis starts from the need to transform and must define the objectives of the course, the knowledge to be imparted, the medium, resources, and the target context and its learning needs. The analysis stage is of paramount importance since here the relationships of meaning are defined, coherence is created between what we intend to design and what we want to achieve in the course. In the design stage, the “how” is defined. The purposes found in the analysis stage are outlined. For the development stage, the information provided by the analysis and design is considered, so that there is always coherence in the content to be created and the objectives. Then, in implementation as the name suggests, the course is run, and the performance of the students is monitored. Then a quality evaluation of the course is carried out, considering whether the objectives were achieved, whether the content was consistent, and what results emerged from there. The evaluation stage is not the end point, since the ADDIE model is a

cyclical process, in which the evaluation allows us to return to the beginning stages for constant improvement.

4.2.2 Relevance

Relevance does not make part of a component of design directly, however, we consider it an important aspect in the process, because the strategy needs to contain foundations in terms of functionality, that can demonstrate that what is being designed has a real purpose to exist.

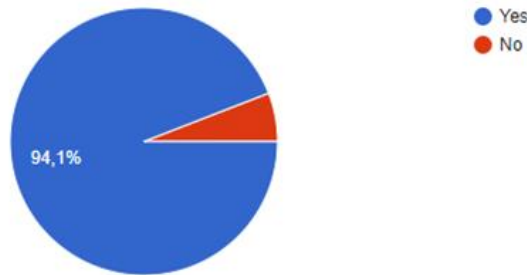
Taking into account that the problem addressed in the research is related to the poor management of resources by the institution's teachers to encourage student learning, some needs arose to be met. Among them, are advice on the use of resources, modern learning, and teaching the foreign language from another perspective. According to the documentary, analysis carried out, there is no official document that argues that these needs can be met from reflexive learning environments. However, during the analysis of documents, the arguments of various authors were considered (Truscott, 2017; Viera & Moreira, 2008 cited by Fandiño, 2017) who maintain that there is a need to create training spaces for in-service teachers in current topics that can be contextualized through the reflexive component. In addition to this, authors such as Araque (2021) agree that it is pertinent to delve deeper into the conception of learning environments and reflexive pedagogy.

Additionally, the survey applied to teachers confirms this idea as it shows the next figure:

Figure 5. *Teachers' perception on relevance of reflexive learning environments*

Reflexive learning environments is a relatively new term in teaching practice, which arises from two concepts: learning environments and reflective pedagogy that, according to Cope and Kalantzis (2017), invite teachers to integrate into their practices the reflexion component and technological mediation through elements known as "e-learning affordances" that understand learning as something ubiquitous, significant, collaborative among other characteristics. Taking into account that little has been discussed about reflective environments, do you consider that it is necessary to train on this issue?

17 respuestas

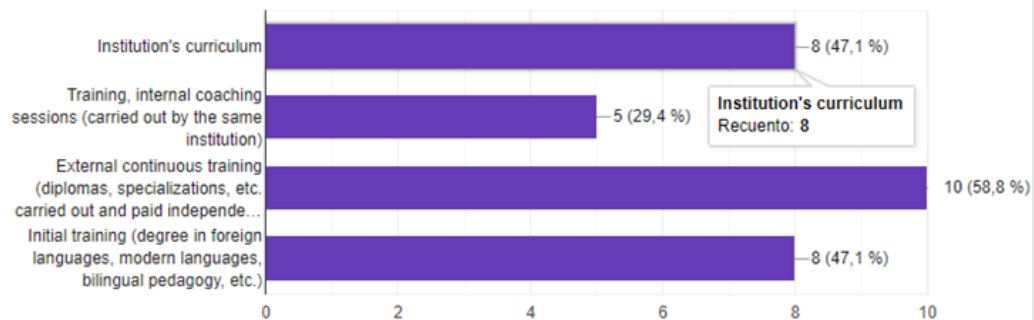


The survey allowed us to recognize that 94.1% of the teachers surveyed agree it is necessary and relevant to train on the topic of reflexive learning environments for their continuous professional development. This also indicates teachers' willingness to participate in a type of course that can help them develop their pedagogical practices as it is confirmed in the next figure.

Figure 6. Aspects that most influence teachers' practices

Of the following options, which one or which ones do you consider most influence your bilingual pedagogical practices?

17 respuestas



This question is related to what most influences the bilingual practices of teachers, continuous external training was the most chosen one with 58.8%, with the same number of answers following the institution's curriculum and initial training with 47.1%, Finally, there is internal training or training by the institution with 29.4%. This indicates that a great number of teachers carry out their bilingual practices according to what they have learned in their continuous, initial training and the school curriculum. The fact that it has been observed that these practices leave aside the use of the institution's own resources indicates that there might be no clear adaptability of the training to its practice, perhaps due to a lack of contextualization or lack of opportunities to do so.

4.2.3 Objectives

According to the technical note of the Ministry of Education (MEN), teacher training or ongoing training described in decree 2277 of 1979 in article 57 states that it must follow the following objectives: “Professionalize educators without a teaching degree, who are in service; update educators on pedagogical, scientific and technological advances; update educators on administration techniques”. And regarding decree 1278 of 2002 of the new teaching statute, article 58, it is described with respect of the objectives that "will be directed especially at their professionalization and specialization to achieve better performance, by updating knowledge related to their professional training, as well as the acquisition of new techniques and means that mean better fulfillment of their functions" (MEN,2022,p.98).

Furthermore, the MEN (n.d) regarding the ongoing training of foreign language teachers, defines the following: "It is expected that any teacher professional development program will result in changes in observable behaviors, that is, new attitudes. These

changes are achieved based on reflection on experiences and the relationship between theory and practice". From this, we can infer that generally, objectives for continuous professional training are directed to enhance professionals' performance by updating their knowledge in modern subject matters or building competencies. The impact that this might have on students' performance must be observable since teachers are working at their context at the same time as training.

Additionally, according to the answers to the question in which teachers were asked about their prior knowledge of reflexive learning environments, 64.7% obtained a correct answer, while 35.2% could not get it right, which indicates that a large number of teachers know the theory and concepts about learning environments, however, in the practice is less observable. Therefore, our objectives should emphasize practical exercises in the strategy.

