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Generation of Novel Activities for English Learning and Teaching: A Learning Styles Approach

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ARTÍCULO 23, RESOLUCIÓN #13 DE 1946. “La Universidad no se hace responsable por los conceptos emitidos por sus alumnos en sus trabajos de tesis. Solo velará porque no se publique nada contrario al dogma y a la moral católica y porque las tesis no contengan ataques personales contra persona alguna, antes bien se vean en ellas el anhelo de buscar la verdad y la justicia”.

Dedication

To all the teachers who struggle(d) in times of the COVID-19 pandemic.

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Summary

1. Información General	
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Título del documento	Generation of Novel Activities for English Learning and Teaching: A Learning Styles Approach (Generación de actividades novedosas para el aprendizaje y la enseñanza del inglés: un enfoque de estilos de aprendizaje)
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2. Descripción
Given that each student's learning style is different, the activities used in the foreign language (hereinafter FL) classroom must be adapted to the various ways in which they learn. Likewise, the basic standards of competences in English must be the basis of these, in such a way that the instruction offered in the national education system is coherently unified, as reflected by the objectives of the Ministry of National Education. For this reason, the learning activities generated within this research attempt to meet these criteria for the basic secondary and middle school in Colombia, taking into account the students' learning styles as expressed in Richard

M. Felder and Barbara A. Soloman's Index of Learning Styles (hereinafter ILS). To this end, the approach is qualitative and quantitative (based on the expert judgment and validation forms results), and the study is interpretive in nature (based on the results of the aforementioned forms to improve the learning activities).

The learning activities, at the core of this thesis, are supported by the Google Classroom platform with the help of techno-pedagogical resources such as Hot Potatoes and Padlet. They aim to meet the basic standards of competences in English from the sixth to 11th grade. Likewise, they mesh with the assessment paths proposed in the book *Suggested Curriculum Structure*, conditions which resulted in the generation of two activities per grade—that is, one package totaling six activities. The estimated time necessary to complete each activity and the suggested level of proficiency in the FL as per *Guide 22* and the Common European Framework of Reference for Languages (CEFR) are indicated. Furthermore, they provide interactive scenarios where technology is the main axis of FL education and, as such, stand a greater chance of being perceived by the students as responding to their personal needs and expectations.

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4. Contenidos

This dissertation opens with an overview of the context and pre-existing conditions, both physical and cultural, dealing with the role of both the teacher and the government from a broader, Colombian perspective. It then progresses to the problem statement, outlining a concise description of the issue to be addressed. Next, it moves on to the research questions, comprising the central and subsidiary questions that the study sets out to answer. Then, the objectives are plainly laid out, describing concisely what the research is trying to attain, after which the justification, referring to the rationale for the project, is set forth. The literature review section goes on to present a rundown of the scholarly sources on learning styles at the foundation of the research. Furthermore, the theoretical framework—that is, the theoretical basis of the research—is discussed. In addition, the methodological framework, describing the approach, research method, and instruments used as part of the study, are put forward. The expert judgment and validation forms, the results of which are dissected in the final chapter, are also presented. Finally, in addressing the conclusion, the following statement and question are implicitly considered: (a) “The wave of the future is technological,” and (b) “Will the educational realm limit itself to antiquated, soon to be irrelevant models or shall it adapt and evolve to take advantage of the new opportunities that technology affords us?”

5. Metodología

The methodological approach adopted for this thesis is mixed/interpretive. This framework helps circumscribe the learning activities developed in the course of this dissertation. Therefore, different models of distance learning were explored and particularly those proposed by Seels and Glasgow (Özer Şanal et al., 2019) and Clark (Allen, 2006). Three

distance learning paradigms were selected, namely hypermedia self-study, online education, and virtual community. The principles underlying cognitivism, constructivism, and social constructivism were also studied. Likewise, a mixed approach based on the emerging ADDIE model was applied to the design and development of such learning activities.

6. Conclusiones
The learning activities at the core of this research were validated by a panel of seven experts with postgraduate studies and experience in the fields of English, education, ICT, and instructional design. The results show that the activities in question are highly valid by having a global mean value of 3.8 on a scale of 1 to 4—1 being the lowest possible score and 4 being the highest. Garnered observations helped determine which facets (Analysis, Design, and Development according to the ADDIE model) of the learning activities needed remedial action for further improvement. Furthermore, the Cronbach's alpha value shows that the internal consistency of collected data from the experts is 0.811, meaning that the provided instrument (expert validation form) is highly reliable. Prospectively speaking, future educational materials could be assessed with this very same instrument, since it has proven to be sound in terms of sufficiency, clarity, coherence, and relevance as per Escobar-Pérez & Cuervo-Martínez's (2008) guidelines. The learning activities were posted, under a Creative Commons license, on a Google site as part of the implementation phase for use by interested parties.

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Chapter One: Introduction

In a modern society where technology is increasingly available, the FL teacher must contend with this undeniable reality. Virtual technology has made huge advances and has had an increasing impact worldwide in recent years (Laukaitis, 2019). This boiling cauldron of creativity has given us an extensive range of applications that provide frameworks for the generation of activities to assist the learning process of English. It is the teachers' responsibility to bring themselves up to speed with such technologies and to partake of the training provided both by the Ministry and online.

One of the most popular software suites used by educators is the G Suite for Education, which allows the creation of interactive language exercises for the Web. In addition, it's freeware and can be used for this research. Its main asset is that it enables the creation, distribution, and assessment of activities electronically as a way to save paper and reach beyond the immediate geographic region. Interactive communications between teacher–students and students–students would also be greatly enhanced by the use of platforms such as Facebook, Twitter, and Instagram, to name but a few.

This dissertation opens with an overview of the context and pre-existing conditions, both physical and cultural, dealing with the role of both the teacher and the government from a broader, Colombian perspective. It then progresses to the problem statement, outlining a concise description of the issue to be addressed. Next, it moves on to the research questions, comprising the central and subsidiary questions that the study sets out to answer. Then, the objectives are plainly laid out, describing concisely what the research is trying to attain, after which the justification, referring to the rationale for the project, is set forth. The literature review section goes on to present a rundown of the scholarly sources on learning styles at the foundation of the

research. Furthermore, the theoretical framework—that is, the theoretical basis of the research—is discussed. In addition, the methodological framework, describing the approach, research method, and instruments used as part of the study, are put forward. The expert judgment and validation forms, the results of which are dissected in the final chapter, are also presented. Finally, in addressing the conclusion, the following statement and question are implicitly considered: (a) "The wave of the future is technological," and (b) "Will the educational realm limit itself to antiquated, soon to be irrelevant models or shall it adapt and evolve to take advantage of the new opportunities that technology affords us?"

Context Conditions (Physical and Cultural)

A society that intends to promote human development requires science and technology to increase its capacity to respond to social demands because both are intrinsically associated with health and quality of life in the modern era. Anyone studying the historical developments in these issues will sadly note that, in recent years, the investments in Colombia's future have been a "locomotive that ran out of steam shortly after leaving the station."

Unfortunately, neither of the two previous 10-year plans had an impact on national or regional education nor did they generate a broad mobilization of resources toward education. Education has to be the *focus* and become a national priority; every governor and mayor needs to assume a leadership role in driving these efforts. The challenge is thus structural: General policies must foster moral and cognitive autonomy in our population, failing which we will continue to be undermined by corruption and forever remain the shorn sheep of outside interests and influences.

The decision to act doesn't depend on politicians but, to a greater extent, on the citizens. After all, it is the citizens who choose the rulers and, as such, a truly democratic government must bend to the will and needs of the people, not the other way around.

Cultural: The Teacher's Responsibility

One of the most important roles, if not the single most important, played by teachers in the modern world, is to serve as mediators between the culture and the students. This goes way beyond the traditionally held belief that teachers are limited to transmitting knowledge of the subject they teach. Human knowledge is always viewed and interpreted through a cultural lens and, as such, professionals must fulfill diverse tasks through which they can acquaint the students to the cultural intricacies and variety of world societies and to the inner workings of the birth or local environment. Thus, despite the technological advances applied to education, the teacher is still a fundamental player in the construction of knowledge, since no technology can ever replace the affective and nurturing components of the pedagogical act.

Indeed, in the pedagogical act, there's a continuous interaction between the students and the teacher, eliciting values and ideas that might never spontaneously emerge without the teacher's guiding hand. It is a sad fact of modern society and economics that, more often than not, both parents are forced to work to provide for their families. Teachers must therefore step in as role models, imparting the social values and mores that the absentee parents can no longer provide and reinforce. That, coupled with a slow decline of the church's influence in modern society, has created a moral void that has to be filled by expanding the role of schools in general and teachers in particular.

No teacher, however good he or she may be, can "learn" anyone anything; learning is largely an individual process. The student has to be willing to learn and, as such, teachers must

be facilitators rather than enforcers. Teachers, in point of fact, must motivate their students to reach the proposed goals or, even to some extent, define their own goals. Teachers must also entice their charges to discover and exploit their innate abilities and to apply basic civicism and morals to whatever they set out to do.

The best gifts a teacher can offer a student is independent and critical thinking; these are the key qualities of the builders who will invent humanity's future. Conversely, teachers who impose themselves as the sole source of universal knowledge on a particular topic are in fact sequestering the students within the limited confines of their own knowledge. The only way forward is to encourage the youth to question everything, to push the envelope of the possible using whatever means currently at their disposal; global networking and electronically assisted learning is the way of the future.

That is to say, teachers must introduce their students to science, art, and technology, and encourage them to invest themselves fully into these key aspects of the modern world. It must thus be made self-evident to the students that knowledge is the key to self-realization.

Physical: The Role of Government

After the Educational Infrastructure Financing Fund (FFIE) conducted an evaluation in 28 departments of the country, it was made public that a large part of the educational infrastructure projects was at high risk in terms of execution. It was discovered that of 184 works currently in progress in 22 of the 32 capital cities, 61% (112) are experiencing a construction delay greater than 20% of the planned schedule or, in some cases, have critical execution problems. For this reason, the Ministry of National Education (MEN) and mayors of capital cities announced a joint work plan, seeking to mitigate the risks and move forward in the

fulfillment of the works and projects throughout the national territory (Ministerio de Educación Nacional, 2019).

In the educational context, the technological gap remains a challenge for the state, and especially for the ministries and governments that represent it. There have been valiant efforts in the past that must be highlighted, one of them being the creation and implementation of the National ICT Plan led by the Ministry of Communications more than 10 years ago. It implemented action policies for social inclusion and competitiveness and developed actions aiming to realize the grand dream that all Colombians, including of course students and teachers, must be making efficient and productive use of ICT (Ministerio de Comunicaciones, 2008; Ministerio de Tecnologías de la Información y las Comunicaciones, 2019; Rodríguez, n.d.).

The researcher must also underline the valuable work that has been progressing since 2001 within the presidential program, Computadores para Educar (2019), which, with the combined efforts of the government, private companies, and communities, has benefited the country's public schools with the provision of more than 27,000 computers. With regard to the processes of updating teachers' competencies in the use of technological tools, different training activities continue to be carried out at the national level, including the Phase I *Compartel* connectivity program that has benefited, with broadband Internet access, 3,000 Colombian schools (Altablero, 2005).

The completion of these early efforts has amply demonstrated the size and scope of the task at hand for the State, governments, and educational centers to achieve the ambitious technology coverage and digital literacy goals outlined in the National ICT Plan. There would probably be more chances of attaining such goals if the global vision was appropriated in a

continuous, ongoing fashion by the schools, with the participation and support of the whole of their educational community.

Overcoming technological illiteracy, present in all aspects of Colombian daily life and especially in education, is one of the most important and determining components of our present and future development as a nation. To make any headway on that front the Colombian people (through every level of government) must, in parallel, invest equal efforts into addressing the problems of rampant poverty and basic illiteracy, both of which still remain crippling factors preventing forward movement.

Problem Statement

The term *learning styles* encompasses a wide range of renowned theories in the field of psychology and education that, starting from the basic premise that students differ in the way they construct knowledge, seek to make allowances for these differences in their learning. Under this perspective, six learning activities were generated, centered on the basic standards of competences in English from grades six through 11 and the Richard M. Felder and Barbara A. Soloman's Index of Learning Styles (2001). According to the learning style model on which the ILS is based, there are four dimensions or types of learners: active/reflective, sensing/intuitive, visual/verbal, and sequential/global. The activities at the core of this research follow the strategies suggested by these two authors. It thus proposes the generation of a package of two activities per grade, indicating the estimated time needed to complete each one, taking into account the assessment paths defined in the book *Suggested Curriculum Structure* and the levels of language proficiency put forward in *Guide 22* and the Common European Framework of Reference for Languages. By enabling interactive scenarios in which technology is at the core of English language learning and teaching, these activities are more likely to be perceived as

responding to students' personal needs and expectations, particularly in the context of a heightened virtual outreach made necessary by the COVID-19 crisis.

Research Questions

Wouldn't one agree that learning activities providing interactive scenarios, which may be applicable to different contexts (national or international) and where technology is the main axis of FL learning, might well stand a better chance of being perceived as novel, ambitious, and interesting?

- Can the learning offered by such activities be accomplished in a virtual environment with a teacher's guiding hand to steer the students' efforts and keep track of progress?
- Can the learning activities be seen as consistent with their stated specific objectives, learning standards, assessment paths, etc.?
- Have the proposed learning activities appropriately identified proficiency levels from elementary (A2) to pre-intermediate (B1)?
- Are the chosen learning activities a perfect reflection of the current trends in the field (cognitivist, constructivist, and social constructivist)?
- Can the learning activities cater to a broad array of learning styles?
- If such is the case, are the learning activities in question relevant and varied with clear and well written instructions?
- Are the deployed techno-pedagogical resources sufficiently diverse and flexible, while fittingly supporting the learning activities, particularly with Google Classroom as the main learning platform?
- Can English teachers be trained to implement such learning activities in a virtual learning context with their students?

Objectives

General Objective

- Design novel activities for teaching and learning English based on Richard M. Felder and Barbara A. Soloman's Index of Learning Styles.

Specific Objectives

- Develop activities from techno-pedagogical resources with the support of a learning platform while targeting different learning styles.
- Publish the activities on the Internet for use by English teachers and students, mainly in the basic secondary and middle English course of studies in Colombia.
- Raise interest in the development of electronic educational activities to mitigate the environmental effects of paper production.

Justification

In a communicative approach, the primary definition of the teacher/computer interface leads to a vision of pedagogical-based informatics, the essence of which is to organize the interactivity between the learner and the linguistic activity in a way that reflects and stimulates the necessary mental processes at work in learning a second language, unlike in other areas where the computer is used for simulation purposes. In the case of language learning, a simulation would be reductive when compared to the diversity of authentic communication.

This approach steers one to give a measure of leeway to guided autonomy—a safety factor both in terms of educational effectiveness and on the psychological level (Gregorc & Butler, 1984). In this regard, the FL teacher should try to address the variety of learning styles always present in the classroom, be it virtual or otherwise.

The process is organizational in general, while the research model of intervention is located in the propositional critical paradigm, which, unlike the positivist one, requires the participation of those involved in the thematic concern studied. For example, an activity such as "watching a movie sequence without audio and discussing a plot hypothesis in groups" concerns non-auditory visual, active, intuitive, and global modes, which is more suited to extroverts. Conversely, a task such as "writing an essay on the main themes of a film with audio for a classmate to read and correct" corresponds to visual/verbal, reflective, sensing, and sequential modes, all more favored by introverts. Finally, an exercise such as "representing actions with the hands (miming) for others to guess and respond orally" is a matter of visual kinesthetic as well as reflective, intuitive, and global modes, involving both introverts and extroverts in the same academic setting.

During this process, the role of the teacher is fundamental, using, in turn, styles of learning and teaching that, with choices of activities and classroom management, must impart a varied and balanced instruction that involves each student. This implies the need to explore the range of individual differences to identify the profile of each student (of which the students themselves may be unaware of) and the group as clearly as possible.

Whatever the impact of learning styles on pedagogical choices, teachers must also consider the need to accustom students to coping with activities that don't entirely suit their individual preferences. In this context, the FL teacher should encourage them to perform exercises that do not fit their profiles, in part to corroborate what their learning styles actually are, but mostly to accustom them to working productively outside of their comfort zone when the need arises, as it surely will in real-life situations. Learning styles should also be taken into consideration when evaluating performance and grading test results.

As previously suggested in the objectives of this dissertation, the Google Classroom platform and techno-pedagogical tools, such as Hot Potatoes, Wordwall, Quizizz, and Liveworksheets, lay the foundation for the learning activities, enabling them not only to have a national scope but also a global one for anyone interested in using them. That they are among the most recognized and easy-to-use applications by educators on the Web made them ideal for this research.

On the one hand, it's worth noting that the content, rather than being focused on the formulation of multiple-choice or short-answer questions, seeks to respond to the learning needs of the basic secondary and middle school English students in Colombia with the incorporation of images, texts, videos, and other multimedia elements to promote truly interactive scenarios. On the other hand, it's also necessary to clarify that the Google Classroom platform isn't relegated to a secondary role, but is brought to the fore as a learning management system (LMS).

Furthermore, the possibility of using Padlet, the free collaborative bulletin board, with which teachers and students can write posts, upload files, attach links, and more, is tantalizing. It would be especially useful in the realization of background and warmup exercises through which the students prepare to take on the activities themselves. Padlet has a great number of features and parameterizations implying a greater time investment but allowing for more flexibility. Given its usefulness and almost infinite customizability, it's another of the resources enlisted to satisfactorily achieve the expected objectives.

Chapter Two: Literature Review

International

Experiential Learning

In their research, Honey and Mumford (1986) identified the four phases of experiential learning as experience, the return on experience, the formulation of conclusions, and planning. Their observations led them to ascertain that each of these four phases is associated with a specific set of behaviors, which make it possible to distinguish the preferred learning style of individual students. Since context is also a key factor in learning, it's feasible to develop a strong preference for, or make use of, more than one learning strategy. Thus, a learner may present a profile comprising two, three, or even all four learning components.

Both Kolb's and Honey and Mumford's learning style questionnaires have pointed out that the most appropriate model for defining learning styles is the four-factor model and not a two-dimensional model as previously envisioned. The results obtained thus lead to defining the learner's knowledge acquisition style from their relative position on each of these four scales. From a vocational training perspective, Honey and Mumford developed a nomenclature that helps to better understand how the learner reacts and chooses to act in any given learning situation. They define four different styles: active, reflective, theoretical, and practical styles. For Kolb (1984), each of these styles is part of a stage of a learning cycle.

The active style, which corresponds to the experimentation phase, refers to an open-minded and flexible person who engages in new experiences spontaneously and without preconceived ideas. This person therefore feels the need to experiment as a way to begin learning before carrying out any reflection on the subject. This echoes the need for concrete experience. In a pedagogical context, this person is easily involved in projects that aim to renew

the perspectives of teaching. They like to try but, by contrast, get bored quickly when the practice seems routine and unchallenging and prefer change. Unlike their colleagues in the theoretical or reflective style, they aren't overly concerned with referring to theoretical frameworks neither in the approaches they advocate nor with documenting prior experiences or using them to address new situations.

The reflective style, which refers to the observation (return on experience) phase in the experiential learning theory, emphasizes gathering information, notetaking, situation analysis, and caution before acting. The reflective learner prefers to inquire about the purpose of the study before experimenting or deepening the theoretical models. They learn empirically and can, subsequently, better understand the fundamentals of the facts and take actions that can change the situation. This person may initially be more reluctant to embark immediately on a pedagogical project that is not explicitly laid out or at the very least outlined. They need to think about and consider the consequences of the choices that the changes entail. This person is discreet, tolerant, and proves to be valuable in a context where decisions are made too hastily. On the other hand, their tendency to avoid risk-taking and advocating the status quo may bog down a decision-making process.

The theoretical style, which refers to the conceptualization (formulation of conclusions) phase, favors abstraction, a logical approach, systematic, and rational organizational frameworks. The theoretical learner likes to analyze and synthesize before taking action. In teaching, they're interested in deepening and explaining the why of things. They question others about what justifies their actions or ideas. They aren't content with explanations that are more intuitive than reasoned and may be intolerant of what is not patently logical (Entwistle, 1998).

Finally, the practical style, which refers to the phase of planning, again, as expressed in Honey and Mumford's theory of experiential learning, promotes the implementation and generalization of ideas. This is of first and foremost importance to the practical learner. The effectiveness of the action is paramount and the learners with this type of profile use their expertise to quickly assess the effectiveness and relevance of the task in a learning situation. They tend to choose judicious ways to put what they like into practice. In their teaching, they clearly define the steps to follow to facilitate the success of a pedagogical project or the realization of an activity that they undertake. They organize the action accordingly. Everything is planned, the material as well as the procedures, and their concern for efficiency, urges them to work with eagerness. When discussions drag on without arriving at a solution, this type of learner may quickly become impatient.

Unlike Kolb's model, in which a style is the product of the combination of two modes of learning, Honey and Mumford defined learning style as a preference that can be independently assessed. In Kolb's model, as in Honey and Mumford's nomenclature, there's no good or bad style. The choice of a style denotes a preference in the method of learning. This does not mean the student has no affinity with other learning styles. As the style is defined as "the way in which each learner begins to concentrate on, process, absorb, and retain new and difficult information" (Dunn & Burke, 2005, p. 2), this model implies that it's possible to take ownership of, or at least to become familiar with, a style that wouldn't be the first choice. Treated, not as an isolated factor, but in relation to other variables such as culture, the student's gender, or age; assessing the learning style appears to be an appreciable asset for the teacher as well as the student.

Learning Style Inventory

From the historical perspective, the concept of learning styles is rooted in the field of psychology. 1950 was the year when cognitive psychologists gave shape to research aimed at defining learning problems, in particular the problem of cognitive styles as Herman Witkin would call them in 1954. By 1977, Witkin had come to understand cognitive styles as the particular ways in which individuals perceive and process information. Other psychologists soon followed that line of thought.

The change from the cognitive style to the learning style came as a consequence of the psychological approach within the studies of learning mechanics. According to the educational perspective, talking about learning styles better reflects the multidimensional character of the knowledge acquisition process in the school context. The rise of learning styles and their understanding from a closer look at the classroom space soon garnered enthusiasts. From their experiences and research, they contributed to define the so-called *learning styles*, from different perspectives.

David Kolb and Marshall Goldman (1973) found in a survey with an extensive sampling of students that there was a direct connection between the learning styles of students and their choice of higher education. There was a strong relation between career choice and learning style among those planning to graduate in their main election; for example, those enrolled in the management programs tended to have a more accommodating and flexible style, while the learning style of those pursuing careers in mathematics could best be described as assimilating, commonly known as learning by rote. Some other styles of learning include but aren’t limited to meaningful learning, active learning, and associative learning.

The results also uncovered a trend where students who chose careers in agreement with their learning styles were more committed and achieved better grades in their respective chosen field than those pursuing careers unlinked to their learning preferences. According to Kolb, a key element of this theory is that not all people learn in the same way. For instance, some need learning activities involving concrete experiences (learning by doing), others require abstract sources such as reading or lectures on a topic, other people like to brainstorm, others demand planning actions, and some others learn by trial and error. It would therefore seem a good strategy on the part of teachers and planners to modify the curriculum and design activities that would alternatively accommodate or combine each of these different styles.

Kolb's theory is part of the mainstream postulate known as learning styles. The hypothesis on individualized learning styles was developed in the Anglo-Saxon world in the 70s. According to Kolb (1984), learning is a process of adaptation of the individual to the environment. Therefore, it is an instrument of personality development—hence the idea that the learning-teaching process should be based on experience as well as individualized, self-paced instruction. In developing Dewey's (1938) ideas, but also those of Piaget more broadly, Kolb develops his experiential learning model from the early 70s (Kolb et al., 1984).

Such a model "allows for the recognition and description of individual differences in learning styles. These styles shape behavior not only in traditional educational settings but shape an individual's basic mode of adaptation to the world about him" (Kolb & Fry, 1975, p. 56). The instructional designer should select or design learning activities and write teachers' guides in such a way that learners can live through the four stages of Kolb's learning cycle:

- an experience that takes into account the particularities expressed below;

- a document allowing the teacher to guide the student during the reflective observation. This document can take the form of a corrected document supporting the teacher when they direct the student toward the discovery of the correct answers, correct sequences to use, etc.;
- a document indicating the concepts to be drawn from the lived experience to which the teacher must refer during the conceptualization phase; and
- a new experience to give life to students that will enable them to validate, by experimentation, the new concepts they've just acquired.

The selection of this macro strategy implies that teachers are comfortable with the phases of thoughtful observation and conceptualization. Indeed, teachers play an important role for students when affording them an opportunity for feedback by sharing perceptions about each individual's ways of being or acting, all leading to self-realization and improvement.

The Learning Style Inventory: Technical Manual. Using the concept of *The Learning Style Inventory: Technical Manual*, Kolb (1976) establishes a relationship between specific (study or work) environments, on the one hand, and corresponding learning styles, on the other hand. The same concept allows him to identify which tasks are easier or which represent challenges for each learning style.

By putting together all of his observations and research findings on the behavior of individuals in the learning environment, Kolb produces the Learning Style Inventory (LSI) that provides detailed portraits of each style. These portraits include general cognitive characteristics, types of favorite activities, potential difficulties, strategies to help develop other abilities, and questions that learners of one type or another most often ask at a particular time.

The Learning Style Inventory also aims to provide teachers and researchers with a tool for measuring the cognitive characteristics of learners to determine their dominant learning style. As a measurement tool, the inventory is an elaborate questionnaire. The first three versions (LSI 1.0, LSI 2.0, and LSI 3.0) are based on four learning styles.

Table 1 represents the cognitive and behavioral characteristics of each of the learning styles, reporting on winning strategies and challenges.

Table 1

Learning Styles, Characteristics, and More

Learning styles	Characteristics	Questions asked and general attitudes that stem from these styles	Favorite learning activities	Challenges and activities that promote the development of other skills
Diverger A combination of modes: concrete experiences and reflective observation	is a visionary; learns through specific experiences; copes better in situations that solicit ideas; is interested in people and emotional elements; likes to observe instead of actually doing; receives information using all their senses; thinker by deduction;	Why would I do this and that way? If I did that, what would happen? What other possibilities can I consider? Should we follow the steps? What's the point of doing that? What would make me interested in that? What can it do for me? Attitude that stems from this	Activities that present challenges and stimulate their imagination: brainstorming role-plays simulations group discussions presentations	Offer a challenge by asking them to: think before giving their opinion; identify a goal and prepare a corresponding action plan; and put their ideas into words. Activities to develop other skills: practice drills homework

Learning styles	Characteristics	Questions asked and general attitudes that stem from these styles	Favorite learning activities	Challenges and activities that promote the development of other skills
	has a fertile imagination and varied interests; paralyzed by alternatives; produces a lot of ideas, little action; and doesn't check their theories.	style: *Convince me to listen!*		
Assimilator A combination of modes: abstract conceptuali-zation and reflective observation	is keener on abstract concepts than people; is determined and needs to prevail over things and events; makes impersonal decisions without taking into account the wishes of those around them and often offends others without realizing it; is able to take a lot of information and put it in a precise and logical order; gives more importance to abstract concepts and little to practical aspects;	Why do you have to add that? What are you saying, are you going with...? What is the connection to the concept we saw last week? What should I know? Attitude that stems from this style: *Give me the information!*	case studies theory class thinking exercises presentations quiz games problem solving research projects	Offer a challenge by asking them to: get involved in the fire of action; give their opinion or share their ideas without notice; and participate in short, fast-paced activities. Activities to develop other skills: simulations mental imagery to demonstrate

Learning styles	Characteristics	Questions asked and general attitudes that stem from these styles	Favorite learning activities	Challenges and activities that promote the development of other skills
	is able to create theoretical models; defines the problems; formulates hypotheses; compares alternatives; and is a thinker by induction.			
Converger A combination of active experimentation and abstract conceptualization modes	takes the time to observe and reflect; compares experiences with knowledge; puts ideas into practice; prefers to deal with things, often abstracting people; is practical and realistic; undertakes new experiments by following the steps one by one; learns by memorization rather than reasoning;	How do we begin with? What are the stages of the work? What do we have to do? Can I try? Attitude that stems from this style: *Let me do it!*	Activities that require well-defined routine steps: tasks laboratory practice logbook simulations group discussions role-plays visualizations case studies nondirected studies	Offer a challenge by involving them in activities: without a clear course of action or directive; where they have to consider more theory and general principles; where they have to consider several options or interventions at the same time; and where they have to build conceptual models from observations or readings;

Learning styles	Characteristics	Questions asked and general attitudes that stem from these styles	Favorite learning activities	Challenges and activities that promote the development of other skills
	is very good at looking at different perspectives to solve problems whose solution is unique; and evaluates plans and programs.			Activities to develop other skills: formulation of learning outcomes solving multiple solution problems
Accommodator A combination of active experimenta-tion and concrete experience modes	learns by trial and error; likes to take risks; likes to learn in the heat of the moment without thinking; the ability to move things forward; likes to participate in experiments, new projects with the collaboration of several people; tends to solve problems intuitively instead of trying to understand why; adapts on the spot to various circumstances; relies on others to get the information without taking the	How is this related to...? Can I have a concrete example? How am I going to go about it? If I change that, what will happen? Attitude that stems from this style: *Let's try another way!*	Activities that involve other people such as: group projects laboratory practice case studies practice and feedback problem solving	Offer a challenge by involving them in activities: where there are deadlines; where there are routine exercises; where they must not miss organization; where scattered efforts are applied and lack of an overview; where it's necessary to assimilate, analyze, and think instead of having a knee-jerk reaction; where they have to repeat the same activity several times to practice a

Learning styles	Characteristics	Questions asked and general attitudes that stem from these styles	Favorite learning activities	Challenges and activities that promote the development of other skills
	time to analyze by themselves; feels comfortable with people; is extroverted; can influence people and events; actively participates in learning; and is sensitive to the reactions and opinions of others.			particular technique; where they have to set goals and work steps; and where they have to listen with an open mind. Activities to develop other skills: relaxation observation of demonstrations

Note. Table 1 sums up the findings in Kolb's Learning Style Inventory prior to version 4.0.

Learning Style Inventory (New Version 4.0): The Nine Learning Styles. The latest version (Version 4.0) offers the classification of more subtle learning styles. It replaces the old four learning styles (divergent, assimilator, convergent, and accommodator) by nine styles: initiating, experiencing, imagining, reflecting, analyzing, thinking, deciding, acting, and balancing.

Characteristics of Kolb's Experiential Learning. "Learning is the process by which knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). With this in mind, the model described by Kolb defines the characteristics that describe experiential learning as follows:

- Learning is a knowledge construction process.

- Learning should be regarded as a continuous process dependent on experience and not an end result to be achieved.
- The primary goal of teaching is to stimulate research and refine the process of constructing knowledge, not to memorize large numbers of facts.
- The learning process demands resolution of two conflicting (but often complementary) modes of adaptation to the world: the physical/the abstract, interiority/externality.
- To learn is not the exclusive domain of a single specialization of the realm of the functions of cognition and perception. Learning requires the participation of the whole body: reflection, sensation, perception, and behavior.
- Learning is humankind's most effective means of adaptation to the environment.
- Learning requires interaction between people and the environment.

Types of Guidance. The Kolb learning cycle requires particular guidance, which varies depending on the phase that the student is experiencing.

The concrete experience phase requires little involvement on the part of the teacher. The goal is to let the student live through the experience. Of course, in situations where the student may be physically injured, the teacher must remain available to ensure the learner's safety. For example: First, I did this... The more I did that...

The following phases require special involvement on the teachers' part: They must guide learners in their reflection. Different strategies may be used to achieve this, such as Socratic dialogue, teacher questions, learner questions, discussions, and formative feedback.

In the reflective observation phase, the teacher must bring the students to reflect on the experience they have gone through. Learners recount their experience and, with the help of the

teacher, realize or deduce certain facts. For example: When I took the first step, something like… happened. When I took the second step, something else happened.

In the conceptualization phase, the goal of the teacher is to get the students to understand the concepts involved in the experience they have had. For example: Whenever I do this, that happens…

In the last phase, that of the formulation of hypotheses, the teacher must, again, guide students toward making deductions that can either be confirmed or infirmed in a new concrete experience. For example: So, if I want this to happen, I need to do that.

Index of Learning Styles

For this research, the Index of Learning Styles was chosen as the ultimate learning styles instrument, the bases of which were formulated by Felder and Silverman (1988); the resulting tool was developed and beta-tested 8 years later (Felder, 1996). Several factors motivated this choice; first, the ILS was originally designed for engineering school students and not for language specialists. However, it has been used by a wide variety of audiences, including language programs (Felder & Henriques, 1995). Further, the tool is relatively recent and still current, getting "close to a million hits per year and has been translated into Spanish, Portuguese, Italian, German, and several other languages" (Felder, 2019).

It has also been used in hundreds of studies that provide a basis for the meta-analysis undertaken by Felder and Spurlin (2005). Their article reports in particular the results of 24 studies carried out by different researchers in a variety of contexts that test the ILS. The full version is freely accessible online (in different languages, including Spanish), complete with a scale and interpretation grid. It only takes about 10 minutes to complete on average. It can fit on

a single double-sided sheet allowing for the quick capture of results onto the interpretation grid for analysis.

This ipsative instrument comprises 44 forced-choice questions, 11 for each of the four dimensions studied. Like most measuring instruments in this area, it starts with polar scales onto which results are plotted. In effect, the ILS is a tool that allows the evaluation of students' learning preferences, based on four dimensions (active/reflective, sensing/intuitive, visual/verbal, and sequential/global).

These learning styles were conceived by Richard M. Felder and Linda K. Silverman in 1987 and published in 1988. Subsequently, the questionnaire for this tool was programmed and substantiated by Richard M. Felder and Barbara A. Soloman (2001). The ILS has been modified and improved by Richard Felder (as it was initially made up of five dimensions), eliminating the inductive/deductive dimension and renaming the visual/auditory dimension to visual/verbal (Felder, 2002). It's based on 44 test questions with answers A or B. With this test, the students' learning preferences can be evaluated, allowing teachers and professors to take into account information pertaining to the trends and habits students may favor.

Sensing/Intuitive. Sensing students like facts and data, and like to solve problems following established methods; they don't like complications and seldom think outside the box. They're patient and meticulous with details and readily memorize facts. They dislike being tested on activities that haven't been covered in class. Such students may also underperform in subjects that don't apply to their immediate reality or are seen as irrelevant to attaining their career goals.

Intuitive students prefer to study principles and theories. They're innovative. They work fast, and they don't like repetition. They're usually good at grasping concepts and can solve

complex problems. They don't like subjects that follow an established order and those requiring a lot of memorization or routine calculations.

The normal state is to be a balanced mixture of both; being strictly intuitive could lead to careless mistakes. On the other hand, being highly sensing could lead one to depend too much on memorization at the cost of failing to grasp the message.

Visual/Verbal. Visual students learn and listen more when information is presented in a visual format (photos, maps, movies, etc.). Verbal students, on the other hand, will get more out of oral presentations.

Human beings are, generally speaking, mostly visual. The first proto-languages made use of mime and gestures to convey ideas and information, which is the reason why visual language is universal. Thanks to visual language, people with reading/writing problems, or the hearing impaired, can still learn, communicate, and exchange with others. Retaining images is easy for most and much easier to assimilate than texts. In the early formative years, children first learn by drawing, which makes learning enjoyable. Taking visual notes (using graphics, tables, etc.) will allow for enjoyment while learning; visual learning is a native ability of the human (and animal) brain cortex. One would do well to remember that verbal or written learning is a learned skill and a challenge for our brain; not everyone is either trained or well equipped for it.

Active/Reflective. Active students are inclined to retain and understand information better when they're given the possibility to work with it in some hands-on fashion (explaining it, discussing it, etc.). They will prove that something works without the need to think about, or document, it. They tend to prefer group work and find it burdensome to always be taking notes.

Reflective students prefer to think calmly about the information obtained so that before putting something into practice they will have correctly documented it. They prefer to work

alone, taking ample notes along the way. If one acts without forethought there's a strong risk of getting into trouble. Conversely, when over-reflecting, many things might never actually get done; it's all a question of finding a proper balance.

Sequential/Global. Sequential students prefer to follow a linear progression, following the logic from least to most difficult. They follow a logical path to problem solving and although they may not fully understand all of the activity; they may be able to do something about it as everything fits together logically.

Global students learn by leaps and bounds, picking up information almost randomly without seeing its connection but ultimately end up fitting the pieces together. They can intuitively solve complex problems in rapid order but may have difficulty explaining how they arrived at the correct answer. A sequential student may know a lot about one topic but may have trouble relating that knowledge to different fields, while a global student who cannot sequentially retain information may experience difficulties until capturing a global vision. A sequential student may not see the forest for the trees while the global one will abstract the trees to envision the forest.

ILS Questionnaire. The Felder and Silverman (1988) model was initially explained in a scientific engineering context and is similar to Kolb's Learning Style Inventory in the sense that it also revolves around four different dimensions of learning. It's therefore one of the models classifying learners according to the relevant methods they use to perceive and process information:

- learner participation (active/reflective);
- learners' perception (sensing/intuitive);
- the learner's preferred input (visual/verbal); and

- understanding of the content (sequential/global).

The combination of the four axes (or dimensions) makes it possible to describe the eight different categories of learners' preferences in parentheses above. Table 2 summarizes the characteristics of each style and the activities that could be put to use to help them learn better. The following types of learning can be ascertained among the student population using the Index of Learning Styles Questionnaire:

Table 2

Characteristics of Learning Styles According to Felder and Silverman

Styles	Characteristics of the learners of these styles	Types of activities that can help these styles of learners
Active/reflective	The active learner tends to apply and discuss the information and enjoys teamwork. The reflective learner opts more readily for silent reflection than discussion and prefers to work alone.	Introduce active learners to small group interaction where they can discuss topics or problems, ask questions, and explain to each other. Get reflective students to do reading summaries or lecture notes and discuss possible applications of the content.
Sensing/intuitive	The sensing learner retains facts in detail, leaning toward all that is practical and prefers to work with well-defined methods. On the other hand, they hate surprises and may be easily confused by the unexpected. The intuitive learner seeks the discovery of eventualities and novelties. They easily understand new concepts and abstractions; however, they don't like routine work and tasks requiring a lot of memorization.	Always relate the content of the class to its applications in the real world, work with clear examples, and most often try to move on to the practice of new concepts. Add comments to the class notes that better explain the reasoning behind things and encourage intuitive students to do several readings on special subjects and remind them during tests to read the questions carefully before answering them.