Additionally, when we inquired about teachers' knowledge of trends in bilingual education, the question showed the following result:

Figure 7. *Prior knowledge of trends in bilingual education*



58.8% of those surveyed claims to know about new trends in bilingual education, while 41.2% deny it. Here there is not much difference between both groups of teachers, which indicates that it is necessary to train teachers in these topics, expand the knowledge of those who already know, and promote the study of those who still lack it.

Based on what was proposed by the Ministry of Education regarding what all permanent teacher training should seek, and the data provided by the functionality survey, the mission, vision and particular objectives of the training strategy of this project must be developed. following the following ideas:

-The strategy must seek to improve the professional quality of participating teachers in terms of techniques and means.

-The strategy must update teachers on new pedagogical trends that are consistent with the context in which they are working.

-The result of the strategy must be observable, that is, it must promote change in visible attitudes in the teacher's work through reflection and experience.

4.2.4 Time

Time is a decisive factor in the training strategy since it can affect the performance of participating teachers. Peralta and Díaz Barriga (2010) indicated the importance of the coherence of the time required to do the activities proposed in a course, with the time available to the participants while MEN indicates in section 3 Continuing training of foreign language teachers, of the curricular guidelines: Foreign languages (n.d.) that reflection in continuous training requires time and space agreed in training must be sufficient for teachers to investigate and discuss with their colleagues.

Accordingly, participants were asked how many hours they would consider sufficient within a 1-month period to complete the objectives of the training strategy. The data showed the following: 41.2% voted 16 hours, 35.3% voted 24 hours and a minority of 11.8% voted 10 hours. Most teachers in the survey say they feel comfortable providing between 24 and 16 hours of training in a month. However, considering the management reference, which is the efficiency of pedagogical practices, in terms of time, it must be optimized in such a way that it does not interfere with the teachers' work.

Since it is a strategy for in-service teachers, the current regulations must be considered, which tells us that an average teacher works 8 hours a day, which per month would be around 160 hours without counting long hours. Therefore, the total time in the strategy should be between 10 to 18 hours distributed intelligently across the course.

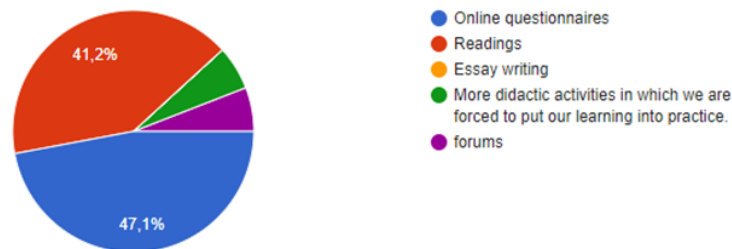
4.2.5 Activities

Understanding that autonomous learning comprises independent, cooperative and collaborative learning, for the activities, the options given to the participants of the survey were divided by these types of learning.

Figure 8. *Teachers' choices in independent activities*

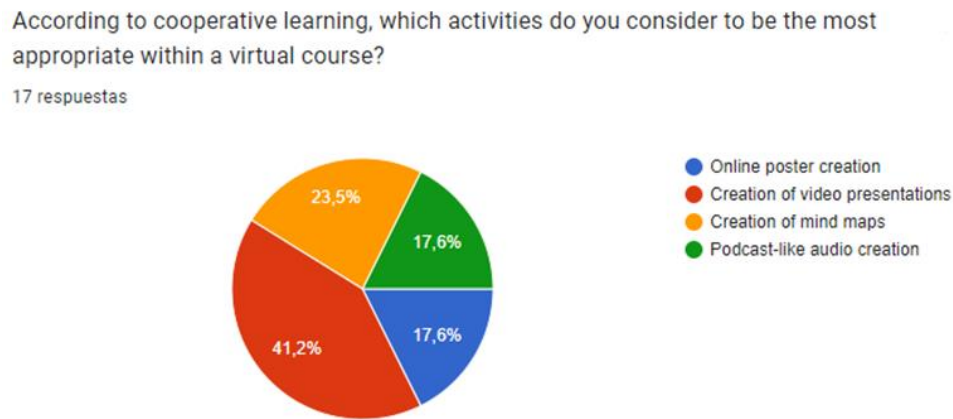
Autonomous learning comprises three types of learning: Independent (study alone), collaborative (study with the support of a teacher or specialist) and cooperative (study with peers). According to independent learning, what activities do you consider to be the most appropriate within a virtual course?

17 respuestas



Teachers considered online questionnaires to be the most appropriate activity, with 47.1% of responses, followed by 41.2% for readings. These activities promote student independence and encourage the acquisition of knowledge autonomously. These results are taken into account for carrying out activities that contribute to the training of teachers. However, in some cases, we should skip some teachers' preferences that are not aligned with the purpose of the strategy, for instance, although questionnaires are the most voted, they do not represent more practical training, and instead focus on memoizable knowledge.

Figure 9. *Teachers' choices in cooperative activities*

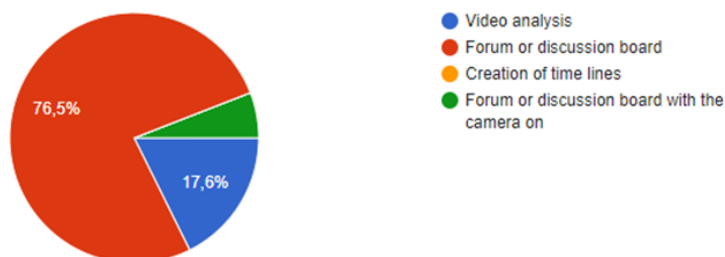


Regarding cooperative learning, 41.2% of teachers chose video presentations as the best activity, the creation of mind maps by 23.5%, and finally, the creation of posters and audio with 17.6%. Here teachers' preferences were split into the four options of activities. Because even though the graphic shows that the creation of video presentations got a larger number of votes, this does not represent the preference of the majority. This is evidence in contrast to the choices in the next activities:

Figure 10. *Teachers' choices in collaborative activities*

According to collaborative learning, which activities do you consider to be the most suitable within a virtual course?