Styles	Characteristics of the learners of these styles	Types of activities that can help these styles of learners
Visual/verbal	The visual learner remembers most of what they see, such as images/photos, diagrams, demonstrations, and videos.	Enrich class content with visual tools; make course videos and recordings accessible to learners and use tables or other visual aids to clarify the content.
	The verbal learner retains oral or written explanations best. They're comfortable with lectures.	Encourage verbal learners to write summaries of the topic taught in their own words and present them to others in group work.
Sequential/global	The sequential learner would rather learn in an orderly and logical way. It's the equivalent of the assimilator in Kolb's Learning Style Inventory.	Arrange the classes sequentially; ask the learner to link new concepts to those already assimilated to follow their evolution.
	The global learner understands a subject in random fashion without making any links at the beginning. As soon as they grasp the general idea, they can solve complex problems without necessarily being able to explain how they did it.	Always start with a general overview of the topic being taught and remind the overall learners to establish connections between what they know already and what is unfamiliar to them, and then apply it to other related topics.

Note. Table 2 is based on the article "Learning and Teaching Styles in Engineering Education" by Felder and Silverman (1988).

Local

National Bilingualism Program (NBP)

The Ministry of National Education has, since 2004, implemented the NBP (Colombia Aprende, 2016a) as the cornerstone of its program for the improvement of policy and the quality of education at all levels throughout the country. It's also their main strategy for enhancing the international competitiveness of Colombian citizens and enterprises. Two basic precepts are put forward in the Program to achieve these goals: a) fluency in an FL, which is considered as the

fundamental prerequisite for any community wishing to partake of the global innovations on economic, technological, academic, and cultural levels; and b) the improvement of English communication skills for individual and collective growth. If Colombian people in general are to take full advantage of the largest repository of knowledge ever assembled, namely the Internet, we must be proficient in English which is the language of choice of over 25% of users (that is an impressive 1.2 billion people), with Chinese coming in at 19% and Spanish being a distant third at slightly less than 8% (Clement, 2020).

The main goal of the NBP is to enable citizens to effectively communicate in English at a level of fluency that would allow them to participate fully in the processes of universal communication and take advantage of opportunities in the global economy while also promoting cultural emancipation. The program specifically intends for all students to finish their basic secondary education having, at minimum, attained an intermediate proficiency level (B1 according to the basic standards of competences in English). Likewise, the English fluency of all of the country's English teachers is expected to at least reach an intermediate-advanced level or B2 according to the pre-cited proficiency standards.

In other words, the Ministry of National Education, within the framework of the National Development Program (set to run until 2022) and through the National Bilingualism Program, seeks to support the strengthening of learning and teaching of English in the educational institutions of Colombia. It's intended to benefit all via a strategic line of action and tools for teaching and learning that aims to develop, deliver, and accompany the use of different techno-pedagogical resources that promote English learning inside and outside the classroom.

To accomplish this, the initial goal was to procure and deliver, over a 4-year period, nearly 3.1 million English textbooks to primary and secondary schools in B and C ranked

schools, according to the results of the Saber tests. With the start of 1,697,386 books delivered during 2019, it's projected to reach 2,816 educational sites, corresponding specifically to the prioritization of B and C ranked schools (Colombia Aprende, 2016b).

For basic secondary, two text series were delivered:

1. *Way to Go* for grades six, seven, and eight. This series aligns with the progression of the *Suggested Curriculum Structure* and aims to support the development of communicative competences ranging from levels A1 to A2. Target schools in the B rank have received the series.
2. *English, Please! Fast Track* for grades nine, 10, and 11. This series of texts is conceived as a language learning acceleration strategy for ninth grade students who are at levels A0 or A1. *English, Please! Fast Track* seeks to take them from level A0–A1 to B1 within 3 years. Target schools with B and C ranks have received this material.

The Ministry of National Education owns the economic rights to these texts, as they were developed under various alliances with the British Council in Colombia and the Richmond publishing house in the United Kingdom. Regrettably, however, nowhere in these materials is there a trace of the term *learning styles*. At the date of writing, it is unclear whether this concept was of import to them during the development phase of these materials.

Bilingualism Kits

In 2016, the Ministry of National Education in conjunction with the Governorate of Valle del Cauca delivered 355 bilingualism kits to the public educational institutions of the department, each consisting of four texts: *Basic Rights of Learning*, *Pedagogical Principles and Guidelines*, *Guide 22: Basic Standards of Competences in Foreign Languages: English*, and *Suggested Curriculum Structure* (Gobernación del Valle del Cauca, 2016). The last of these was developed

by a group of professors and researchers from the Universidad del Norte Foundation and the Colombia Bilingual Team, whose main purpose has been to support the official English sector since 2014 (Colombia Bilingüe, 2016a). This book, unlike the others, is the first and only one in which practice is combined with theory by providing didactic examples that demonstrate the application of the basic standards of competences in English from the sixth to the 11th grade in actual class plans. In addition, it offers an open proposal of what and how students of these grades should learn as part of their bilingual education.

The curricular outline of this proposal, divided mainly into (1) scope and sequence and (2) syllabus, was taken into consideration during the creation of the activities presented herein. The first presents a matrix-like structure with components that outline the linguistic and communicative didactic progression of the suggested curriculum. The basic standards of competences in English are linked with the objectives, cross-cutting goals, and functions of the language; all of which are based on the proficiency levels taken from *Guide 22* and the Common European Framework of Reference for Languages. The knowledge and key English skills that students have the right and obligation to acquire and develop are indicated. Likewise, four modules are included according to the school grade and the thematic axes that guide the transversal training. The modules are democracy and peace, health, sustainability, and globalization.

It's suggested that all the courses focus on the same thematic nuclei during each term with an increasing depth and complexity in accordance with the respective grade, the age of the students, and their command of English. Because of this, the organization of the content is done through a spiral structure, allowing the thematic axes, the tensions of the language, and the communicative situations to be retaken in greater depth in each grade. Additionally, in each

mesh the suggested degree for the axis and title of the corresponding module is observed, the suggested time to teach and evaluate it, as well as the level of proficiency in the FL in accordance with the grade.

The goals outlined refer to the transversal training during the module. This gives indications of the type of tasks, projects, and problems that can be developed, each of which served as a reference for the activities that were generated as a product of this research. Then, one can appreciate the functions of the language, the suggested objectives, and the proposed basic standards of FL competence. There are also performance indicators; they detail the different actions students may take to attain the goal presented in the module. Furthermore, the indicators are split into knowing (knowledge as a basis for training), knowing how to do (the FL competence that one must have to achieve outstanding performance), and knowing how to be (the sense of responsibility).

Finally, there's a section entitled "suggested content," which outlines grammatical, lexical, discursive, intercultural, and sociolinguistic aspects that could be studied in each module. Thus, the book *Suggested Curriculum Structure* ends by emphasizing the point that teachers will have the opportunity to adapt it while taking into account their school context and the sociocultural background of the students. However, and despite the impact the book has had on the education sector, at no time does it refer to the student's learning styles, which definitely casts a shadow of uncertainty over the importance that this educational concept had during the drafting of said text. Another example of this, more closely dealing with the application of game-design elements to English language learning is discussed next.

Bthe1Challenge

To provide students with more learning tools during the development of their nonattendance academic activities during the COVID-19 pandemic, the Government of President Iván Duque, through the Ministry of National Education and its National Bilingualism Program, and in agreement with the British Council, developed an educational video game in English called Bthe1Challenge (Ministerio de Educación Nacional, 2020).

The application can be downloaded for free on tablets or cell phones with Android technology from the Google Play Store and is available for download on the iOS operating system. The game's mission is to recover several objects that hide the formula of a super food, created by scientist and philanthropist, Margaret Winter, a fictional character created for this story. To achieve this, players must travel to seven museums around the world where they will find a series of challenges, all related to their English learning. The challenges are mini-games that can be explored and completed autonomously by each student. Furthermore, students can select between the game's three levels of difficulty, namely basic, intermediate, and advanced—that is, levels A1, A2, and B1, respectively.

Students from official educational institutions can download Bthe1Challenge, register, and enter basic data thanks to the integration of this app with the Student Registration System (SIMAT) of the public education sector. This tool is also available for private school students and the registration process can be done under the free user option.

According to the British Council Colombia (2020), the general objective of Bthe1Challenge is to boost the English learning of adolescents and young people in public basic secondary and middle schools, through a tool for play and formative evaluation. In this regard, it also incorporates guidelines for English teachers in the formulation of pedagogical action plans

relevant to the learning needs of their students, based on the study of results from formative evaluation strategies.

This initiative combines pedagogical elements of English teaching with a method of educational gamification. This method is designed to afford each student a learning environment providing a user experience that mimics the video game world and, at the same time, a language teaching tool for English teachers and school directors. It offers aspects of familiarization with standardized tests and a control panel (dashboard) that can be used as a strategy for accompaniment in the classroom, be it virtual or otherwise.

This method aims at the integral formation of the student from a cognitive, social, and disciplinary perspective. The purposes behind this method are:

- to provide meaningful environments where the student feels motivated to perform learning activities;
- to instill confidence and self-knowledge into students about their learning process;
- to increase autonomy and empowerment through the design and monitoring of self-training routes; and
- to develop and apply cognitive skills (problem solving) in different situations and with different levels of difficulty.

It's worth noting that educational gamification does not consist of merely playing in class. It's rather about turning the educational act into an environment analogous to a game with a clear purpose of learning and benefiting the integral development of the students.

Some of the aspects that characterize a gamified learning environment are:

- the integration of game design elements (e.g., points, avatars, teams, leaderboards) into the learning experience in a way that makes sense and is attractive to the student;

- a model of progression, achievements, objectives, and stimuli that encourages the student to continue until the task at hand is completed; and
- real-time qualitative and quantitative learning results, i.e., feedback.

The conceptual framework that supports the gamified design of Bthe1Challenge is known as the Octalysis Framework (Chou, 2019) and is based on the eight impulses (core drives) behind human motivation. The core drives are the following:

1. Epic Meaning and Calling: can be evinced when a person believes he or she's doing something of great import like saving the world.
2. Development and Accomplishment: is when someone's driven by a sense of personal growth in some aspect which he or she eventually attains.
3. Empowerment of Creativity and Feedback: refers to the person's engagement in spontaneously wanting to figure things out and showcasing his or her creativity.
4. Ownership and Possession: as the name suggests, it's about having a sense of ownership over something, such as points, avatars, and virtual goods.
5. Social Influence and Relatedness: has to do with feeling part of a community.
6. Scarcity and Impatience: is the longing for something exclusive (a prize or reward).
7. Unpredictability and Curiosity: refers to the eagerness to discover what's next.
8. Loss and Avoidance: revolves around avoiding something that might negatively affect the person. For example, losing one's progress and having to restart.

As it can be remarked upon closer inspection, there's still no trace of learning style theories or models on this framework. As of today, there's no material or activity published by the government or any affiliated institution that is founded on the notion of learning styles—hence the novelty and significance of the present study.

Chapter Three: Theoretical Framework

The terms of reference presented herein set out the three fundamental concepts of this dissertation and are intended to establish its general framework.

The first concept to be discussed is that of distance learning and the distinction between e-learning and online learning to later introduce the notion of a learning platform/environment/system and the TPACK framework, which "suggests that content, pedagogy, technology, and teaching/learning contexts have roles to play individually and together" (Koehler & Mishra, 2009, p. 67).

The second concept the researcher shall delve into is that of instructional design, particularly the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) and other emergent ones, which are used to systematize the design and development of educational activities. The foundations of instructional design will be presented, along with the questions that support the design and development of online activities.

Finally, the third concept presented in this chapter will focus on the different pedagogical approaches to and factors affecting the learning environment that must be considered in making pedagogical choices and creating learning activities in the design and development phase of such an environment. Different approaches, such as cognitivism, constructivism, and social constructivism will also be discussed, as well as the language view.

To better understand what a learning platform is, the origins of distance learning will be presented, allowing for the introduction of the arrival of e-learning as a natural mutation of distance learning through the progressive integration of technological systems.

Distance Learning, a Brief History

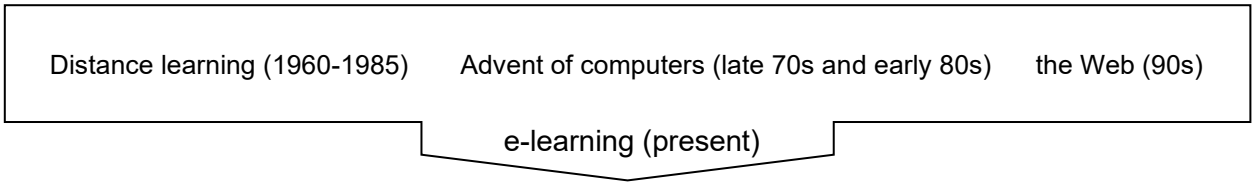
Distance learning is more than 100 years old. It dates back to 1840, the same year the postage stamp was introduced (Moore & Kearsley, 2011). Isaac Pitman developed the first ever distance education course in England using a shorthand method. This type of distance education, based on manuscript correspondence, became so popular that many courses were developed.

The period between 1960 and 1985 marked the beginning of distance learning as a university teaching method. In fact, distance education was then enhanced by the use of radio, telephone, television, and fax, which marked significant advances in this type of instruction (Simonson et al., 2009). The latter technologies gradually increased accessibility to knowledge and changed the way people learn nowadays.

The advent of computers in the late 70s and early 80s and the Web in the 90s added even more potential for growth to distance education by allowing for real-time interactivity between the teacher and the learner (Bates, 2005). The arrival of ICTs thus simply confirms the logical evolution of distance education toward online learning. The benefits are almost instantaneous and are greatly appreciated by the teaching and professional niches as well as the adult continuing education realm, which is no exception to this reality.

Figure 1

What Led to e-Learning



Note. Figure 1 provides a chronological overview of the natural evolution from distance learning to e-learning.

On the Concept of Distance Learning

Although it's difficult to find a common definition of distance learning among the authors consulted, it's noteworthy though that they all define it by certain recurrent factors, such as space (face-to-face courses), time (deferred teaching and learning activities), or according to the use of techno-pedagogical resources. As Keegan (2013) suggests, distance learning can be defined in opposition to traditional, intramural, or face-to-face instruction, as it frees the learner from space and time constraints through a clear break between teaching and learning activities.

Students are no longer required to be present in the classroom to access course content, thus abolishing the geographical and temporal constraints. This form of knowledge dissemination and acquisition thus allows students to self-study, at their own speed, without having to travel and without being in physical contact with a teacher. Although the aspect of distance appears to be a key feature of the benefits of distance education, Simonson et al. (2009) propose an expanded version of the concept of distance education. In addition to the notion of spatial and temporal distance, they introduce three other aspects: psychosocial, technological, and socioeconomic barriers to access to information, which are breached thanks to the globalization of instant communications.

For their part, Moore et al. (2011) present a definition of distance education based on the five aspects mentioned above. Distance education is most often described as an economical mode of instruction that uses technology to bridge the space-time distance, thus improving accessibility in an ideal of democratization of education.

According to Bates (2005), education and learning have always been influenced by technology. Whether one thinks of writing, printing, audiovisual, computers, and now the

Internet and the Web, the world of education and training has benefited from the contribution of advances in the means of communication.

Simonson et al. (2009), on the other hand, lean toward a more general definition that encompasses all the factors raised above. As an educational practice, it favors a learning approach that brings knowledge closer to learners. Learning is thus considered a mental representation and a means of understanding the world.

Distance learning is therefore a means by which students access knowledge by building on prior knowledge, allowing them to construct a new representation of it. This new construct enables them to better understand the world, expanding their reality beyond their immediate socioeconomic and geopolitical boundaries—globalism is the new real.

e-Learning

Born out of distance learning, e-learning is clearly linked to the evolution of ICTs. Indeed, Pavel et al. (2015) agree that this form of learning is a natural application of recent technological advances sparking a parallel evolution of educational technologies. Known as e-learning or Web-based instruction in the Anglo-Saxon world, e-learning has a plethora of definitions. Although it's difficult to find a consensual definition in the literature, Downes (2005) suggests, in the spirit of simplicity, that e-learning refers to the use of learning technologies in the form of online courses. By contrast, Hanley (2004) considers it as a spatial and temporal decompartmentalization of the classroom and by what happens when education is offered and supported by networks such as the Internet or intranets.

For her part, Alexander (2001) refers to it as a process by which the learner acquires knowledge and skills. Thus, e-learning uses multimedia and Internet technologies to increase the qualitative and quantitative aspects of knowledge construction and skills development through

access to services and resources as well as collaborations and remote exchanges. As for Lin (2011), e-learning alludes to the use of computer technologies and the Internet to provide a vast array of solutions to facilitate learning and improve performance, not only in distance learning but in the classroom as well.

TPACK Model

TPACK stands for Technological Pedagogical Content Knowledge, a model developed by Koehler and Mishra (2009) and largely based on Shulman's previous work (1986). It provides a representation of technology integration in the classroom, describing how the teachers' knowledge of technology relates to their didactic and pedagogical savvy for the integration of technology in teaching.

The TPACK model is deeply rooted in three areas of teacher's knowledge: knowledge of the content to be taught, of pedagogy and, equally important, up-to-date knowledge of technology.

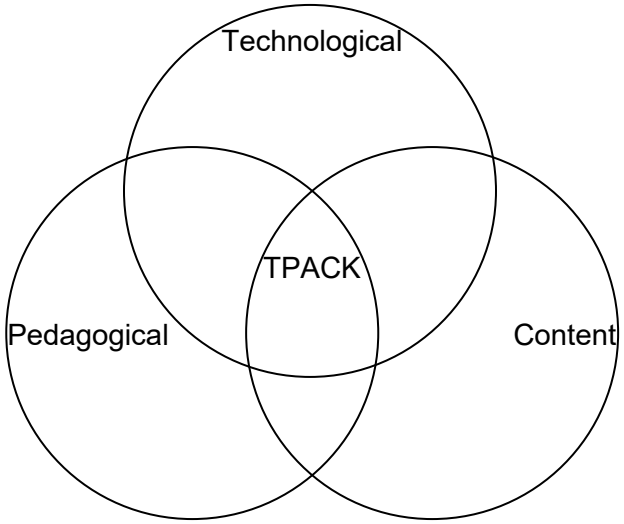
Content knowledge (CK) refers to competence in the subject being taught; it's dependent on the subject and the grade level.

Pedagogical knowledge (PK) is in-depth knowledge of the methods, practices, and processes of learning and teaching.

Technological knowledge (TK) implies not only digital literacy but also the dexterity and comprehensive understanding of information technology in terms of data processing, problem solving, and communication.

Figure 2

Logics of the TPACK Model



Note. A deep understanding of the interactions between and among the bodies of knowledge; i.e., content (CK), pedagogical, (PK) and technological (TK), are essential for the construction of the teacher's knowledge base, leading to an efficient delivery of input via modern interactive networks and applications.

The interactions between and among such three logics are particularly important in the TPACK model:

Pedagogical Content Knowledge (PCK) is the adaptation of content to teaching.

Technological Content Knowledge (TCK) relates to the understanding of how technology and subject matter influence and either constrain or enhance one other. A particular technology may, for instance, alter the kinds of representations that learners establish in a specific subject and thus the importance for teachers to make out the most suitable technologies to address a specific content.

Technological Pedagogical Knowledge (TPK) refers to the way in which teaching and learning may change as a result of the choice of a technology or the way in which it's used. For

example, the interactive whiteboard, as designed, will induce certain types of uses and interactions between teacher and students.

Technological Pedagogical Content Knowledge (TPACK): Adapting Lee S. Shulman's (1986) Pedagogical Content Knowledge (PCK) model by adding the technological dimension, the TPACK model makes it possible to analyze the relationships between technology, pedagogy, and content to induce an optimal effect on learning. For the teacher, this model also makes it possible to identify the strengths of teaching and learning strategies, as well as the improvements that can be made in such strategies. In the end, it's a model that allows for the integration of technology into teaching with a focus on coherence with pedagogy and content (Wong et al., 2015).

This construction of knowledge is possible insofar as it's based on a rigorous process that allows for the development and maintenance of a learning environment. The knowledge must be meaningful to the student. Content adapted to reality follows a pedagogical logic that adds relevance and richness to the instruction. Finally, the consideration of different learning styles leads one to opt for pedagogical trends or paradigms that promote the appropriation of content and learning by the student. The learning environment must take into account this pedagogical logic to ensure effectiveness and versatility in serving the target audience's needs.

In addition, the technological logic gives such an environment certain advantages. Indeed, e-learning is perfectly in line with the new ICT paradigm that places the students at the center of the construction of their knowledge base. e-Learning, however, is not only becoming a way to facilitate access to knowledge by freeing instruction from the constraints of space and time, but also a means by which learners can engage, individually and in groups, in a process of knowledge construction through which they can develop higher-level skills (Liaw et al., 2007).

On the other hand, Hubalovsky et al. (2019) assert that the majority of e-learning courses are geared to reinforce intellectual skills; the cognitive domain being especially well suited for e-learning. For these authors, in the cognitive domain, the development of thinking skills requires interactive learning activities, since these skills are best acquired by doing. The implementation of a learning mechanism can be a considerable asset to facilitate learning and improve academic performance.

Learning Platform

These two terms are frequently used in the literature. A simple search on the Internet using the keywords *learning* and *platform* confirms not only their frequent use but also the multiple meanings given to these two words. As Cacheiro-Gonzalez et al. (2019) point out, the term platform is often used in education to polysemically refer to "a way of structuring the instruction that fosters optimal organization of content and interaction with students" (p. 75).

In other words, a platform is an instance, a social place of interaction and cooperation that has its own animus, its own physical and abstract processes, and its own modes of interaction (Henry, 2021). Park and Kim (2018), for their part, refer to it as a learning system—that is, a coherent set of procedures, resources, strategies, and subjects interacting in a given context while trying to fulfill specific objectives, which offers an interesting solution to knowledge construction.

Dilshad (2017) opts to use the term collaborative learning environment because the term platform masks all of its components. However, she recognizes the common meaning of the two terms when the learning platform is designed and developed in such a way as to articulate a set of human, organizational, technological, and pedagogical resources in order to effect learning. Kabilan and Zahar (2016) make the same observation and see a similarity between the two terms

but acknowledge that the term platform has become an essential denominator that is used in a good and current fashion, seeking above all to highlight that one is fully aware of the complex interaction between various parameters.

The terms platform and environment can take on a common meaning insofar as they're concerned with the articulation of different elements with each other to cause someone to learn something. As Huang et al. (2012) point out, in order for a learning environment to be interesting, one must put oneself in the student's shoes, consider learning as a process, take into account different learning styles, and refer to different techno-pedagogical resources to offer an adaptive learning system that is as flexible as possible. It's worth mentioning that the use of the concepts of learning platform, learning environment, or even learning system have a common ground nonetheless.

Learning Platform Variables

For a learning platform to be pedagogically sound, it must have an instructional design framework (Beldarrain, 2006), which allows for the analysis, design, development, implementation, and evaluation of online courses, activities, or environments. Moreover, the concept of a learning platform consists of three main components: interface, specifications, and learning activities. In 2015, Andreicheva and Latypov characterized such variables by an explicit division of facets. The interface, for instance, makes it possible to lay out more precisely the teaching materials or documents necessary for the training to be carried out. Such an interface helps support those who disseminate training by specifying the documents, techno-pedagogical tools, the various means of communication and services, and the places of dissemination.

The specifications focus on the pedagogical aspect of the learning platform. It brings together a wealth of information needed to design a learning environment. It specifies the general

competency as well as the specific objectives to be achieved to attain that competency. In addition, it specifies the content to be covered and other teaching materials needed for the instruction. It presents the framework segmented into events and learning units. Such specifications also indicate the learning activities used in the instruction.

The activities center on the didactic aspect. This stage is a serious and important one in which extensive forethought is required to develop activities that correspond to the pedagogical approaches and content selected.

The learning platform provides the choice of ICTs for the activities and locates the main resources that will need to be accessible to each of the users. It involves setting up the required technological and organizational infrastructures and designing various processes for maintaining the quality of learning and teaching. For example, the use of Google Classroom platform opens up a multitude of resources, such as tools (questionnaires), means of communication (e-mails), or services (calendar) for formative purposes, which in turn are selected for their relevance and for the needs of the target audience. Moreover, with different learning styles in mind, it "can offer valuable advice and instructions to students and teachers to optimize students' learning process" (Truong, 2016, p. 1185), an opinion also shared by Gaytan and McEwen (2007).

One caveat: Although curriculum and goals must be comparable in all learning environments across a given territory, designers and planners must avoid producing rigid templates with inflexible rules of application. Such programs cannot be seen as one-size-fits-all. The local school and teachers at ground zero must be given the tools and have the necessary flexibility to choose the methods they will ultimately use to cover the curriculum and attain the expected goals, in keeping with local resources, socio-economic imperatives, and the specific needs of their charges.

These procedures apply to every phase of the lifecycle of a learning environment, whether they're shorter lessons, training courses, or learning activities lasting a definite period of time. This serves mainly to enhance the teachers' competence and awareness to enable them to consider and mobilize existing resources to metamorphose the educational sequences into a form more suited to the target audience, what Brown (2009) calls the pedagogical design capacity. This concept can help to understand the reasons why two teachers with the same disciplinary knowledge and having the same commitment to resources can lead to very different applications of the same curriculum. Brown also suggests that the assessment of this competency be based on criteria such as the personal engagement of the teacher, the achievement of stated objectives, and the conformation to the main educational objectives.

Continuing education in connection with working on institutional resources and adapting the curriculum to effective practice could bring development of teachers' skills in the following areas:

- Understand the intentions of learning environment designers.
- Adapt institutional resources.
- Test different ways of using the same resources.

Davis and Krajcik (2005) are concerned with the way in which institutional resources could become educational curriculum materials or pedagogical resources (educational here designating the development of teachers, not students), specially designed to include content likely to develop teachers' knowledge and skills (Drake et al., 2014). Institutional resources should in fact be designed to help teachers anticipate students' reactions, develop their didactic knowledge, adopt a global perspective on the semester/school year, and highlight the underlying ideas to increase their capacity to adapt to the curriculum prescribed.

Learning Paradigms

Hypermedia Self-Study

This learning paradigm requires advanced techno-pedagogical resources, since the student accesses multimedia content on the Internet in the case of bandwidth-intensive audiovisual material. The term hypermedia refers to the multiple hyperlinks presented in the content that can be consulted throughout such a material. Calcaterra et al. (2005) point out that each student can navigate at their own pace, and to the specific content that is most meaningful to them, according to their preferences. As its name suggests, this paradigm focuses first and foremost on individualized learning by a single student. There are no time or place constraints here. The student can therefore freely access the content. This type of model appears to be very popular today and opens up a set of courses and programs that constitute one of the basic elements of a virtual campus.

Online Education

This learning paradigm also makes use of hyperlinks, the Internet, and the media. However, it differs from other models in that the content is managed by the educator who makes presentations and coordinates offline—that is, asynchronous interactions with a group of students (Yamagata-Lynch, 2014). The students can move at their own pace and interact with other participants using digital resources such as discussion forums, emails, or blogs. Teachers play an important role in this process, since they can steer the students' learning in certain directions and elicit interaction between students.

Virtual Community

It's characterized by a social participation approach to learning (Cabero, 2006; Shea et al., 2019). It's also a form of collective learning within a group of people who, in synergy and

complementarity, implement a common, contextually meaningful, and relevant process of skill development, training, problem solving, or local development. Community members can then use the same asynchronous means of communication used in e-learning; this is to be complemented with synchronous communication, such as video and audio-conferencing, which allow for real-time discussions and exchanges between participants or face time, in e-parlance.

This paradigm does not necessarily involve a teacher or trainer but rather a facilitator. Usually, the facilitator might or might not have as much knowledge as the students but is well equipped to facilitate interaction between them. Students can share information and compare practices through case studies. From there, they can solve problems as a team or engage in projects that will give them the opportunity to construct new knowledge or develop skills.

Instructional Design

The term *instructional design* appeared in the 60s (Schott & Seel, 2015) when American researchers were developing a systematic method for planning and developing teaching. The modern concept of this systems approach has gradually developed thanks to the contributions of various fields, particularly psychology (Sharif & Cho, 2015). Moreover, in the words of Reiser (2001), instructional designers "often use systematic instructional design procedures and employ a variety of instructional media to accomplish their goals" (p. 53).

Instructional design is then seen as a systematic approach that "could be used to guide the design and development of instructional materials" (Khalil & Elkhider, 2016, p. 149). Such a systematic approach is generally broken down into five phases: Analysis, Design, Development, Implementation, and Evaluation, better known by the acronym ADDIE, now considered an instructional design model, among others that will be gradually presented in this chapter.

Foundations of Instructional Design

The origin of the first foundation of instructional design dates back some 100 years when John Dewey sought recognition of a hinge science between learning theories and pedagogical practice (Dewey, 1900). Since then, many studies have been carried out by a number of researchers, thus making it possible to recognize the more scientific nature of educational design to this day. In support of this work, pedagogical design can now be defined today as the set of theories and models that make it possible to understand, improve, and apply teaching methods that promote learning.

As already stated, the design of a learning activity onto learning platforms like Google Classroom should be considered as a complex environment involving the interaction of several interrelated sub-elements such as objectives, pedagogical strategies, assessments, media, and educational resources (Heggart & Yoo, 2018). The instructional design process allows the interaction of these sub-elements to be considered using a model, such as ADDIE, which includes different phases or life cycles.

Design and Development of Online Activities

Indeed, instructional designers have long since invested many hours of work in questioning the design and development of their online activities. What are the target skills in such activities? What content is needed to develop the intended competences? What are the most significant learning activities? How many hours are required for each of the learning activities? Are there formative and summative evaluations? What is the weighting for each?

This form of rationalization of the activity development process, which can be elevated to an art form, has been the buzz of everyone’s conversation since the arrival of ICTs. Thanks to numerous studies and research in the education world, teachers are now increasingly aware of

the pedagogical impact that their course design processes and their choice of pedagogical activities have on their students' learning (Baldwin & Ching, 2019; Blau et al., 2020; Cabero et al., 2018; Jenkins, 2014). One needs only to look at the directory of the network of ICT counsellors to understand the importance given to ICT in Colombian universities and educational networks overall. However, before adding ICT to any learning platform, it seems essential to refer to a systematic method on which to base the design of an educational project before its dissemination. As Romi (2017) points out, online learning is now the result of a rational approach supported by a systematic design adapted to the institutional context.

ADDIE Model

The next concept to be delved into is the ADDIE model, along with its foundations, outlining the different steps that support the design and development of learning activities. A few instructional design models will be presented and explain the choice of model used to systematize the design and development of such activities.

Emergent Models

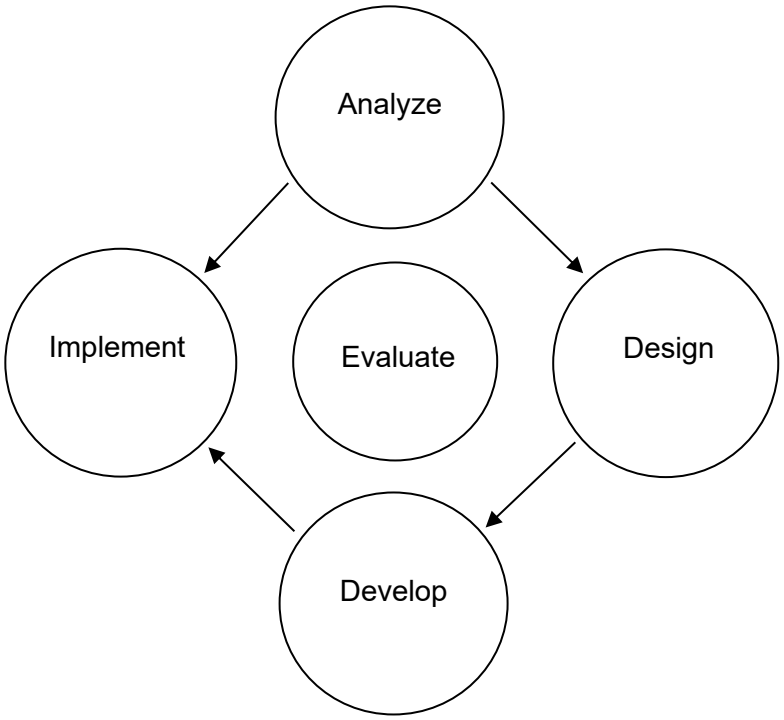
There are countless models in the literature that stage an instructional process. Some examples include the Seels and Glasgow's model (Özer Şanal et al., 2019). This model proposes a chronology from the analysis of a problem to the dissemination of a platform. Furthermore, the process is initiated by problem analysis. This is followed by the needs analysis stage, where the target learning outcomes, competences, objectives, strategies, activities, and content in general are established. The instructional design phase focuses on the conception of learning activities. The implementation and evaluation phase aims to disseminate and evaluate the overall effectiveness of the process (Connelly & Miller, 2020). It should be noted here that this phase can influence the further development of the learning activities.

In Clark's model (Allen, 2006), on the other hand, each of the five stages of the model addresses a specific aspect of the instructional design process (Analysis, Design, Development, Implementation, and Evaluation). Unlike Seels and Glasgow's model, this model adopts a circular path and encourages a return to an earlier phase throughout the process.

For the purposes of this thesis, the generic ADDIE model, as shown in Figure 3, was repurposed, and it was used, as in introspection it can prioritize the educational aspect and take little account of mercantile considerations. Furthermore, it can be narrowly focused on the target audience, i.e., Colombian basic secondary and middle school students and teachers.

Figure 3

ADDIE Model



Note. The ADDIE model relies on each stage being done in order with evaluation being at the core of the process.

Pedagogical Factors

Although learning platforms can hardly do without ICTs, it is important to note that with or without ICTs, communication remains at the heart of the teaching/learning equation. This is at least what Haugen (1992) and Istrate (2009) argue, suggesting that the nature of pedagogy is first and foremost a social and communicative activity. Thus, a work or exchange organization is established between the teacher and the student.

The teacher works in direct and personalized interaction with the student. This means that, whatever the subject to be taught, learning about that subject invariably involves a communicative interaction between two pedagogical poles: teacher/student. The teacher will choose the appropriate pedagogical measures or techniques in order for knowledge construction to take place. This leads one to define pedagogy as a set of means used by teachers to achieve their ends in interactions with learners. Is it not active pedagogy to do everything possible to facilitate interaction in learning?

In effect, communication appears to be an essential factor in pedagogy. It seems that in modern times the mere presence of ICT will not be a guarantee of learning success. The educational world has moved to another stage where it has become apparent that it is the uses of technology in education that make the difference and not the technologies themselves.

Indeed, the implementation of learning activities must go beyond the simple reflex of integrating ICTs into it; better still, one must reflect on the most appropriate way to use them for learning to increase their effectiveness. Based on the pedagogical conception proposed by Marton (1996), it now seems easier to put into perspective a reflection on the pedagogical factors at the core of such activities. For the latter to be efficient, it must respect the factors that will be discussed in the following paragraphs.

Motivation

Motivation should be the starting point of any endeavor. Motivation must be generated and instilled in the student; otherwise, any learning enterprise is futile. Self-starters are few and far between; most people must be convinced of a personal benefit in order for them to willingly participate. Moreover, even when one has succeeded in creating motivation, it has to be sustained to the end. Chances are better if one knows how to maintain motivation by informing and explaining the situation that will be experienced, situating and linking it to content, creating an expectation, and involving the student from the start. Motivation also acts on the initiation, direction, intensity, persistence, and frequency of the student's behaviors or attitudes (Geen, 1995).

Rhythm

Not everyone learns at the same speed. Therefore, the learning activities must have some built-in flexibility and give sufficient latitude to respect the student's rate of understanding and integration.

Participation

Everything possible must be done to keep the student active by engaging their senses (e.g., vision, hearing, etc.) as much as possible through dynamic activities. The techno-pedagogical resources of the learning environment must encourage participation through exercises, questionnaires, reflections, exchanges, or self-assessments.

Interaction

Pedagogy is first and foremost a social and communicational activity, i.e., a set of interactions mediated by languages between teachers and learners, which are more or less institutionalized depending on the era and society. Dialogue and sharing between the actors of

the learning activities (on a student/student axis as well as student/teacher) are among the keys to success.

Perception

It occurs through the sensors that pick up physical and psychological stimuli. Simple and perceivable indications (e.g., images, sounds, or signals) can increase the efficiency of the learning activities.

Organization

The design of learning activities must adopt an articulated and user-friendly visual presentation that respects the pedagogical essence. An appropriate balance must be sought between linguistic and visual modes.

Structure

The structure of the content must be consistent by highlighting the main links to the basic standards of competences in English, proficiency levels, goals, and methods. In fact, mapping these links will facilitate perception, on the one hand, and increase understanding and receptivity, on the other.

Methods

Methods should take into account certain pedagogical trends, such as cognitivism, constructivism, or social constructivism. Several methods are possible, but the crux lies in choosing the most appropriate one to effect the learning offered through the activity in question.

Strategies

Strategies must encompass and make efficient use of all that the students have at their disposal in a learning situation. In other words, the learning activities must be accessible to

students in terms of procedures. It's also a question of both the material and human resources required to accomplish the learning activities in question.

Guidance

Clear markers or instructions should help to orient oneself through the course of the activities. These indications are a form of GPS (global positioning system) for the student.

Activities and Experiences

Adhering to the constructivist trend, it's essential to foster the construction of students' thinking by encouraging frequent interactions as well as varied and coherent content that will become meaningful to them and promote learning. Indeed, alternating applications and exercises will promote interest and that quality learning is not built on a simple transfer of the material taught but on the personal construction that the student will undertake.

Awareness of Results

It is crucial to include a mechanism (e.g., rubrics) to provide quick feedback through the learning platform, which makes it possible for students to verify and validate their answers or the quality of their work or exercises.

Knowledge Translation

Testing should be encouraged to afford students the opportunity to apply the newly constructed knowledge and developed skills. Practical exercises are the key to fully integrating new knowledge. It isn't enough to know of a good bread recipe; one must be able to bake an actual loaf and have a taste of the resulting product.

Human Contact

While human contact is one of the recognized strengths of face-to-face classes, it appears that online learning activities, which adopt techno-pedagogical resources promoting human interaction, have similar benefits. In the end, human contact is a hallmark of student learning.

Pedagogical Trends

Following Piaget, research and work on cognitive psychology have provided knowledge disseminators of all varieties with a better understanding of the phenomenon of learning based on different mechanisms of student understanding, perception, conception, conceptualization, and memorization (Hinde & Perry, 2007; Langford, 2018). The advent of the theories on constructivism and social constructivism highlights the importance of the student's active role in learning and the social nature of knowledge construction—hence the absolute necessity to offer ICT-assisted learning.

In this mode of thinking, learning activities must be designed to help students construct knowledge that is an intimate reflection of their personal experiences. In other words, for constructivist pedagogy, the construction of knowledge has value only if it takes into account the concrete reality of the learner (Amineh & Asl, 2015; Hendricks, 2003).