17 respuestas



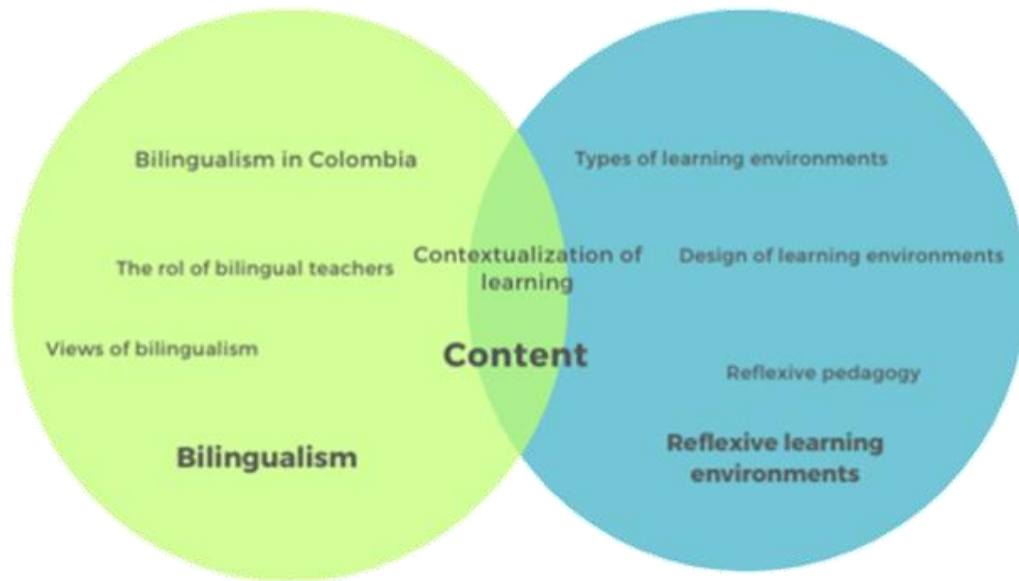
Most teachers chose a forum or discussion space as the most relevant with 76.5%, plus one respondent who specifically voted for a forum as well with the camera on. This indicates that teachers expect in their permanent courses activities that invite them to interact with others. The team of researchers also considers that the social components in this learning environment are fundamental.

4.2.6 Methodology

According to Rodríguez (n.d), the instructional design of virtual courses must consider the pedagogical dimension, which defines what the course tries to offer in pedagogical terms, and it must be considered from the beginning of the design since there must be harmony between virtuality and pedagogy. At the same time, the epistemological support that includes learning theories, methodology, nature of language, etc., defines the pedagogical dimension, since from this, we have the conception of evaluation, the function of learning resources, and the roles of teacher and student.

Peralta and Díaz-Barriga (2010) suggest a constructivist perspective for designing virtual learning environments, in the sense that, it supports conveniently the interaction between the agents (teacher-students-technology), and generates a space where situational, problem-based learning can be possible. Rodríguez (n.d) considers that the type of

methodology that arises from the constructivist perspective creates learning situations that encourage real situations related to experimentation and problem-solving. Considering that the strategy seeks to differ from training courses that focus on the transmission of content



rather than problem-solving in the teachers' context, this methodology seems aligned with the objectives of the proposal.

4.2.7 Content

As we mentioned previously, the content of the strategy was defined by the categories of reflexive learning environments and bilingualism. This data was mainly gathered from the documentary analysis, where we tried to find the most relevant topics for teachers to learn in the first instance. The topics of our proposal are represented in the next Venn diagram:

Figure 11. *Content of the strategy*

According to the analysis, it was found that the term reflexive learning environments is not generally used in educational research and practice but rather, it is a

term composed of learning environments and the reflexive pedagogy proposed by Cope and Kalantzis. Thus, the appropriation of this concept needs to be studied separately at first, and then as a set. The recurrent topics identified that can contribute to the thematic content of the strategy were principles for designing learning environments according to the OCDE, reflexive pedagogy, and types and characteristics of learning environments.

On the other hand, bilingualism plays an important role and has been researched in different fields over the years. When analyzing these documents, the most relevant introductory topics were views of bilingualism, bilingualism in Colombia, and the role of bilingual teachers. The documents generally highlight the importance of interaction and communication in the process of acquiring a second language and students' motivation and attitude towards second language learning as key factors in achieving effective bilingualism.

The content offered by these two categories is for introductory purposes, and it does not intend to completely expertise teachers in the knowledge, but rather build a sense up to these subjects, and promote the use of spaces and resources intelligently for effective bilingual pedagogical practices.

4.2.8 Evaluation

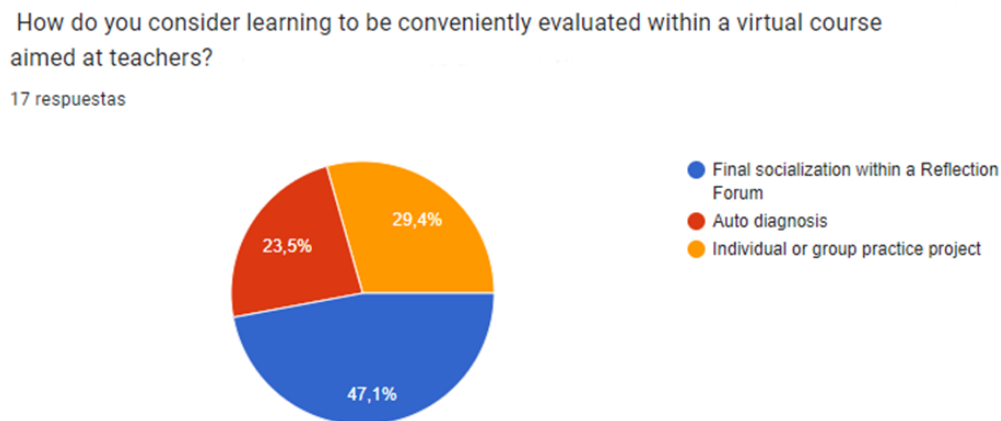
The purpose of the evaluation process is to determine to what extent the quality goals or objectives set are being met by the student's performance during and at the end of the course.

Rodriguez (n.d) depicts the conception of evaluation from a constructivist perspective as permanent, and qualitative, takes advantage of the error to review, reflect,

and correct, value the knowledge acquisition processes (beyond the quantitative grade) and conceptualizes the understanding of the knowledge acquisition process before the results.

In terms of evaluation of the participants within the training strategy, we asked teachers to choose the most suitable form of evaluating their process as it is shown below:

Figure 12. *Teachers' preferences in evaluation*



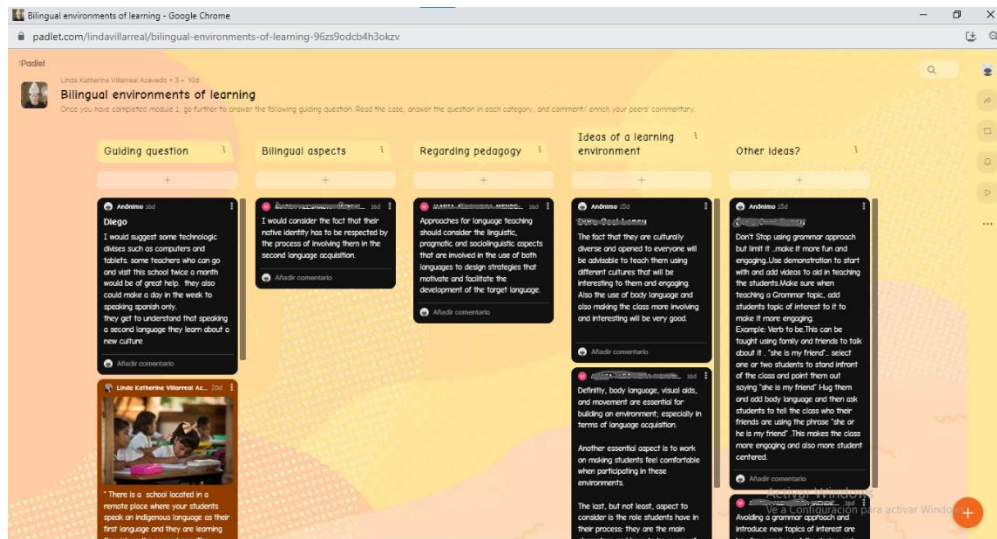
47,1% of respondents selected final socialization with a reflection forum, 29,4% individual or group practice project and 23,5% auto diagnosis. Bearing in mind that the praxis of knowledge obtain from the strategy is one of the key points of our proposal, the most viable option would be individual or group practice project, because with this type of formative activity, learning can be observed in the practices. However, we also wanted to consider the final socialization forum, because it contains a reflexive element, so both options are thought to be included in the strategy.

4.3 Core analysis

The general aim of the current project was to design a virtual continuous strategy addressed to in-service teachers in reflexive learning environments. This qualitative research focused on educational innovation, therefore, following the specific objectives, a

final product is delivered. First, we began by recognizing in the literature the elements that constitute our core concepts: reflective learning environments, bilingualism, and continuous professional development strategies. Then, we conducted a functionality survey with 17 participants to inquire about some of the sub-categories already pre-set and to know the extent of relevance of our proposal. After the cross-analysis of data, we structured the design of our virtual strategy, which we could carry out a pilotage with a selected group of teachers from the survey. The last part of our project consisted of validating the strategy through a satisfaction survey applied to the teachers who participated in the pilotage.

Figure 13. Teachers' participation in pilotage



Note: Padlet activity of first module

The data collection followed a specific time frame. From April 1st to May 7th, the practice of documentary analysis was done through a matrix, which lasted a month and six days, however, new documents were revised according to new requirements the project asked for. From May 7th to May 20th, we applied the functionality survey to teachers. It took around two weeks to be completed because the expected number of respondents was

about 20, but by the set time, we had 17 participants. During the summer break, the design began based on the preliminary data gathered. Then we proceeded with the pilotage, where ten teachers participated in the course. On September 19th the satisfaction survey was applied, which helped us validate the project and determine the aspects that need improvement. This last data from the validation stage was analyzed using a techno-pedagogical utility matrix that led us to a decision-making process proper of strategic projection.

The satisfaction survey used for validation and consequently, for the utility analysis, delivered numerical data as we used a Likert scale that showed us the different levels of satisfaction of users. The pedagogical utility refers majorly to a form of evaluating the quality of projects and practices within the educational context. It fosters an educational culture of using evaluation results for transformation (MEN, 2010). This study designed a matrix of utility analysis based on one developed by Badilla (2019). The matrix consisted of two pedagogical references: Learning and didactic. Based on these references, the elements that arose from the satisfaction survey were classified.

We called the analysis techno-pedagogical, according to the ideas of Coll (2008), who affirms that in virtual training, the pedagogical or instructional design has technological tools that create a close link between technology and pedagogy, of which one depends on the other (as cited in Peralta & Díaz-Barriga, 2010). The technological aspects from the survey data were included in the learning referent, in this way, we came up with the classified elements to define their usefulness as shows the following table:

Table 5. *Elements of pedagogical utility analysis*

Referente	Elemento
Aprendizaje	Aprendizaje en general
	Aplicabilidad
	Plataforma
Didáctica	Discurso
	Objetivos
	Instrucciones
	Actividades
	Materiales/recursos

Note: own creation

4.3.1 Learning referent

Beginning the learning referent, in general, teachers showed a considerable level of satisfaction with what they learned in the course, the majority consider that the course invites them to reflect moderately while developing the proposed activities, which is positive since there must be a balance between what is read and what is being taught. In addition, the majority stated that they wanted to continue delving deeper into the topics learned, which indicates that the course was well received and aroused the interest of the teachers either because of the way in which the content was presented or because of the importance of the topics per se. The possible reasons why the course is considered useful could be that the contents were appropriate and responded to pedagogical concerns that the teachers already had, which generated interest and satisfaction. Another reason may be that because teachers were already familiar with the topic, they found it useful to deepen into. The reflection component was presented in a moderate amount, which is believed to have

generated a dialogue between the reader and the content which allowed them to analyze and contrast with their reality.