Cognitivism

Cognitivism is a scientific research movement whose adherents assert that thinking is a process of information processing (Mandler, 2002). This psychological current, combined with ICT, can strongly influence pedagogical strategies. Indeed, as pointed out by Kang et al. (2011), the rigid organization known as a classroom or laboratory induces more transmissive uses, whereas the availability of techno-pedagogical resources in these same places generates more creative uses based on the rediscovery and personal construction of knowledge.

The student is no longer seen as a set of responses to external stimuli (behaviorism) but rather as a processor of information (Warin et al., 2011). Thus, cognitivism, which stems from contemporary learning theories, posits that the student is the main actor in the knowledge construction process. The learning outcomes no longer depend exclusively on what is presented by the teacher but relies as much on the nature of the information presented as on how the student deals with it. New pedagogical practices are taking hold and are taking more account of the cognitive, affective, and social dimensions of the student. Learning thus becomes "a willful, intentional, active, conscious, constructive, and socially mediated practice that includes reciprocal intention—action—reflection activities" (Jonassen, 2000, p. 2).

The pedagogical approach will no longer focus simply on the what to learn, but also on the how, the why, and the interrelation of these factors at play in the learning process. For Ertmer and Newby (1993), cognitivism places more emphasis on the internal process of learning and constructivism on the active construction of meaning, thus transforming the pedagogical relationship into a form of interactive dialogue between students and teachers.

Despite the diversity of the approach, the coherence of the cognitive paradigm is given here by a set of common principles on cognition and language that differentiate this approach from others, such as the structuralist and generativist. A summary of these basic principles could be made around the following points:

- Language is intimately connected to other areas of human cognition: environmental, sociocultural, psychological, etc. In fact, human cognitive and social abilities couldn't have expanded much beyond that of great apes in the absence of language; civilization is an artefact of the parallel development of language and cognition.

- Cataloging or conceptualization processes reflected in the language are adapted to one's own physical experiences both in relation to oneself as well as to the outside world.
- Linguistic units are reflected in language giving rise to conceptual structures: radial networks, mental images, and cognitive relationships of schematicity and prototypicality, which determine diffuse boundaries between linguistic categories. Metaphorization processes are an integral part of the linguistic organization.
- Grammar is driven by semantics. As semantics evolve over time, in step with conceptualization differences brought on by sociocultural change, so must the grammar evolve to reflect the new reality. Due to conceptualization differences, the grammar rules are specific to each language, not universal.
- Given the interrelation between the various components of language, in addition to the interrelation between language and other fields of human cognition, sharp linguistic dichotomies, such as the separation between morphology, lexicon, and syntax must be ruled out as well as linguistic knowledge of extralinguistics.

Constructivism and Social Constructivism

The use of ICTs through learning activities provides opportunities to change certain pedagogical practices by allowing the students to place themselves at the center of their learning. Honan (2008) points out that ICTs break down the barriers between classrooms and lead to new modes of instruction based on new forms of interaction between the teacher and the student. Efforts must therefore be made to foster pedagogical approaches other than behaviorism, which focuses more particularly on students' knowledge and skills, leaving it to the teacher to ensure the transmission of information.

Eberwein (2015) identifies Piaget as the father of constructivism. Piaget's work gives rise to a new pedagogical trend that recognizes learners as constructors of their own knowledge from a context that is meaningful to them. For constructivism, knowledge is individual fabrications resulting from personal experience (Brown, 2006). The students integrate new knowledge into what they already possess by assimilating it.

Distance learning based on a constructivist pedagogical approach promotes student motivation by introducing meaningful, real, visual, and dynamic learning contexts by assigning tasks that depend not only upon the use of background knowledge or already acquired skills but also the deployment and integration of new knowledge (Mattar, 2018). This pedagogical approach also requires students to participate more actively by working with their peers.

For Boghossian (2006), learning, according to the constructivist paradigm, is defined as an information processing activity. The principles relating to information processing are essentially those corresponding to the nature of learning. In other words, students learn to learn and to extract/infer knowledge in order to construct new knowledge.

The first principle implies that learning is initiated through the links between new information and background knowledge. The second principle is that of knowledge reorganization due to assimilation of factual knowledge and conceptual understanding, since new information may either validate or invalidate previously learned facts. The third principle involves cognitive or metacognitive strategies as much as self-monitoring activities, e.g., asking for peer feedback and being on task (Brien & Eastmond, 1994).

However, since knowledge is not the same for everyone, it cannot be considered uniform and universal. To a large degree, knowledge corresponds to subjective and inner realities

(Tashimova et al., 2020). Thus, social constructivism (derived from constructivism) proposes that the student structures and organizes knowledge based on prior experience and knowledge.

Furthermore, Vygotsky (1978) attributes learning to pedagogical activities with potential problems for students. From a social constructivist perspective, students are forced to engage in social exchanges with other students to confront their representation or understanding of things. From there, they drift toward another representation. The emphasis is on interaction with others to foster the construction of knowledge (Raynaudo & Peralta, 2017).

Akhrif et al. (2019) assert that studies support the thesis that people in general learn more by collaborating with peers and that the ensuing interactions enrich the quality of learning. As these authors assert, “In an academic environment, team building plays a key role in the acquisition of knowledge and skills through courses and practical work” (p. 53).

Language View

The vision of a language herein is essentially defined as a network of structures dethroned by that of a language of communication integrating speaker, interlocutor, intention, and impact of speech acts. Without redefining all the components of what is now called incongruity, it seems important to recall the essential distinction, in a perspective of pedagogical use of the computer, between linguistic competence (systematic knowledge) and communicative competence (integrating the many facets of communication: identifying the context, participants, roles, etc.). If the computer lends itself more naturally to the development of linguistic competence (grammatical and lexical work, training in oral or written comprehension, in particular), its use in the context of communicative competence does not come without posing a certain number of questions and technical problems (taking into account open questions, synonymy or polysemy phenomena).

Chapter Four: Methodological Framework

This chapter addresses the methodological choices made in the context of this dissertation. In addition, the data collection techniques and instruments will be described along with the approach to data analysis. The means to ensure rigor and scientific validity as well as ethical considerations will also be outlined.

The integration of new technologies implies that one takes into account the evolution of the status and role of learners in this new learning situation brought about by the arrival of the computer in the language class. It also assumes that, from an organizational point of view, educational technology is seen to be the axis to more precisely handle actions and outcomes in FL learning.

The multiplicity of educational software and the mixed success that people can encounter leads one to believe that the criteria used for their design are largely dominated by commercial rather than didactic considerations. Minimal development time, lack of coherence between the chosen media and the objectives, outdated or absent pedagogical and linguistic vision, seems to be the case for a significant proportion of these pieces of software (Gabriel & Richtel, 2011). These tools will truly become efficient only when a sufficient database of coherent and up-to-date activities are produced by, and made available to, both teachers and students.

Approach and Research Methods

For several decades, the methods adopted by the Ministry of National Education have sought to systematically associate theories (linguistic and didactic) and techno-pedagogical resources, and this is what this research intends to do. For example, early on, the method known as audio-oral or audio-lingual, in response to structural and behaviorist approaches, favored the structural exercise (drill) that was an ideal mode of expression for the language laboratory. As a

result, in the early days, the structural-global or audio-visual methodology made much use of the slide projector, in conjunction with the tape recorder.

Since the late 70s, an approach called notional-functional appeared in France (Goldstein, 2014). The name of this concept may be easier to understand under its Anglo-Saxon label: communicative approach. This new methodology favored, at first, the video recorder, then, as technology advanced, the first generation of computers which led to the bitter failure of the "Computer Plan for All" (Williams, 1982) the effects of which are still felt in the mind of teachers worldwide.

The researcher believes that the respective successes or failures in relation to the introduction of technology in language teaching stem from the coherence (or lack thereof) of the combination of three elements that could be considered as the three basic components of any learning machine: linguistics, didactics, and technology. The effectiveness of such a machine depends, in fact, on two main factors:

- The validity of the underlying theories: that is, their ability to make sense of a reality, the complexity of which one gradually perceives. Is language a finite set of structures (Bloomfield [1933] and structuralists), a generative potentiality of forms (Chomsky, 1956), or an elaborate combination of psycho-sociological and linguistic elements (Bakhtin's theory of enunciation [Lazzarato, 2009])? Further, does learning come down to a common and identifiable cognitive pattern or does it vary significantly from one individual to another?
- The balance or hierarchy established between each component: Should new technology necessarily lead to the development of new learning activities or should it be used only if it responds to a specific need of the language teacher? Where can it bring

> significant innovation? Recent and current history proves that, in a materialistic society, there's a strong temptation to put technology first because it has concrete and immediate financial repercussions.

To illustrate the problem, let us take an example from a brief historical review: If one only considers the notion of automation of tasks, one of the first attempts at association between teaching and technology led to what was called programmatic learning (Brown, 2002; Kenny, 2020), the precursor of digital language learning. If the technology of the time was the perfect answer to the defined tasks, what then was the validity of the learning theories on which the concept was based? In those days, learning was seen as a rigid set of tasks, clearly defined and ordered, a real algorithm of learning, whose limits were, in practice, very quickly reached. This example should indicate the way forward and the pitfalls to avoid.

Accordingly, the methodological approach presented here, by its very nature and context, was chosen due to its nonmainstream research design. Indeed, a predominantly qualitative mixed method was used for conducting this research. Such a mixed research method, also known as a mixed design, consists of combining the same study aspects drawn from both quantitative and qualitative approaches (Johnson & Onwuegbuzie, 2007). This choice was made, despite the format of the items contained in the instruments (forms), due to the small number of subjects who participated in the study.

Responses to the forms resulted in the calculation of descriptive statistics from which interpretations were made to improve the target learning activities. In fact, no sophisticated statistical analysis methods could be used. This is believed to be in line with the attributes of an interpretative approach because the vision of reality is constructed by the actors in a situation that the researcher wants to understand (Leech & Onwuegbuzie, 2009).

Through this endeavor, a systematic approach to the design and development of the learning activities is followed, making them adaptable to the reality of students and introducing pedagogical approaches that rely on teaching/learning resources through ICT. The predominantly mixed research method allows for borrowing a qualitative approach which, according to Sandelowski et al. (2012), derives from the interpretive paradigm and the very essence and nature of the data collected. Indeed, as these authors point out, qualitative data use words that express an idea, which is difficult to measure.

As mentioned previously, to properly address the general and specific objectives of this dissertation, a mixed methodology approach combining qualitative and quantitative data was adapted. It should be noted that the responses to the instruments can result in descriptive statistical calculations from which the researcher is to make interpretations with the aim of improving the learning activities. Thus, no sophisticated statistical analysis methods are used. As Ingleby (2012) and Mason (2018) point out, these data aren't contradictory, but they may very well complement each other and be found within the same research.

Furthermore, quantitative and qualitative data collection enriches research results (Onwuegbuzie & Combs, 2011). In order to carry it out, developmental research is to be conducted because it's necessary to consider not only the development of learning activities but also the development of strategies, methods, models that have an impact on educational action—hence the adoption of a developmental focus.

ADDIE Model

The archetype of educational design is designated by the acronym ADDIE, derived from the first letter of the five phases of the process (in English: Analysis, Design, Development, Implementation, and Evaluation). A large proportion of the educational design methods that have

been proposed to date use this basic framework, with some variance (Branch, 2009; Branch & Kopcha, 2014).

Sometimes other phases are added to address various issues, such as the maintenance (upkeep) or the enhancement of the learning in place (improvement). In addition, the more specific tasks associated with each of these phases vary according to the methods proposed, as well as according to the contexts in which these methods are applied and the type of learning offered. Nevertheless, the ADDIE model, in and of itself, presents a rational, logical, and sequential approach, which makes it possible to set up a process strong enough to solve problems in the development of teaching and learning resources that meet previously analyzed needs.

This model, which is also intended to be nonlinear, takes a cognitivist approach to learning and is presented as a flexible and inclusive process because the model gradually becomes operational and is constantly readjusted (Nelson et al., 1988). This allows for feedback on the following steps, as illustrated through the dotted line:

- contextualization
- learning styles
- ADDIE model
- scheme of the projected learning activities
- scope of the projected learning activities
- activities needed
- possible constraints on the projected learning activities
- human resources needed for the projected learning activities

ADDIE's five phases are as follows (although the terms for each may vary from one author to another):

Phases

Analysis. As expressed by Aldoobie (2015), first and foremost, the analysis is the foundation for all the other phases to follow. This phase aims to analyze a certain number of elements that define and orient the project. For instance, it's necessary to determine the need for training by defining the specific nature of the goals the learning activities aim to attain, ascertain the demographics, and characteristics of the target population as well as the context in which the learning will take place. It's also necessary to clearly identify the expectations of the target population and the constraints that will have to be dealt with and foresee possible risks and opportunities, among other internal and external factors.

Design. The intent of this phase is to build the learning structure and establish the strategies and models at the core of the learning activities, while linguistic skills are subdivided into learning sub-elements and eventually turned into content. Design is essentially the responsibility of the teacher/researcher and aims at organizing the strategies and goals formulated in the previous phase (Shelton & Saltsman, 2006). To this end, the graphics editor is determined. From there, the learning activities are designed and turned into tangible products. In addition, the aim of this stage is to precisely identify the technology and equipment required to enable the execution of the learning activities.

Development. This third phase consists of further realizing the learning activities by building on the two previous stages. Mainly, the objective is to shape the learning activities by using various techno-pedagogical resources. According to Muñoz and Quiroz (2019), it's also a question of applying different methodological principles at the foundation of the development of the learning activities. In the context of technology-mediated instruction and learning, this can take the form of a deep understanding of students' command of, and familiarity with, the

technology. In the end, each level of development will have its own procedural elements that are based upon the nature of the ADDIE model.

Implementation. Implementation consists of disseminating the learning activities and making them accessible to the target population (Corno & Randi, 1999). All the interested parties are given access to the activities (encompassing instructions, texts, photos, videos, hyperlinks, etc.) to be telematically accomplished at home, since classrooms, language laboratories, and computer rooms in general are closed due to the ongoing COVID-19 pandemic at the time of writing. During this cycle, it is important to ensure that the students have a proper understanding of the techno-pedagogical resources that form part of the activities, and that knowledge is to be conveyed to their devices via the learning platform.

Evaluation. This last step consists of carrying out an evaluation of the learning activities to validate its quality and value in light of the initial research questions. At this point, a decision must be made regarding its adoption with the aim of improving them if necessary or plain removal if deemed unsuitable. Evaluation can occur during the phases, between phases, or at the end of the implementation process (Briones et al., 2019; Flagg, 1990).

There are two kinds of evaluation (Scriven, 1996): the first, called formative evaluation, seeks to make the necessary improvements before making the learning activities available to the target audience. Summative evaluations, on the other hand, seek to assess and ultimately decide whether the end product can be launched, sold, or made available to the target population. In this case, a formative evaluation was effected with the help of educational experts or experts in the target field shedding light on the workability of the proposed learning activities.

Table 3

List of Stages and Descriptions of the ADDIE Model

Stages	Descriptions
1. Analysis	Defining the problem, target population, objectives, constraints, expected proficiency levels, strengths, weaknesses, opportunities, and threats.
2. Design	Outlining basic standards of competences to be achieved and skills to be developed, as well as content to be covered, pedagogical approaches to be considered, learning strategies and models to be taken into account, graphics editor to be used, technology and equipment requirements, and the educational platform that will support the learning activities.
3. Development	Generation, selection, and assembly of content, reference material, techno-pedagogical resources, methodological principles, rubrics, and role of learning styles.
4. Implementation	Dissemination of the learning activities to the target population to ensure that the activities can be telematically done with a teacher's involvement.
5. Evaluation	Assessment of the learning activities through formative or summative means. The former was the method for assessing the activities in question after completion.

Note. Own elaboration.

As can be seen, the evaluation phase with the experts, which also amounts to the validation process, was done, along with the data collection process, by electronic means only. The same applies to the dissemination of the learning activities during the implementation stage of the ADDIE model. The reasons for this are the scope of this model and the limitations of such an undertaking, especially in light of the COVID-19 pandemic.

Application

Analysis of the Learning Activities. To proceed with the analysis of the learning activities, a document presenting all the components of the analysis stage was produced. Three essential elements determining the implementation of such activities were considered: (a) the

goals the learning activities aim to attain, (b) the subject matter at the core of the contents, and (c) the target audience.

In addition, as explained earlier, such elements cover essential components of the analysis phase:

- contextualization
- learning styles
- ADDIE model
- scheme of the projected learning activities
- scope of the projected learning activities
- activities needed
- possible constraints on the projected learning activities
- human resources needed for the projected learning activities

Also of use is the SWOT matrix (Strengths, Weaknesses, Opportunities, and Threats) presented in Table 4. Strengths and weaknesses are internal influences, therefore manageable. Opportunities and threats, on the other hand, are external forces and can only be exploited or mitigated. The procedure originated in the business world as a tool for organizational management (Learned et al., 1965), but it has been advantageously put to use in many other fields. This brings additional information to the analysis by making it possible to associate the study of the strong and weak points of the project with that of the threats and opportunities in its planning. Thus, both internal and external factors can be taken into account by focusing closely on the potential pros and cons while at the same time minimizing the impact of threats and weaknesses (Pickton & Wright, 1998).

Table 4

SWOT Matrix

	Positive (to reach the goal)	Negative (not to reach the goal)
Organizational	Strengths	Weaknesses
Internal origin	• minimal training required thanks to Google Classroom's ease of use • platform and resources free and available for use • educational innovation • research based on authoritative learning theories and instructional design models	• target population out of reach due to the ongoing COVID-19 pandemic • implementation stage limited to electronic means • techno-pedagogical resources might expire or vanish • no in-person training offered
Environmental	Opportunities	Threats
External origin	• experimentation with different techno-pedagogical resources, ranging from old to new • By creating a website for everyone to have free and open access to the activities, their scope will be widened.	• delay in expert judgment resulting in • delay in activity design • delay in activity development • sketchy completion of learning activities

Note. Own elaboration.

Finally, Table 5 presents a list of discussed subthemes that further define the three aforementioned elements, revolving around the objectives, intended audience, and the substance of the learning activities.

Table 5

Analysis Subthemes

Subthemes	Descriptions
Target population	Colombian basic secondary and middle school students and teachers
Teaching mode	Online
Aim of the learning activities	Foster the students' communicative, pragmatic, and sociolinguistic competences (Ministerio de Educación Nacional, 2008). Improve the students reading, writing, listening, and speaking abilities through the accomplishment of learning activities. Support an asynchronous method of English learning.
Subject matter	Video games, wordless picture books, autobiographies, English pronunciation, social networks, and technology
Contents	Suggested grade, suggested time, CEFR level, methodology, styles to engage, assessment path for learning, assessment path of learning, corresponding basic standards of competences in foreign languages: English, goals, contextualization, exercises, instructions, links, images, tables, rubrics, and self-assessment
Proficiency	A2–B1 (Ministerio de Educación Nacional, 2008; see Heyworth, 2006, for more)

Note. Overall, Table 5 highlights relevant information that make up the essence of the learning activities by addressing the previously mentioned elements.

Design of the Learning Activities. The approach and basis of the learning structure, including concept maps, will be described herein along with the underlying reasoning behind the learning structure. Also, the choice of different learning strategies and contents as well as the technology and equipment requirements will be presented.

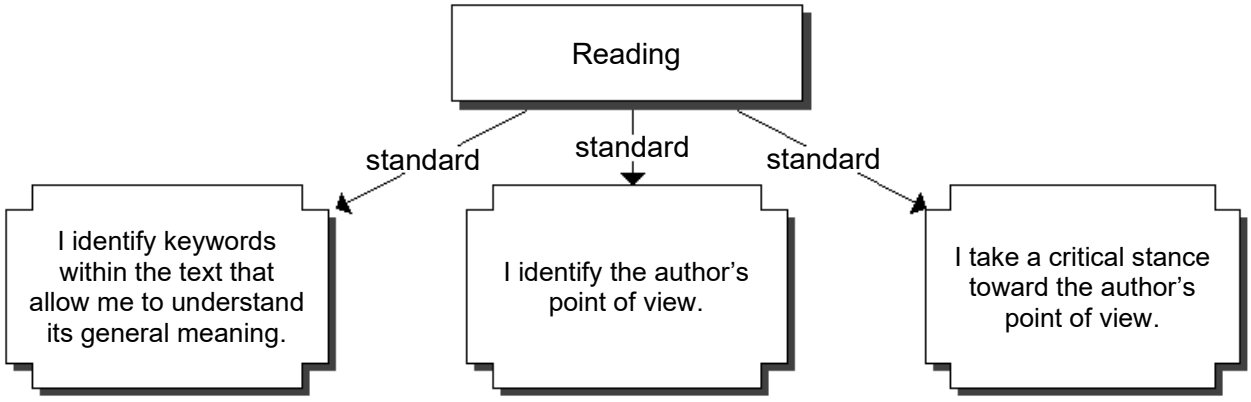
Learning Structure. With the intention of building the learning structure, it was necessary to use the MOT software tool, which is a mapping tool for graphically representing conceptual diagrams designed for instructional designers who wish to generate learning

platforms and activities. Using MOT, therefore, enables one to create concept maps that are systematic, focused, specific, and efficient, thus enabling to configure learning activities and the different elements that make up their structure. Furthermore, it also makes it possible to graph "from simple to complex representations of structured knowledge" (Paquette et al., 2008, p. 140).

In effect, the development of the typed-object structures was thus carried out using the MOT software tool, which makes it possible to create graphic models subdivided into sub-models. This structure translates, for instance, three of the 10th grade English reading standards into a conceptual diagram, as illustrated in Figure 4:

Figure 4

The Reading Skill in 10th Grade

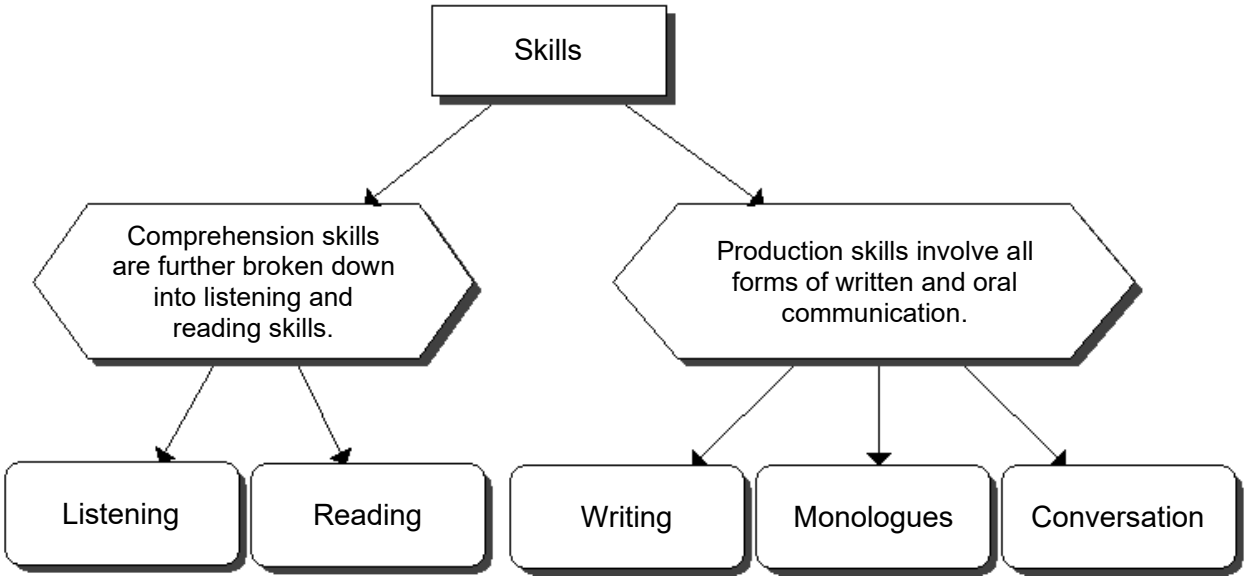


Note. The reading skill is generally linked to 10 reading standards per grade. Here three of them are shown (see Ministerio de Educación Nacional, 2008, p. 26, for more). So, each of the learning skills can be broken down into basic standards of competences, corresponding to the subskills of the learning environment.

To further develop the learning structure, each activity must be broken down into a series of sub-elements. Considering that there are five skills, these can be classified under two principles, as shown in Figure 5:

Figure 5

Skills as a Concept



Note. Own elaboration.

Following the same logic, each resource can be further divided into several sub-resources. Consequently, they can be classified as "Resources for reading, writing, listening and speaking; resources for grammar and vocabulary; resources for language teaching methodology; resources for curriculum design and lesson planning; games and virtual resources in general" (Colombia Bilingüe, 2016b, p. 134).

Online Transposition of the Learning Activities. The Google Classroom platform, initially released in 2014 by Google, was chosen because this learning management system makes pedagogical and communicative functions easily accessible (Iftakhar, 2016; Moreno et al., 2019). Moreover, Google Classroom is in line with the current state of social constructivism by investing in functionalities that allow for interactions between teachers, learners, and digital resources (didactic content), thus forming a network and sometimes even a real community

around a subject. Moreover, it's widely used in the present circumstances resulting from the COVID-19 pandemic.

Learning Strategies. In order to proceed with the choice of learning strategies, the most appropriate and applicable strategies were selected and elucidated in the learning activities themselves according to the already presented learning paradigms (hypermedia self-study, online education, and virtual community), strategies to be favored to optimize learning. Hypermedia self-study, online education, and virtual community were chosen from the many available venues based on their dynamic nature and their potential to provide students with a wide range of learning opportunities, and in accordance with the educational strategies used.

Content Design. As with the learning strategies, the activities were designed while following cognitivist, constructivist, and social constructivist approaches, as well as the learning styles suggested by Felder and Silverman back in 1988. In addition to the audiovisual materials explaining the functioning of the learning platform and its multiple techno-pedagogical tools, documentary information from websites was listed in a document with additional resources, knowledge integration and self-assessment exercises being at the core of the learning activities, especially in the introductory and final stages, respectively.

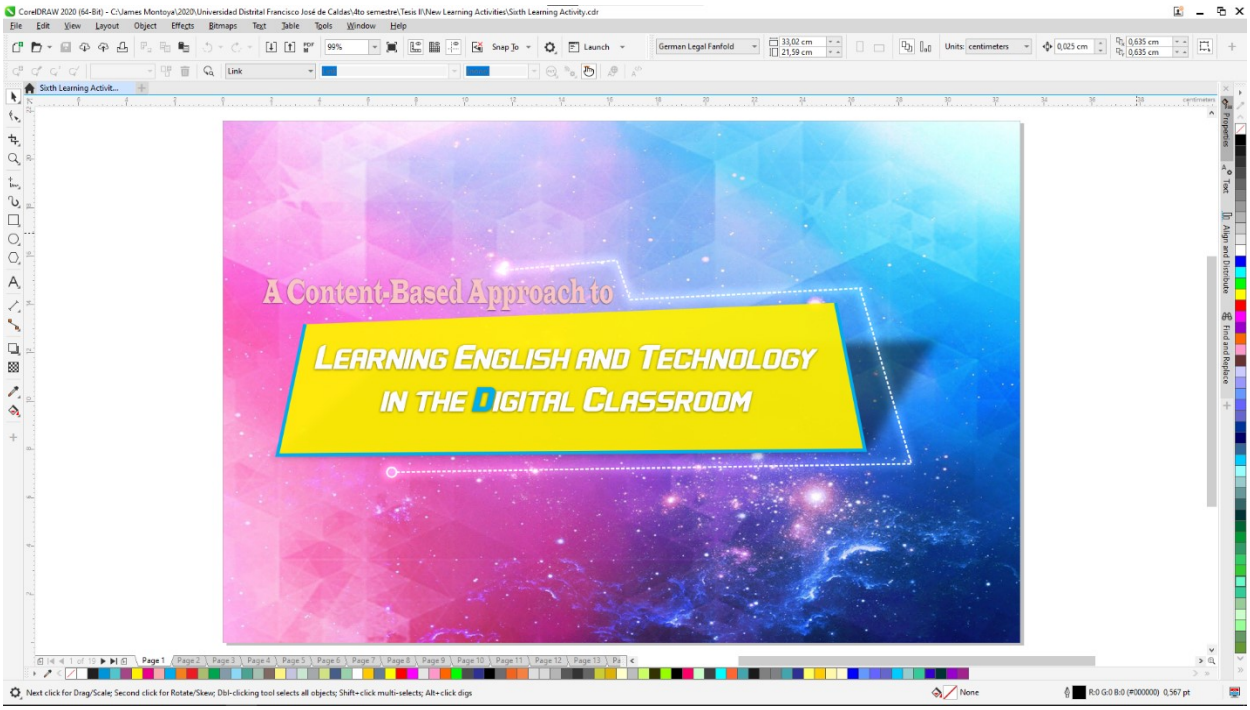
Technology and Equipment Requirements. It is strongly recommended that both teachers and students have access to a laptop, PC or MAC-type computer, Internet, a screen, keyboard, and mouse to carry out the learning activities. However, they could also be done on tablets or upper/mid-range smartphones. The Google Drive app, which can be downloaded on the Google Play Store, is compulsory for this purpose. Most devices nowadays have it pre-installed by default. Moreover, a headphone with microphone (headset) is mandatory while using a computer if audio devices aren't built in. A printer may be useful but not an absolute necessity.

Finally, a minimum of 50–100 megabytes of storage are required to save documents and other files directly on the device.

Graphics Editor. The learning activities were designed on the CorelDRAW Graphics Suite 2020, which was released on March 12 of the same year.

Figure 6

Title Page of One of the Learning Activities on CorelDRAW Graphics Suite 2020



This application was chosen as the main activity design software as it allows for the creation of professional-looking projects due to its comprehensive illustration and page layout tools, including cutting-edge typography, making it possible to use a wide variety of fonts. One can also easily insert hyperlinks, royalty-free images (from Pixabay); not to mention visual effects, such as transparency to objects, interactive shadows, and contours, to name but a few. Its relative ease of use makes it convenient and a suitable choice for reaching the general objective of this dissertation.

Development of the Learning Activities. Albeit online, various techno-pedagogical resources were used during the development phase. Padlet was extensively used as a collaborative tool in the background building process the learners would go through as they embark upon the first and second learning activities focused on video games and wordless picture books, respectively. The subject matter of the learning activities was chosen with their own interests and preferences in mind while targeting different basic standards of competences in English and various assessments paths for/of learning (see Colombia Bilingüe, 2016b, pp. 24–26, for more). Other activities are centered, for example, on the use of social networks, such as Facebook and Twitter, as well as on technology itself not only as an area of knowledge in the school curriculum but also as a means of language learning.

Interactive whiteboard systems such as Jamboard and Limnu are also suggested for online collaboration and eliciting interactive scenarios for English language learning, while some other apps, including Liveworksheets, Hot Potatoes, Wordwall, and Quizziz, have a more formative purpose. The last two provide real-time formative assessment in the form of self-paced games, allowing for instant feedback. Research studies (Basuki & Hidayati, 2019; Buckley & Doyle, 2016) have shown that gamified tools significantly improve students' overall academic performance, instilling motivation and other positive character qualities for learning.

Different methodological principles are also used to make the learning activities relevant and varied, such as project-based (centered on addressing a central question or problem and exploring possible answers through a product), task-based (in which students are asked to perform a variety of tasks in succession to assess whether learning is occurring), exercise-based (focused on doing challenging work for language acquisition like drills involving association and

recall), and theme-based instruction (emphasizing a theme, as the name suggests, in the course of learning activity as the content may be wholly or partly related to the theme).

Furthermore, learning styles play a central role in the development of learning activities, providing teachers with the opportunity to encourage the development of a broad range of learning skills in their students. As a useful strategy to maximize classroom-based opportunities for intellectual enrichment and engagement, the most predominant learning styles were established at the beginning of each learning activity based on the contents to be covered and Felder and Silverman's (1988) seminal journal article. Teachers are thus encouraged to ask students to fill out the Index of Learning Styles Questionnaire to determine their learning styles and encourage the completion of the learning activities as a way to address the wide variety of learning preferences students may have.

In effect, the Index of Learning Styles Questionnaire provides an overview of how the students function within their unique learning styles and provides teachers with the opportunity to select the learning activities that allow the activation of the student's specific learning styles. This can be done in various ways, i.e., choosing appropriate methods of instruction (lecturing, demonstrating, or collaborating), the tasks or exercises assigned, and the type of interactions during the learning activity. Different learning styles also influence the order in which the content is covered in class. For example, visual learners may more quickly assess, think, compare, and contrast information that is presented in visual terms, whereas verbal learners will prefer detailed explanations and demonstrations.

As specified earlier, Google Classroom was selected as the educational platform of choice because it's well-established in the online educational community, especially as a result of the COVID-19 pandemic crisis. In addition to fostering interaction between teachers and

students, this educational platform makes it possible to put online a host of resources, such as discussion threads, announcements, a customizable grading system, and other tools that help teachers communicate, check assignments, post discussions, participate in conversations, and control the presentation of information. Teachers can send information or materials to students, schedule quizzes or tests, respond to student emails, schedule presentations and exams, and access to all the materials for the class, including online textbooks, Google Drive documents, and more.

Finally, the analytic rubrics suggested at the end of each learning activity allow students to monitor how much they have truly achieved when completing the assignments. They're appropriate for addressing questions posed by the students with regard to the content to be covered. Furthermore, such rubrics also lay out concrete ways in which the activity is going to be assessed to avoid or minimize confusion and frustration, leading to better student learning outcomes. It is to be noted that Google Classroom makes it possible to create and reuse them as often as needed to track students' progress and performance.

Implementation of the Learning Activities. The implementation phase consists in the online publication of the learning activities and making sure they're freely available for use by the interested parties—that is, Colombian secondary and middle school teachers and students. The activities in question can be visualized online with no registration and free of charge. They can be viewed by the target population with no barrier to access, under a Creative Commons license with no commercial use or alteration (see Appendix A). This last detail is important: Sharing and visualizing such activities in real time can help accelerate their dissemination. Finally, a warm invitation is made to each user so that they can share their own creations to generate a database of worldwide public access activities with a learning styles approach.

Hosting. Such activities are hosted on Google Sites, as it "works well as an e-portfolio platform" (Haave, 2016, p. 8) and allows the publication of forms to provide feedback for the maintenance and provision of information, especially with prospective research purposes. Users all over Colombia, and indeed worldwide, would be interconnected and could partake of the resources and activities produced by others and contribute some of their own. This would make for an infinitely expandable, up-to-date, and most importantly, freely accessible database of activities also raising interest in the development of electronic educational activities to mitigate the environmental impact of paper production. A utopian, worldwide democratization of education could well be achievable with such tools, and eventually bringing about the possible end of historical rule by "the one with the biggest club" as a larger goal.

Evaluation of the Learning Activities. The evaluation of the learning activities is explained in depth in this section. As it was mentioned earlier, expert validation is the foundation of the evaluation phase, which aims not only at validating the learning activities as such but also at improving them based on the provided forms.

Expert Validation. Data were compiled from two forms related to the application of three stages of the ADDIE model (Analysis, Design, and Development). It was then processed, item by item, to the manual compilation of quantifiable data of each of the Analysis, Design, and Development dimensions. A panel of experts, in line with Escobar-Pérez & Cuervo-Martínez's (2008) guidelines, assessed such items in terms of sufficiency, clarity, coherence, and relevance with 1 being the lowest and 4 being the highest score, along with their corresponding observations on the learning activities. After the learning activities were tuned according to the observations made by the experts in the expert judgment form (see Appendix C), they were

asked to fill out the expert validation form (see Appendix D) in order to validate the learning activities.

Expert validation alone has been proven effective in determining the workability of educational materials (Astuti et al., 2017; Dewi & Afrizon, 2020; Habibi et al., 2018, Ismail et al., 2019; Kholis et al., 2020; Lauren et al., 2016; Lesmono et al., 2018; Maryanti et al., 2019; Muhyadi et al., 2019; Putra et al., 2019, Trisna & Nasution, 2018; Unsiah et al., 2016). The data analysis technique used in this research is descriptive wherein the mean value of the validation results is calculated through an averaging formula (Arikunto, 2009; Astuti et al., 2017; Dewi & Afrizon, 2020; Habibi et al., 2018; Maryanti et al., 2019; Trisna & Nasution, 2018). The formula is:

$$M = \frac{\sum x}{n}$$

Where:

M = mean value

x = experts' values per item

n = the number of experts

After obtaining the mean value for each item, a four-level grading is applied.

Table 6

Criteria for Level of Validity

Ranges	Grading
1–1.49	Not valid
1.5–2.99	Somewhat valid
3–3.49	Valid
3.5–4	Highly valid

Note. Adapted from Habibi et al. (2018).

Data were classified in tabular form to facilitate the analysis of results. For the analysis dimension, five items were established, namely the learning activities in relation to the teacher's role, different contexts (national or international), ambitiousness, stated objectives, standards, assessment paths, and proficiency levels. Regarding the design dimension, the items therein pertain to current trends in the field (cognitivist, constructivist, and social constructivist), catering to different learning styles, aesthetic presentation of the learning activities, and clarity and accuracy of writing. Once again, the data collected were presented in the form of tables.

As for the development dimension, the items revolved around the techno-pedagogical resources deployed, the learning platform, didactic content, and overall assessment of the learning activities and workability. The same number of items were used in every other dimension of the validation forms, taking into account the research questions posed in the introductory chapter. Here again, the data collected were also presented in the form of tables. Finally, it was elected to assign a letter to each of the forms (A and B) to ease the traceability of data.

Statistical Software, Measurement Scale, Reliability, and Homogeneity. OriginPro is an integrated software package for the creation of scientific graphs and data analysis (OriginLab, 2008). The goal of OriginPro within this research was to provide an integrated software package to perform a full range of statistical and descriptive analyses. Apart from performing statistical analyses, it's characterized for having a relatively easy-to-use operating mode, enabling reproducibility and the manipulation of complex data. This section in particular deals with whether the scale exemplified in Table 6 is sufficiently accurate to be used in forms A and B.

A measurement scale is, by definition, a set of items on the same construct whose sum (or mean, as the case may be) reflects the quantity of the construct (Hand, 1996). An underlying

feature of the measurement scale is that all the elements are evaluated by means of a Likert-type scale with a graduated response choice ranging from low frequency to high frequency (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, and 4 = *strongly agree*).

The crucial element here is the reliability of the measurement scale. Reliability is regarded, among other factors, as (a) the characteristic of a measurement to remain stable over time regarding the same subject (test-retest) and (b) the characteristic of a measurement to be constant in the measured object (homogeneity) (Hattie, 1985). In this respect, the homogeneity of the items is proportional to the pattern of correlations of the items among themselves and between them and the total score, as reflected in the coefficient alpha (α) of the data analysis. The greater the homogeneity, the more the scale is consistent with the sense of internal coherence of the items, the more it can be believed that the items measure a single construct. Also, the higher the homogeneity, the more the items measure the respondent's true score, which thus reduces measurement errors that may cause the total score to vary from one measure to another over time (Flores et al., 2018).