The applicability of the course and its content receives the highest rating, placing it as useful and applicable in day-to-day teaching practice; only 20% consider that "it may be applicable." A relevant aspect of what teachers find applicable and useful to strengthen their practice is directly related to the topic "learning environments" 80% affirming the topic is of great interest and usefulness. While a small group (20%) consider that the topics of reflective pedagogy and bilingualism are also useful to strengthen their teaching practice, we need to improve them so that all participants can also see the usefulness of these topics. It is worth highlighting that the topics addressed, although some with more popularity than others, were considered by 80% of the participants as topics that can help improve their role as a teacher and the way in which their students acquire knowledge.

According to the platform chosen to display our strategy, the organization of the content and the route it offers to develop the activities were mostly rated as organized, with 50% of the ratings. 10% found that the platform is disorganized, which despite being a low value, is significant because it means that for a certain number of teachers, perhaps the distribution and organization were tedious or incoherent, which is why it is considered an element to improve. The possible reasons why teachers found the platform disorganized may vary, for instance, it can be a case of lack of coherence between the organization of topics.

In terms of discourse, accessibility and easy interpretation of information are important aspects that directly affect users, in this case, the teachers. Although more than half of the participants found the language used to be moderately easy and easy to

understand, 30% found it moderately difficult or not at all easy, which suggests that these participants had to make more effort. to understand the content and/or its activities. The possible causes that arise may be from the cognitive level, such as the ability to understand English, or from the writing such as the ambiguity in the terms or ideas presented, even if said topics were unknown to the participants and are not addressed in a way. broader so that they can be interpreted in their entirety. Given these results, a review is considered to improve the fluency of written language and interpretation.

4.3.2 Teaching referent

The objectives were clear enough for a larger number of participants, but 40% found them partially clear. This indicates that objectives were not totally clear, since it could have led to several interpretations from users. A possible cause is that the interpretation of the objectives was distorted by the organization of the content on the platform

About the instructions, 60% of participants found the instructions clear. However, we consider this as something to enhance, because although half of the respondents show a level of satisfaction, it is necessary that all, or most teachers perceive that the instructions are easy to understand.

Regarding activities, 70% of teachers qualify activities as somewhat adequate. The level of satisfaction was moderate, and this could happen due to several reasons, the disposition and attitude towards the development of the course, the time disposed, which was 4 days, or that the activities were not complex enough to make the teachers interested.

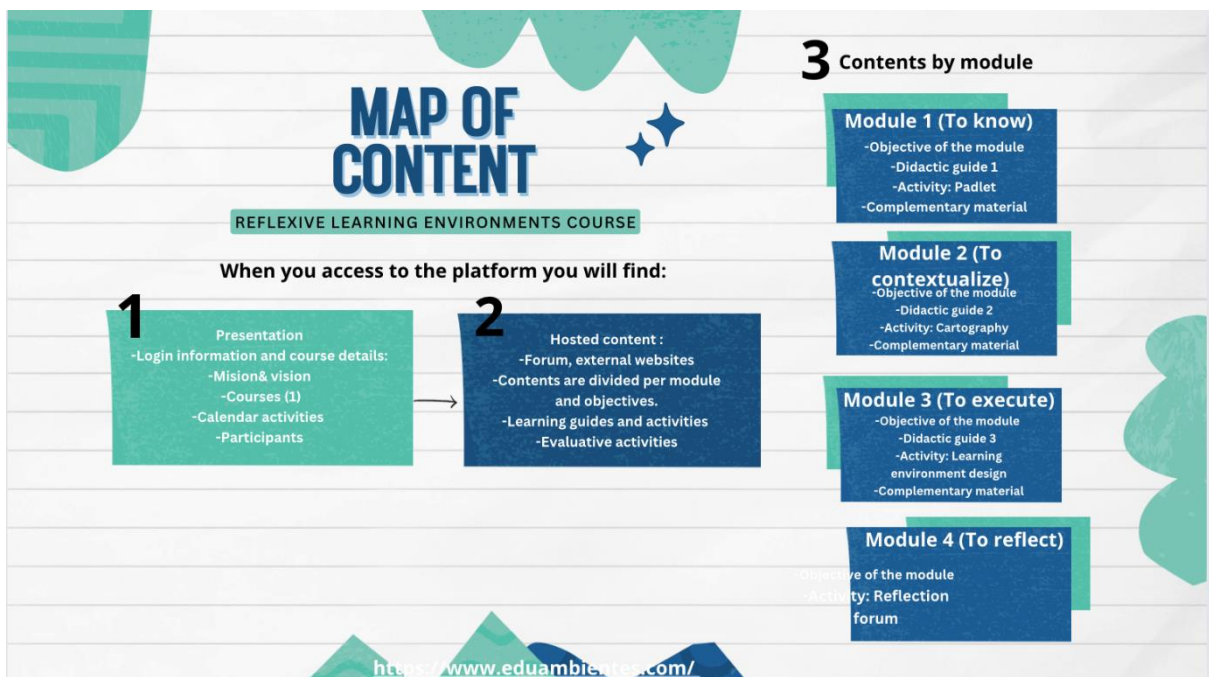
Finally, materials and resources gain favor from most teachers as they find them relevant. This highlights that their design was carefully planned and studied so that there was veracity and coherence between the topics addressed. On the other hand, 30% find these resources neutral, which might be useful but not so pleasant in the eyes of that percentage of participants.

5. Design and piloting

The third objective of this project referred to the design of the virtual strategy to the participating teachers (see appendix E). Due to time limitations, the research team decided to carry out a piloting that included only the first part of the learning environment.

The piloting was carried out in the second week of September in one of the institutions characterized above, with 10 bilingual teachers participating. The training was carried out through our virtual learning environment that counted with the following technical characteristics:

Figure 14. *Map of content*

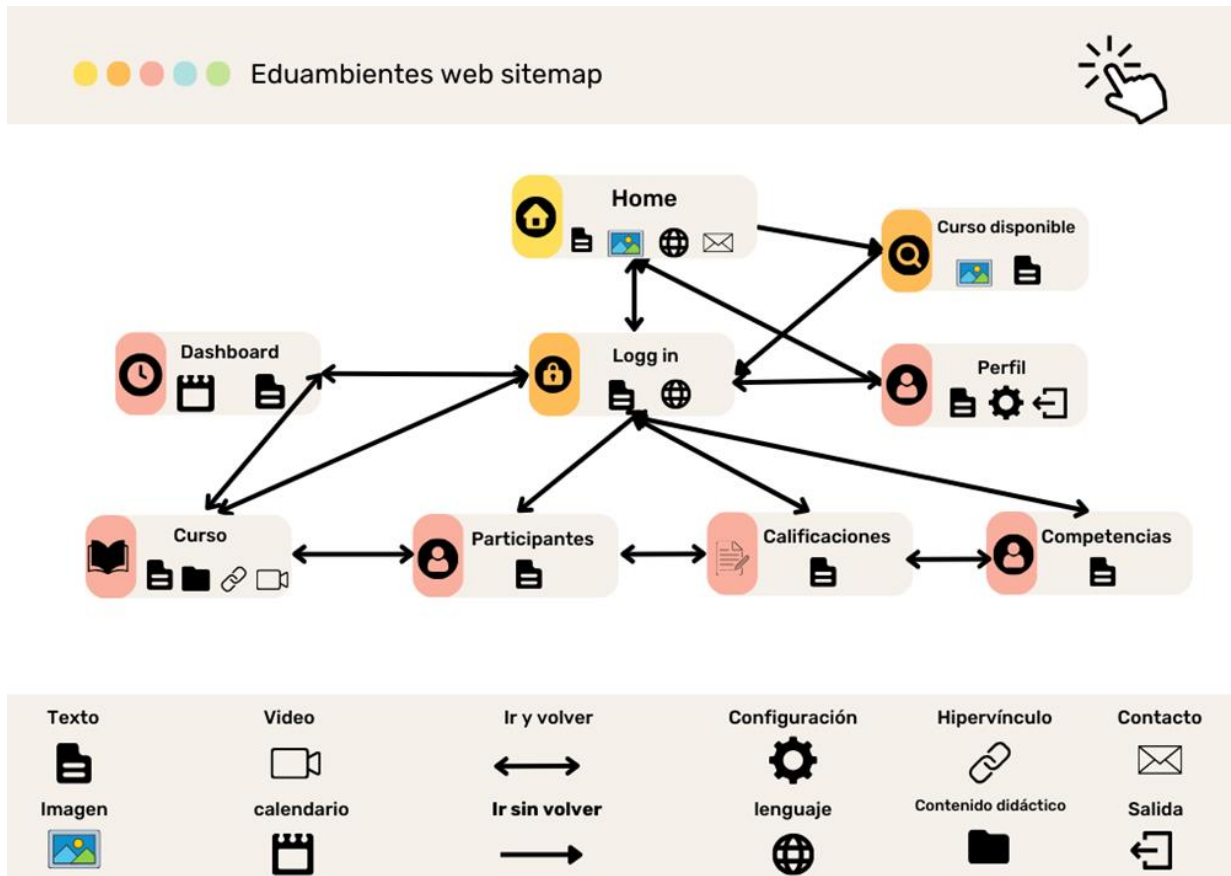


Note: Own creation

In the content map we can see that in the first instance, we have the presentation information of the platform, such as access, our mission, and vision among others. When

you enter the course, we are presented with the content to be developed for each module linearly, each module has its objective, a teaching guide, an evaluative activity, and complementary material for the users.

Figure 15. Site map

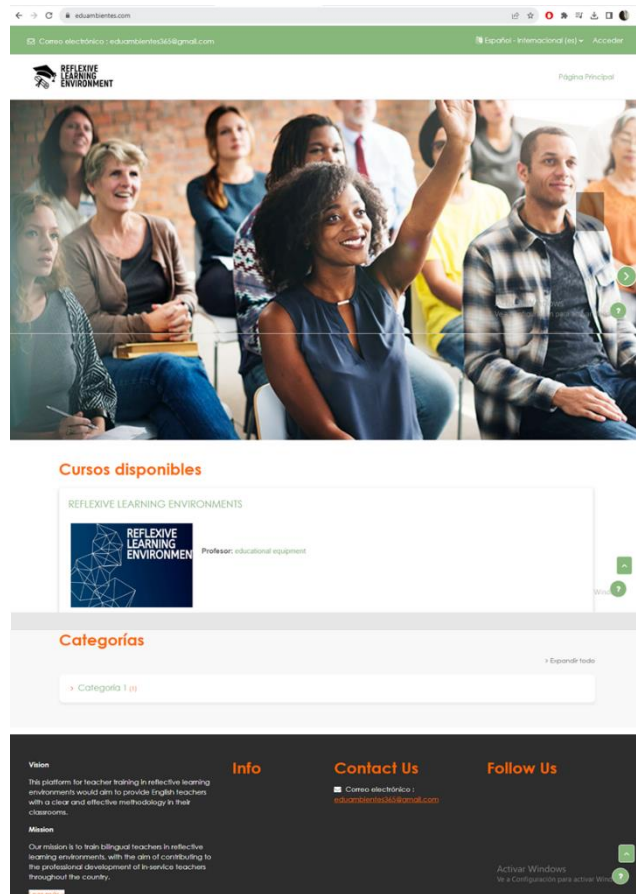


Note: Own creation

The website map illustrates how the virtual training strategy is organized in the platform. It starts from the home page, and following the route as it is shown, we can access elements such as a calendar in the dashboard, grades, participants' list and the most important one, the course where the modules, objectives, activities and materials are hosted.