Ways to Ensure Rigor and Scientific Validity. The application of scientific criteria is a key issue at the base of any methodological approach to research. In this regard, Hofseth (2018) suggests that scientific rigor increases "the likelihood: (i) for accuracy of results; (ii) that these accurate results can be independently repeated. Most strive for the former, and hope for the latter" (p. 21). Since this dissertation adopts a predominantly mixed research method, no sophisticated statistical analysis method could be used for the quantitative data because of the small number of subjects (experts) who participated in the research. However, this approach requires scientific rigor involving a number of methodological criteria, which are discussed in the next paragraph.

Credibility, Transferability, Dependability, and Confirmability. Credible, transferable, dependable, and objective data (Golafshani, 2003) allowed the researcher to increase the conclusiveness of his results. For Noble and Smith (2015), the credibility of a research project or researcher is enhanced when there's "clarity in terms of thought processes during data analysis and subsequent interpretations" (p. 35). Johnson and Christensen (2010) believe that the use of multiple data sources, also known as data triangulation, promotes internal validity. Johnson and Christensen explain that triangulation aims to use sources of data to allow "cross-checking information and conclusions through the use of multiple procedures or sources" (p. 266). Furthermore, it helps to understand and corroborate the phenomenon under study, measurable in the recorded and compiled data.

In this research, two types of data were used, namely closed-ended Likert-type items (quantitative) and open-ended observations (qualitative). Expert triangulation consisted in having a sizable number of independent experts participating in the study. According to Lynn (1986), there should be three *at minimum* for validation purposes, a number that is agreed to by Polit et al. (2007). This form of triangulation was particularly relevant in the presentation and analysis of results and to obviate any bias in the dataset (Turner & Turner, 2009). The use of triangulation allowed one to confirm the meaning given to the phenomenon by reconciling such data. Furthermore, Hoepfl (1997) and Cohen et al. (2007) argue that credibility can be enhanced through triangulation of data and multiple sources. In this regard, seven experts were asked to endorse the expert judgment form.

The criterion of transferability raises the following question: How can the knowledge generated from this sample of experts help one understand the dynamics of another situation with similar characteristics?

As pointed out by Lincoln and Guba (1985), in order to ensure the transferability of the validation results, readers must be provided with a detailed analysis that allows them to make a judgment on the workability of the learning activities. The second criterion deals with dependability. For Golafshani (2003), dependability is demonstrated when there's a clear thread in the research. This thread is clear when there's consistency between the different stages of the research from the problem statement to the interpretation of the data collected. It's believed that the interconnection between the different phases of the ADDIE model and their corresponding application helped accomplish this criterion. In addition, Fitzgerald (2003) points out that "One of the basic means of achieving reliability and validity that has been adopted in qualitative research is the use of triangulation, the examination of some issue or phenomenon from a variety of positions" (p. 149). In this regard, the dissected forms and answers, as well as the number of independent experts involved in the project, contributed to the attainment of this third criterion.

The final criterion of scientific rigor is confirmability. In 1985, Lincoln and Guba stipulated that this criterion aims for objectivity in the data and also in their interpretation. In other words, the researcher cannot afford a biased interpretation of the research results; it must be ensured that these results reflect the data collected. For Lincoln and Guba, certain methods can be put forward to achieve this criterion, such as the justification of data collection instruments, the description and application of the data analysis method and external verification. In addition, it goes without saying that the construction of data collection instruments (forms for the Analysis, Design, and Development stages) is characterized by objectivity and rigor.

Ethical Considerations. Aluwihare-Samaranayake (2012) states that it is the responsibility of the researcher to conduct research in an ethical manner. Indeed, particular

attention has been paid to the ethical aspect in his approach. In effect, experts who voluntarily chose to participate in the validation process had no previous relationship with the researcher. They were selected in accordance with their experience, postgraduate studies, and scholarly affinities; mainly English, education, research, e-learning, and instructional design. Upon making a first contact with them online, they were invited to read and sign a free and informed consent.

According to Williamson (2007), free and informed consent means that the individuals were given all the essential information, that they're familiar with its content, and that they possess a good understanding of their role in the research being conducted (see Appendix B). In this regard, the consent comprised several pieces of information, including the purpose of the research, the population targeted by the research, the researcher's name, and a note reiterating the confidentiality of the information and stating that it can only be used for research purposes. On top of it all, each expert was free to withdraw at any time.

Regarding the measures taken to ensure confidentiality and anonymity, the original documents with the experts' real names and signatures are kept under lock and key in the researcher's personal workspace, to which no one else has access. Other electronic files related to data collection are password-protected, in line with Watson's (2015) guidelines for safe data storage. As for the expected benefits of this evaluation approach, it's expected to contribute to the advancement of knowledge on the design and development of novel learning activities revolving around the students' learning styles, all the while innovatively improving outcomes and achievements in online education (Surahman et al., 2019). On such a basis, the researcher considers himself to be in compliance with all ethical principles and rules.

Chapter Five: Presentation and Interpretation of Results

In the first part of this chapter, the answers to the expert judgment form filled out by the experts concerning the Analysis, Design, and Development stages of the ADDIE model will be tabulated, summarized, and analyzed using bar charts. The collected observations will also be dealt with, indicating the adjustments made to the design and development of learning activities.

In the second and final part of this chapter, the responses to the expert validation form will be interpreted with bar graphs, revealing whether the developed learning activities prove to be a valuable educational resource for teachers and whether they could contribute to improving students' competence in English language learning. Finally, the experts' closing remarks and the researcher's final question will be looked into, as well as recommendations on how the learning activities should be integrated into an online learning context based on such remarks.

Data Analysis of the Expert Judgment Form Answers

As pointed out in the previous chapter, the items were subjected to the experts' judgment and graded on a scale of 1 to 4—1 being the lowest score and 4 the highest (see Appendix E).

Sufficiency of the Items in Every Dimension

Analysis.

Table 7

Experts' Analysis Dimension Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, the analysis items suffice to measure this dimension.

Design.

Table 8

Experts' Design Dimension Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	3
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+3+4+4+3+4}{7} = 3.6\right)$, the design items suffice to measure this dimension.

Development.

Table 9

Experts' Development Dimension Values

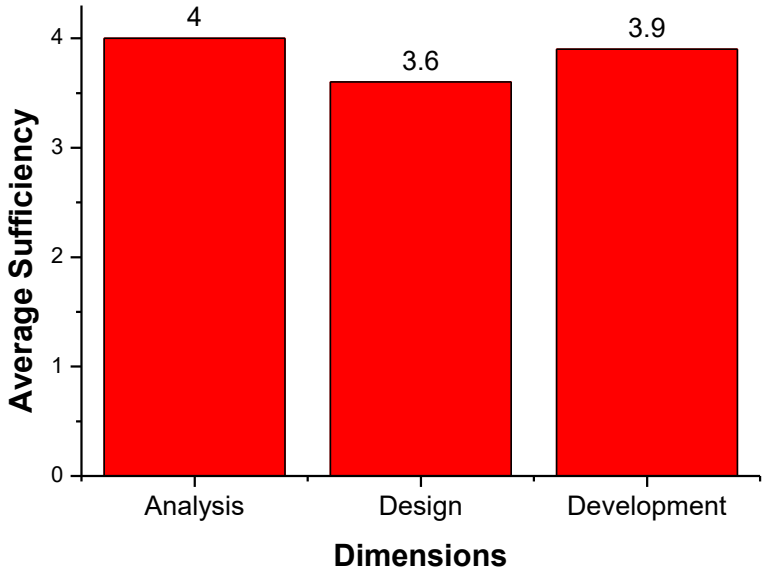
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, the development items suffice to measure this dimension.

In Sum. It can be stated that all items in the expert judgment form are sufficient to measure every dimension, as reflected in the mean values in Figure 7.

Figure 7

Average Sufficiency of Every Dimension



Clarity of the Items in Every Dimension

Analysis.

Item 1. The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.

Table 10

Experts' Item 1 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 1 is clear, with appropriate semantics and syntax.

Item 2. Learning activities could be applied to different contexts (national or international).

Table 11

Experts' Item 2 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 2 is clear, with appropriate semantics and syntax.

Item 3. The learning activities are ambitious.

Table 12

Experts' Item 3 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 3 is clear, with appropriate semantics and syntax.

Item 4. The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.

Table 13

Experts' Item 4 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 4 is clear, with appropriate semantics and syntax.

Item 5. The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.

Table 14

Experts' Item 5 Clarity Values

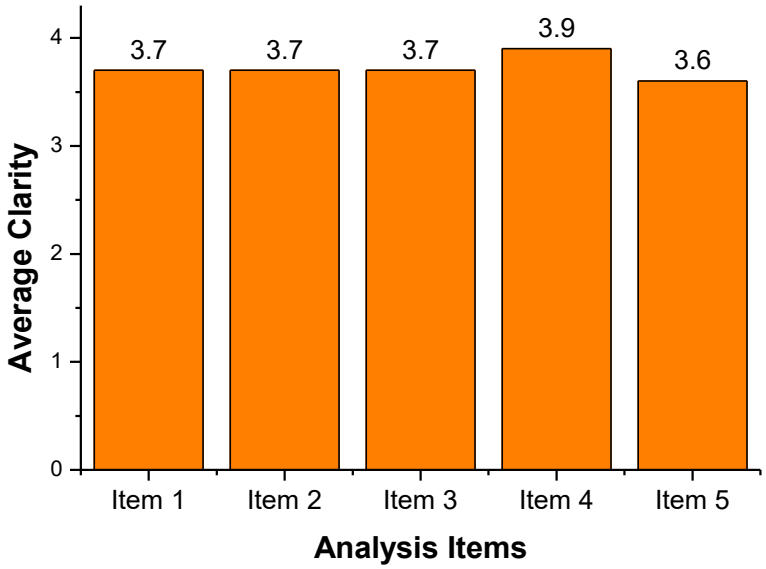
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	3
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+3+4+4+3+4}{7} = 3.6\right)$, Item 5 is clear, with appropriate semantics and syntax.

In Sum. It can be stated that the analysis items can be easily understood, i.e., syntax and semantics are appropriate, as reflected in the mean values in Figure 8.

Figure 8

Average Clarity of Analysis Items



Design.

Item 6. The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.

Table 15

Experts' Item 6 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	3
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 6 is clear, with appropriate semantics and syntax.

Item 7. The learning activities cater to a wide range of learning styles.

Table 16

Experts' Item 7 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 7 is clear, with appropriate semantics and syntax.

Item 8. The learning activities are relevant and varied.

Table 17

Experts' Item 8 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	3
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 8 is clear, with appropriate semantics and syntax.

Item 9. The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.

Table 18

Experts' Item 9 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	3
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+3+4+4+3+4}{7} = 3.6\right)$, Item 9 is clear, with appropriate semantics and syntax.

Item 10. The instructions and rubrics for doing the activities are clear and well written.

Table 19

Experts' Item 10 Clarity Values

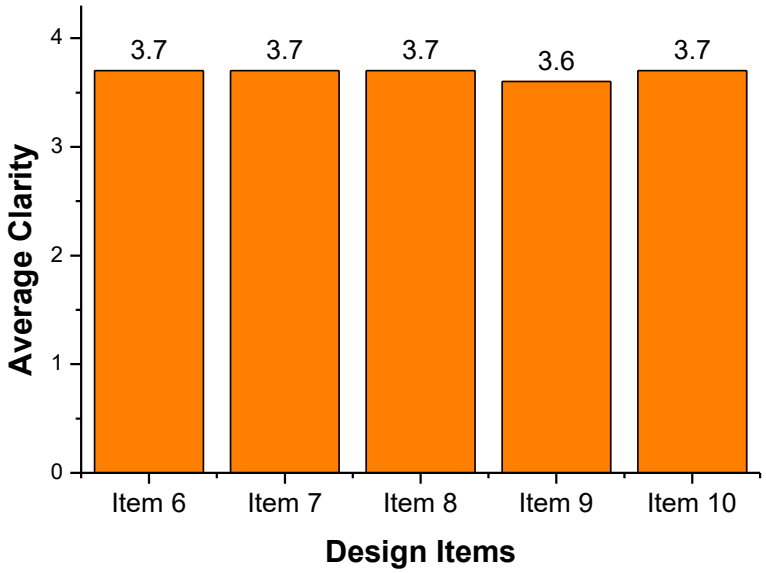
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 10 is clear, with appropriate semantics and syntax.

In Sum. It can be stated that the design items can be easily understood, i.e., syntax and semantics are appropriate, as reflected in the mean values in Figure 9.

Figure 9

Average Clarity of Design Items



Development.

Item 11. The techno-pedagogical resources deployed adequately support the learning activities.

Table 20

Experts' Item 11 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 11 is clear, with appropriate semantics and syntax.

Item 12. Google Classroom can effectively support/work as the main learning platform.

Table 21

Experts' Item 12 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 12 is clear, with appropriate semantics and syntax.

Item 13. English teachers can be trained to implement the learning activities in a virtual learning environment with their students.

Table 22

Experts' Item 13 Clarity Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+3+4}{7} = 3.6\right)$, Item 13 is clear, with appropriate semantics and syntax.

Item 14. The selected techno-pedagogical resources are diverse and flexible in application.

Table 23

Experts' Item 14 Clarity Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	3
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 14 is clear, with appropriate semantics and syntax.

Item 15. This project provides interactive scenarios where technology is the main axis of English education.

Table 24

Experts' Item 15 Clarity Values

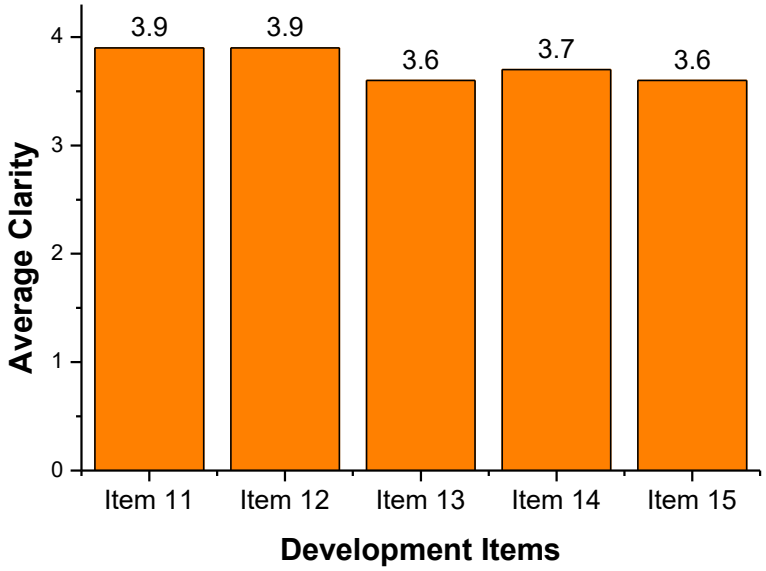
Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+3+4}{7} = 3.6\right)$, Item 15 is clear, with appropriate semantics and syntax.

In Sum. It can be stated that the development items can be easily understood, i.e., syntax and semantics are appropriate, as reflected in the mean values in Figure 10.

Figure 10

Average Clarity of Development Items



Coherence of the Items in Every Dimension

Analysis.

Item 1. The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.

Table 25

Experts' Item 1 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 1 is completely related to the dimension it's measuring.

Item 2. The learning activities could be applied to different contexts (national or international).

Table 26

Experts' Item 2 Coherence Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+4+4}{7} = 3.7\right)$, Item 2 is completely related to the dimension it's measuring.

Item 3. The learning activities are ambitious.

Table 27

Experts' Item 3 Coherence Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+4+4}{7} = 3.7\right)$, Item 3 is completely related to the dimension it's measuring.

Item 4. The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.

Table 28

Experts' Item 4 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	3
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+3+4+4+4+4}{7} = 3.7\right)$, Item 4 is completely related to the dimension it's measuring.

Item 5. The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.

Table 29

Experts' Item 5 Coherence Values

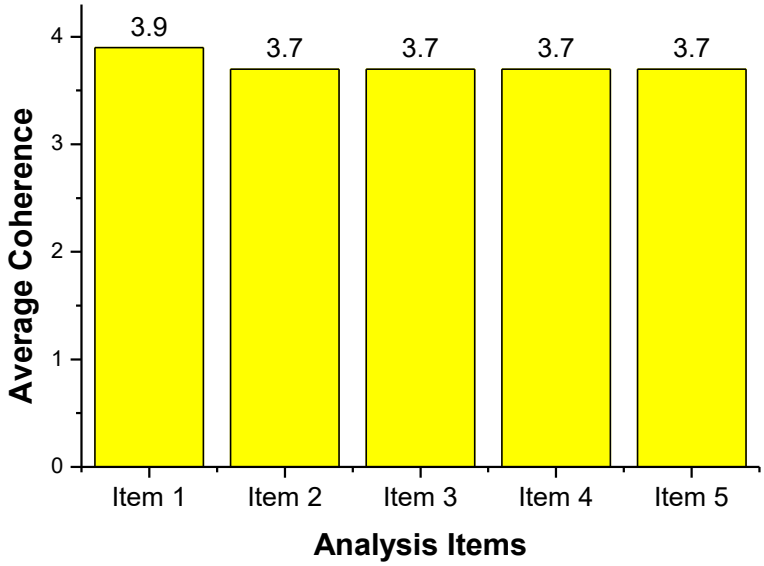
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	3
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+3+4+4+4+4}{7} = 3.7\right)$, Item 5 is completely related to the dimension it's measuring.

In Sum. It can be stated that the analysis items are logically related to the measured dimension, as reflected in the mean values in Figure 11.

Figure 11

Average Coherence of Analysis Items



Design.

Item 6. The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.

Table 30

Experts' Item 6 Coherence Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+4+4}{7} = 3.7\right)$, Item 6 is completely related to the dimension it's measuring.

Item 7. The learning activities cater to a wide range of learning styles.

Table 31

Experts' Item 7 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 7 is completely related to the dimension it's measuring.

Item 8. The learning activities are relevant and varied.

Table 32

Experts' Item 8 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	3
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 8 is completely related to the dimension it's measuring.

Item 9. The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.

Table 33

Experts' Item 9 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 9 is completely related to the dimension it's measuring.

Item 10. The instructions and rubrics for doing the activities are clear and well written.

Table 34

Experts' Item 10 Coherence Values

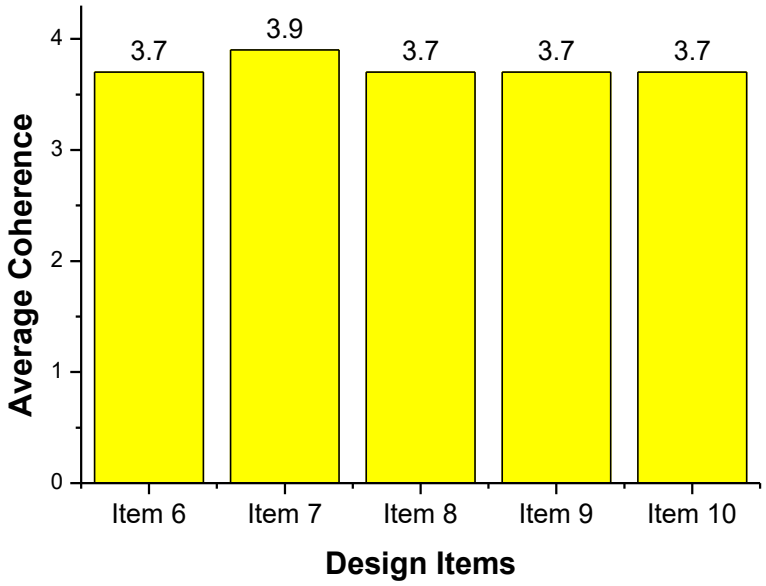
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	3
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+3+4+4+4+4}{7} = 3.7\right)$, Item 10 is completely related to the dimension it's measuring.