We present here the principal interfaces of the platform, which complement the sitemap and contribute to the understanding of the design organization:

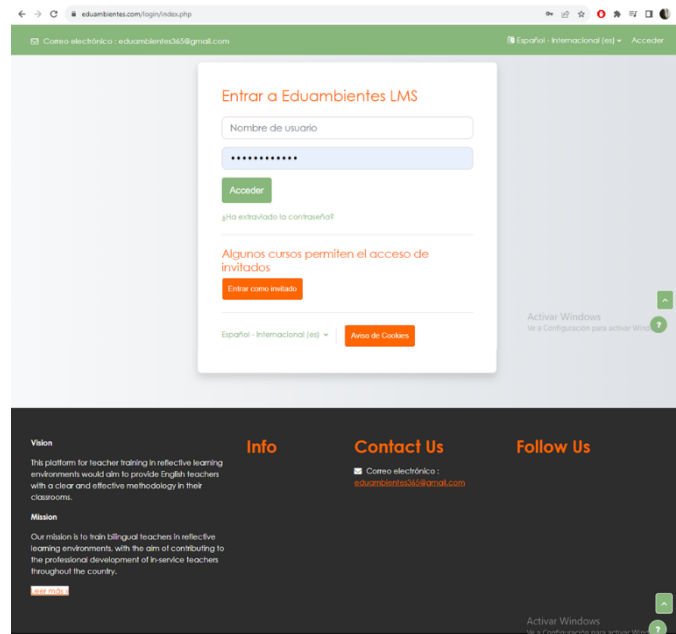
Figure 16. *Interface 1*



Interface script

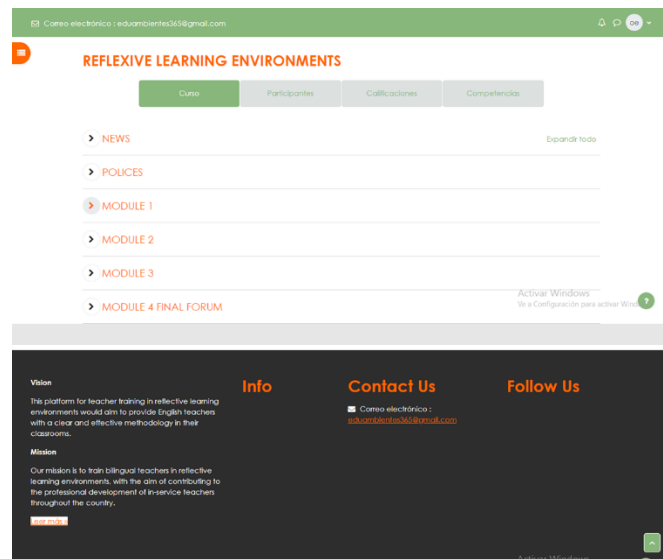
N°	Object	Initial state	Event	Action
1	Barra de contacto, lenguaje y acceso	Activo	click	Click usuario
2	Imagen	Activo	Por tiempo	Movimiento
3	Botón acceso al curso	Activo	click	Click usuario
4	Texto	No activo	ninguno	ninguno

Figure 17. *Interface 2*



N°	Object	Initial state	Event	Action
1	Barra de contacto, lenguaje y acceso	Activo	click	Click usuario
2	Botones de acceso	Activo	click	Click usuario
3	Texto	No activo	ninguno	ninguno

Figure 18. Interface 3



N°	Object	Initial state	Event	Action
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1	Botones acceso superior	Activo	click	Click usuario
2	Botones acceso a los módulos	Activo	click	Click usuario
3	Texto	No activo	ninguno	ninguno

For a more detailed view of the virtual strategy visit:

<https://www.eduambientes.com/?redirect=0>

Usuario: Profesor

Contraseña: profesorMOODLE3*

6. Further improvement: Strategic projection

Based on the conclusions from the utility analysis, we developed a plan for further improvement of our virtual teacher training strategy. For this, we followed a series of steps:

- **Step 1:** A RICE matrix was created, which helped us in the decision-making process. (See appendix C)
- **Step 2:** Based on the results from the utility survey, the research team devised ideas that then became decisions.
- **Step 3:** These decisions were classified into the ones that were for immediate actions and the ones conceived for the future. A process of coding was also made to define the decisions that were for academic, administrative, and financial purposes.
- **Step 4:** Finally, the decisions were organized in a strategic planification matrix (see appendix E), which presents the product of this research project in other words, the plan of improvement of our virtual teacher training strategy.

7. Conclusions

This study aimed to design a virtual continuous strategy for bilingual teachers in reflexive learning environments. Through the data collection instruments, we could get the appropriate data that made the project possible. Our research question reflects the problem observed, the need for us to seek a solution, and the direction of the study itself. For instance, the research question implicates designing, which in part is a process, and the components we need to bear in mind to make everything functional and coherent.

Results from this study depicted in detail how we created our product based on the documentary analysis and what the surveys showed us. This information worked as the basis of the design. Therefore, we highlight the importance of considering the features and context' needs, and such information can only be acquired by making the individuals who are expected to benefit, participants of any design we plan to carry out.

One of the key contributions we hope to make with our research project is empowering bilingual teachers with enhanced pedagogical practices. By providing teachers with a course of instructions, valuable information, resources, and practical activities, the project might help educators feel more confident in their ability to use the spaces and the resources that not only the institutions can offer them, but also everything around them that can impulse learning. This empowerment might lead to more engaging and effective teaching practices and therefore, more effective learning environments.

Additionally, improved pedagogical practices directly translated into better learning outcomes for bilingual students. Students benefited from a more immersive and interactive learning experience, which fostered their language acquisition and academic growth. As

students thrived, it had a profound impact on their self-esteem and motivation to succeed academically.

Although we presented our product in this paper in its final version, there is much more for us to work on. This study followed the axis of educational management of our master's degree, which invited us to develop a strategic projection of our project for the next years. In this sense, the course needs to keep updating, so that its impact can reach and benefit more communities.

Because the target context of this study was bilingual private schools, we understand that the effect of this project may vary according to the educational context this is implemented. Although it seems like a barrier, the thing is, it is rather an opportunity to not only conduct further research on the impact that the implementation can have but also to motivate others to continue in practices to benefit teaching and learning.

8. Limitations

Our main limitations in carrying out the study are related to the time. Because we pursued an intervention focus, the main intention was to implement the project, however, because of the time, we could only develop the piloting process and validation. Originally the study hoped to work with 20 participants, but in the first phase they were 17, by the time of applying the piloting session, the number was reduced to 10. This, along with some teachers ability to use the virtual platform were uncontrolled variables that could have affected in some way the development of the study.

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10. Appendix

Appendix A: Consentimientos informados: [Apéndice A. Consentimientos informados](#)

Appendix B: Instrumentos de recolección: [Apéndice B. Instrumentos de recolección](#)

Appendix C: Recolección de datos y matrices: [Apéndice C. Recolección de datos y matrices](#)

Appendix D: Material didáctico de la estrategia: [Apéndice D Material didáctico de la estrategia](#)

Appendix E: Ficha de prediseño

Ficha de prediseño							
Ruta de aprendizaje	Misión	Visión	Políticas	Diseño instruccional		Plan de implementación	Evaluación de estrategia
<p>1. Conocer Teorías, conceptos, definiciones características etc. (Individual)</p> <p>2. Contextualizar Juzgar, observar el entorno, adaptar, o analizar la forma en como responder a las necesidades. (grupal)</p>	<p>Nuestra misión es formar a docentes bilingües en ambientes reflexivos de aprendizaje con el objetivo de contribuir al desarrollo profesional de los docentes bilingües en servicio en todo el país. Nuestro proyecto se centra en mejorar la</p>	<p>Para el final del semestre se espera que este proyecto de investigación en ambientes reflexivos de aprendizaje permita a los docentes de inglés adquirir las habilidades y conocimientos necesarios para crear ambientes reflexivos de aprendizaje en sus aulas, lo que a su</p>	<p>Accesibilidad y equidad: Asegurarse de que la formación en línea sea accesible para todos los adultos.</p> <p>-Interactividad y participación: Promover la interacción y la participación activa de los adultos en el aprendizaje en línea.</p>	<p>Modelo de diseño instruccional</p> <p>Soporte epistemológico</p> <p>Objetivos</p>	<p>Addie: Análisis, diseño, desarrollo, implementación, y Evaluación.</p> <p>Teoría sociocultural de Vygotsky.</p> <p>1. Módulo conocer: Identificar las teorías y conceptos clave de la pedagogía didáctica y reflexiva, así como las definiciones y características</p>	<p>Para la implementación se debe contar con el apoyo administrativo, Rectoría y directivos docentes, con antelación para aplicar el curso en la institución educativa.</p> <p>A los docentes se les otorga una cuenta para participar.</p> <p>El tiempo estipulado de</p>	<p>Una encuesta de satisfacción alojada en el ambiente virtual de aprendizaje, para que los usuarios puedan acceder a ella al finalizar el curso.</p>

<p>3. Ejecutar Colocar en practica lo aprendido en 1, y tomando en cuenta el análisis en 2 (Grupal)</p> <p>4. Reflexionar Evalúa los resultados de la parte 3 y se invita a la reflexión. (individual)</p> <p>Naturaleza Individual Grupal</p>	<p>eficiencia de los docentes bilingües de todos los grados. Reconocemos la importancia de contar con docentes altamente capacitados y reflexivos, capaces de adaptarse a las necesidades cambiantes de los estudiantes y ofrecerles una educación de calidad en su lengua materna y en una segunda lengua.</p>	<p>vez mejorara la calidad de la educación que reciben los estudiantes.</p>	<ul style="list-style-type: none"> - Consentimiento informado - Protección de datos personales: La privacidad y la protección de datos personales de los participantes deben ser una prioridad. - Política de uso del entorno virtual - Política de convivencia - Política de calidad 		<p>de los ambientes de aprendizaje, para comprender los beneficios y desafíos de su implementación y reconocer el rol del docente en dichos ambientes.</p> <p>2. Módulo contextualizar: Comparar y relacionar los elementos que constituyen ambientes reflexivos de aprendizaje con el contexto educativo propio.</p> <p>3. Módulo ejecutar: Diseñar un ambiente reflexivo de aprendizaje que comprenda los</p>	<p>implementación del ambiente virtual es de 15 horas, distribuidas entre las actividades.</p> <p>No hay encuentros sincrónicos, ya que el aprendizaje es totalmente autónomo. Sin embargo, hay actividades de naturaleza grupal, las cuales son monitoreadas por el docente asesor.</p> <p>Se utilizan los siguientes objetos virtuales de aprendizaje: Videos,</p>	
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					<p>conocimientos anteriormente adquiridos.</p> <p>4. Módulo reflexionar: Analizar y evaluar críticamente los resultados obtenidos en la fase de ejecución, con el fin de identificar patrones, hallazgos significativos y posibles áreas de mejora.</p>	<p>artículos online e infografías.</p> <p>Algunas actividades están pensadas para realizarse de forma presencial entre los docentes participantes, es decir, los docentes además de tener la opción de trabajar de forma completamente virtual, si así lo desean, se pueden reunir, ya que todos los participantes hacen parte de un mismo colegio.</p>	
				Contenido	<p>1. Conocer:</p> <ul style="list-style-type: none"> a. Pedagogía didáctica y reflexiva b. Bilingüismo y tipos de bilingüismo c. Introducción a los ambientes de aprendizaje. 		

					<p>2. Contextualizar:</p> <p>a. Ambientes de aprendizaje en el contexto local</p> <p>b. Bilingüismo en Colombia.</p> <p>C. Pedagogía reflexiva en el aula</p> <p>3. Ejecutar:</p> <p>a. Diseño de ambientes de aprendizaje.</p> <p>b. Ejemplos de ambientes de aprendizaje</p> <p>4. Reflexionar:</p> <p>a. Evaluación de resultados y eficacia de las estrategias de enseñanza reflexivas implementadas -Mejora y ajustes necesarios</p>	
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				<p>Formato</p> <p>Actividades</p>	<p>-Plan con vistas al futuro</p> <p>Plataforma virtual diseñada a través de GOdaddy.</p> <p>Conocer 1 interacción en Padlet: Comentar en un padlet desatacando sus conocimientos previos junto con lo aprendido en el modulo 1 Evaluación formativa</p> <p>Contextualizar: -Cartografía: Realizar un mapa institucional de los espacios que componen la</p>	
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					<p>institución educativa que puedan promover ambientes reflexivos de aprendizaje. Evaluación sumativa</p> <p>3. Ejecutar: Diseñar un ambiente reflexivo de aprendizaje funcional en la institución. Evaluación sumativa.</p> <p>4. Reflexionar: Foro final de reflexión</p> <p>La evaluación final es el foro de reflexión. El puntaje mínimo en las actividades es</p>	
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					de 3.3 y el máximo.		
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