In Sum. It can be stated that the design items are logically related to the measured dimension, as reflected in the mean values in Figure 12.

Figure 12

Average Coherence of Design Items



Development.

Item 11. The techno-pedagogical resources deployed adequately support the learning activities.

Table 35

Experts' Item 11 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 11 is completely related to the dimension it's measuring.

Item 12. Google Classroom can effectively support/work as the main learning platform.

Table 36

Experts' Item 12 Coherence Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+4+4}{7} = 3.7\right)$, Item 12 is completely related to the dimension it's measuring.

Item 13. English teachers can be trained to implement the learning activities in a virtual learning environment with their students.

Table 37

Experts' Item 13 Coherence Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+4+4+4}{7} = 3.7\right)$, Item 13 is completely related to the dimension it's measuring.

Item 14. The selected techno-pedagogical resources are diverse and flexible in application.

Table 38

Experts' Item 14 Coherence Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 14 is completely related to the dimension it's measuring.

Item 15. This project provides interactive scenarios where technology is the main axis of English education.

Table 39

Experts' Item 15 Coherence Values

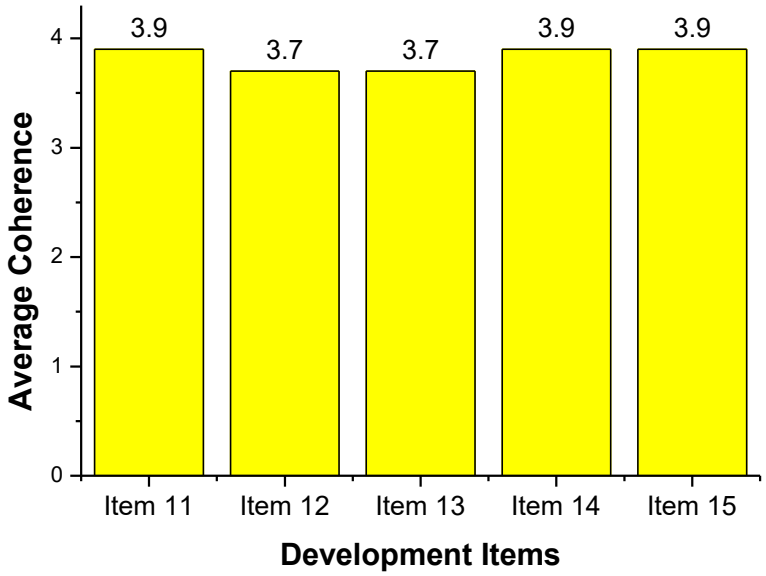
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 15 is completely related to the dimension it's measuring.

In Sum. It can be stated that the development items are logically related to the measured dimension, as reflected in the mean values in Figure 13.

Figure 13

Average Coherence of Development Items



Relevance of the Items in Every Dimension

Analysis.

Item 1. The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.

Table 40

Experts' Item 1 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 1 is very relevant and should be included.

Item 2. The learning activities could be applied to different contexts (national or international).

Table 41

Experts' Item 2 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 2 is very relevant and should be included.

Item 3. The learning activities are ambitious.

Table 42

Experts' Item 3 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+3+4}{7} = 3.9\right)$, Item 3 is very relevant and should be included.

Item 4. The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.

Table 43

Experts' Item 4 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 4 is very relevant and should be included.

Item 5. The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.

Table 44

Experts' Item 5 Relevance Values

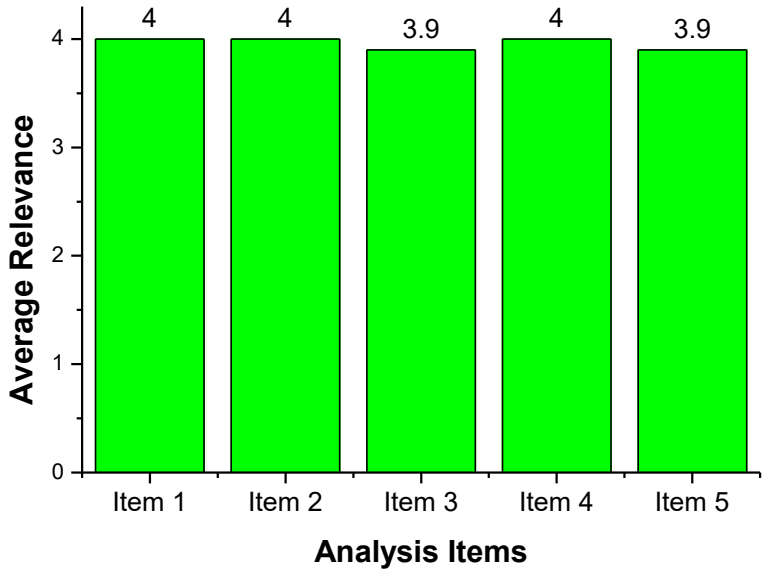
Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 5 is very relevant and should be included.

In Sum. It can be stated that the analysis items are essential or important, as reflected in the mean values in Figure 14.

Figure 14

Average Relevance of Analysis Items



Design.

Item 6. The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.

Table 45

Experts' Item 6 Relevance Values

Experts	Values
Expert 1	3
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	3
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+3+4+4+3+4+4}{7} = 3.6\right)$, Item 6 is very relevant and should be included.

Item 7. The learning activities cater to a wide range of learning styles.

Table 46

Experts' Item 7 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 7 is very relevant and should be included.

Item 8. The learning activities are relevant and varied.

Table 47

Experts' Item 8 Relevance Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 8 is very relevant and should be included.

Item 9. The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.

Table 48

Experts' Item 9 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	3
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+3+4+3+4}{7} = 3.7\right)$, Item 9 is very relevant and should be included.

Item 10. The instructions and rubrics for doing the activities are clear and well written.

Table 49

Experts' Item 10 Relevance Values

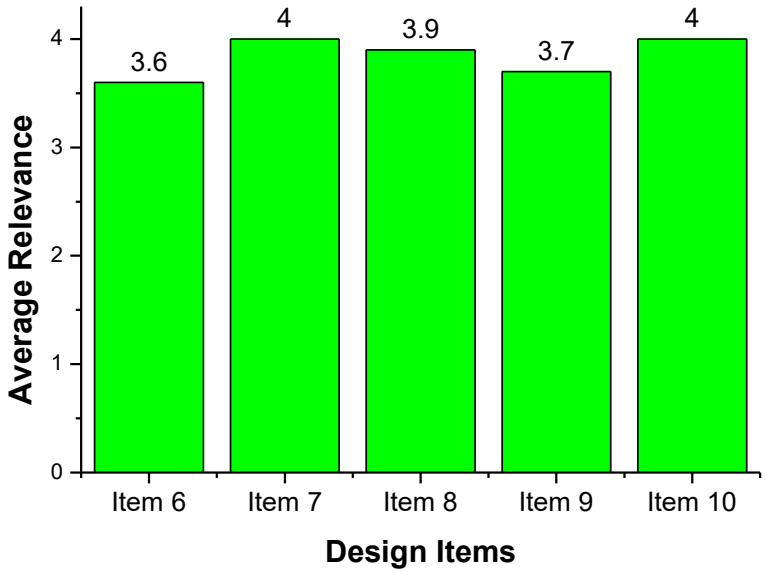
Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 10 is very relevant and should be included.

In Sum. It can be stated that the design items are essential or important, as reflected in the mean values in Figure 15.

Figure 15

Average Relevance of Design Items



Development.

Item 11. The techno-pedagogical resources deployed adequately support the learning activities.

Table 50

Experts' Item 11 Relevance Values

Experts	Values
Expert 1	3
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 11 is very relevant and should be included.

Item 12. Google Classroom can effectively support/work as the main learning platform.

Table 51

Experts' Item 12 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 12 is very relevant and should be included.

Item 13. English teachers can be trained to implement the learning activities in a virtual learning environment with their students.

Table 52

Experts' Item 13 Relevance Values

Experts	Values
Expert 1	4
Expert 2	3
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+3+4+4+4+4+4}{7} = 3.9\right)$, Item 13 is very relevant and should be included.

Item 14. The selected techno-pedagogical resources are diverse and flexible in application.

Table 53

Experts' Item 14 Relevance Values

Experts	Values
Expert 1	4
Expert 2	4
Expert 3	4
Expert 4	4
Expert 5	4
Expert 6	4
Expert 7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 14 is very relevant and should be included.

Item 15. This project provides interactive scenarios where technology is the main axis of English education.

Table 54

Experts' Item 15 Relevance Values

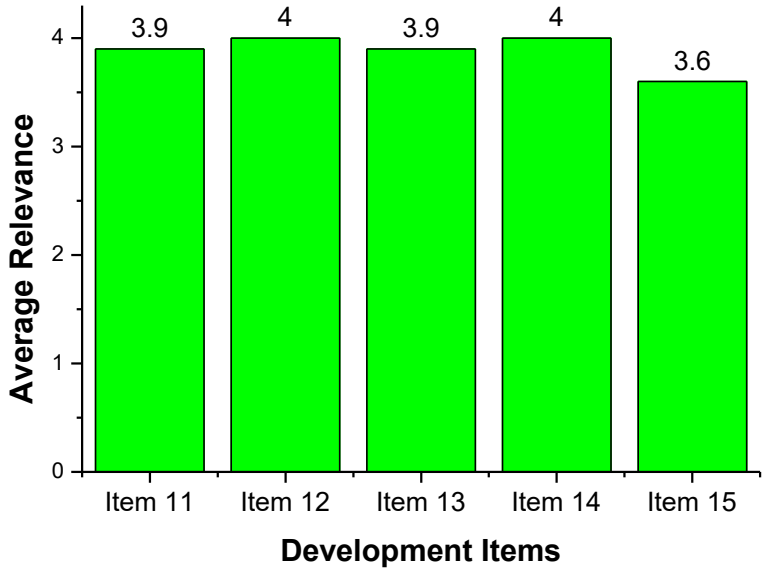
Experts	Values
Expert 1	4
Expert 2	4
Expert 3	3
Expert 4	3
Expert 5	4
Expert 6	3
Expert 7	4

According to the mean value $\left(M = \frac{4+4+3+3+4+3+4}{7} = 3.6\right)$, Item 15 is very relevant and should be included.

In Sum. It can be stated that the development items are essential or important, as reflected in the mean values in Figure 16.

Figure 16

Average Relevance of Development Items



Rundown

An overview of the previously analyzed data is presented in Table 55.

Table 55

Abridged Expert Judgment Form Data Analysis Results

Sufficiency					
Dimensions			Mean values		
Analysis			4		
Design			3.6		
Development			3.9		
Overall sufficiency mean value			3.8		
Clarity					
Analysis		Design		Development	
Items	Mean values	Items	Mean values	Items	Mean values
1	3.7	6	3.7	11	3.9
2	3.7	7	3.7	12	3.9
3	3.7	8	3.7	13	3.6
4	3.9	9	3.6	14	3.7
5	3.6	10	3.7	15	3.6

Overall mean value	3.7	Overall mean value	3.7	Overall mean value	3.7
Overall clarity mean value				3.7	
Coherence					
Analysis		Design		Development	
Items	Mean values	Items	Mean values	Items	Mean values
1	3.9	6	3.7	11	3.9
2	3.7	7	3.9	12	3.7
3	3.7	8	3.7	13	3.7
4	3.7	9	3.7	14	3.9
5	3.7	10	3.7	15	3.9
Overall mean value	3.7	Overall mean value	3.7	Overall mean value	3.8
Overall coherence mean value				3.7	
Relevance					
Analysis		Design		Development	
Items	Mean values	Items	Mean values	Items	Mean values
1	4	6	3.6	11	3.9
2	4	7	4	12	4
3	3.9	8	3.9	13	3.9
4	4	9	3.7	14	4
5	3.9	10	4	15	3.6
Overall mean value	4	Overall mean value	3.8	Overall mean value	3.9
Overall relevance mean value				3.9	
Global mean value				3.8	

Note. It can then be stated that the form itself—that is, every one of its items—is highly valid by having a global mean value of 3.8, which falls well within the range of 3.5 to 4, equivalent to the maximum (highly valid) grading. Thus, no modifications were needed nor made, and it can be used as is for this research.

Observations

Experts were also asked to comment on the accomplishment or nonaccomplishment of the previously dissected items in the form of observations and based on the version of the learning activities they were provided with. It should be noted that the most predominant remarks were tabulated and addressed for the further improvement of the learning activities as the ultimate goal of the qualitative data analysis for this study. Furthermore, these remarks,

mostly associated with the presentation, writing, and guidance sought from the learning activities, along with the remedial actions taken, can be seen in Table 56.

Table 56

Chiefly Observed Items with Experts' Comments and Corresponding Corrective Measures

	Statements		
Items	9. The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.	10. The instructions and rubrics for doing the activities are clear and well written.	13. English teachers can be trained to implement the learning activities in a virtual learning environment with their students.
Observations			
Expert 1's	"The graphics are relevant, it is necessary to take into account the copyright. At the instructional level, there is too much text that opoca the level of focus that is presented in the proposal, other types of vignettes can be created, speech bubbles that give a better environment to the learning environment"	"The rubrics are relevant and consistent. Better layout, text size and color"	"Orientations to other teachers are required to understand the strict or instructional design, the strategies and approach, times and resources used in the proposal"

	Statements		
Expert 2's	"I did a very detailed review of the material. Methodologically it is very good and innovative in that it is novel in making use of current communication technologies and easily accessible to the target audience. Contextualization is very good. However, as far as the presentation is concerned, I see an aspect to be improved and that is the large amount of text in the slides. I believe that text should be used sparingly in charts, maps, etc. to make it more entertaining and dynamic."		
Expert 3's	"Some of them are difficult to read, however they are well-designed and presented!"	"It would be nice to have different resources for teachers and students, I mean, certain guides for students and others for teachers. Sometimes it	"Having different guides would be more helpful(teachers -students)"

	Statements		
		makes it easier to follow."	
Expert 4's	"A lot of text on some slides. Some of them are too dark. Text in white can be hard to read sometimes."		
Expert 5's			
Expert 6's	"Aesthetic presentation is important, but we can't have all flash and no content. Noted spots where the graphics interfered with readability"	"Grammar and vocabulary are clearly non-native in some areas and could be made more fluid, but it has more to do with style and doesn't really impact meaning"	"PROPER training is key. Older teachers may have a steeper learning curve to climb…"
Expert 7's	"Be aware with some colors (yellow, grey,...) and fonts, sometime it is difficult to read."		
Remedial actions	The presentation of the learning activities was revamped by spreading out the text and increasing font sizes to make the content clearer and easier to read on most devices; i.e.,	The learning activities were improved in terms of language, rendering the context and instructions more learner-centered, fluid, and polished. Most passages were rewritten using the second-	A document with additional resources was created with the sole purpose of providing links to tutorials for using all of the techno-pedagogical resources tools referred to in

	Statements		
	smartphones, tablets, laptops, notebooks, and desktops. In addition, the text was abridged to enhance clarity and to stress the practical aspect of the learning activities.	person perspective (you), rather than the third-person point of view (the student), as second-person sentences are generally more engaging and authoritative.	the learning activities. Instead of creating separate guides aimed at either teachers or students, all the additional resources were included in a file with titles specifying the target group.

Data Analysis of the Expert Validation Form Answers

The learning activities went through expert validation and were graded on a scale of 1 to 4—1 being strongly disagree and 4 being strongly agree (see Appendix F).

Analysis Items

Item 1. The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.

Table 57

Experts' Item 1 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	3
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 1 is highly valid, meaning that the learning offered can indeed be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.

Item 2. Learning activities could be applied to different contexts (national or international).

Table 58

Experts' Item 2 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	4
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 2 is highly valid, meaning that the learning activities could easily be applied to different contexts (national or international).

Item 3. The learning activities are ambitious.

Table 59

Experts' Item 3 Validation Values

Experts	Values
1	4
2	4
3	4
4	4
5	4
6	4
7	3

According to the mean value $\left(M = \frac{4+4+4+4+4+4+3}{7} = 3.9\right)$, Item 3 is highly valid, meaning that the learning activities are certainly ambitious.

Item 4. The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.

Table 60

Experts' Item 4 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	3
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 4 is highly valid, meaning that the activities are largely consistent with their stated specific objectives, learning standards, assessment paths, etc.

Item 5. The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.

Table 61

Experts' Item 5 Validation Values

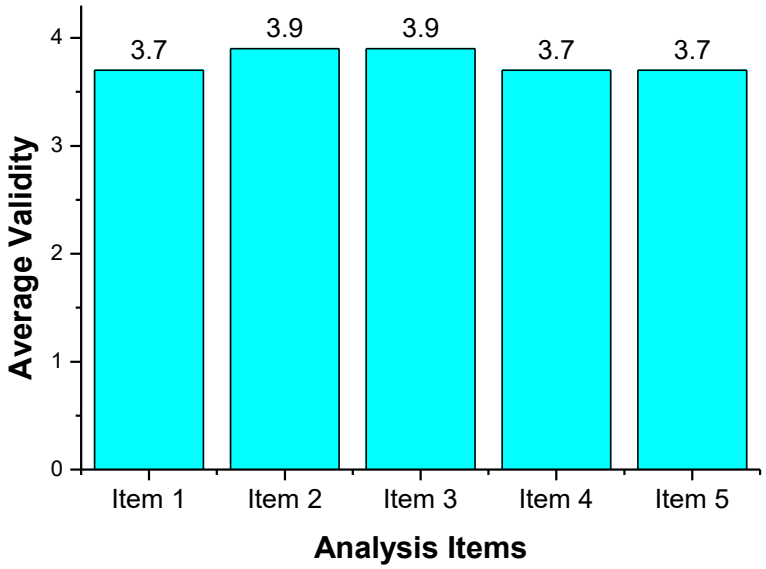
Experts	Values
1	3
2	4
3	4
4	4
5	4
6	3
7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 5 is highly valid, meaning that the proficiency level identified (elementary [A2] and pre-intermediate [B1]) is quite appropriate for the proposed learning activities.

In Sum. It can be stated that items 1–5 are highly valid, i.e., the learning activities are analytically well accomplished, as reflected in the mean values in Figure 17.

Figure 17

Average Validity of Analysis Items



Design Items

Item 6. The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.

Table 62

Experts' Item 6 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	4
6	3
7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+3+4}{7} = 3.7\right)$, Item 6 is highly valid, meaning that the learning activities chosen are actually a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.

Item 7. The learning activities cater to a wide range of learning styles.

Table 63

Experts' Item 7 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	4
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 7 is highly valid, meaning that the learning activities cater well to a wide range of learning styles, which in this case are in line with the Index of Learning Styles.

Item 8. The learning activities are relevant and varied.

Table 64

Experts' Item 8 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	3
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 8 is highly valid, meaning that the learning activities are eminently relevant and varied.

Item 9. The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.

Table 65

Experts' Item 9 Validation Values

Experts	Values
1	4
2	4
3	4
4	4
5	3
6	3
7	3

According to the mean value $\left(M = \frac{4+4+4+4+3+3+3}{7} = 3.6\right)$, Item 9 is highly valid, meaning that the aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them quite attractive.

Item 10. The instructions and rubrics for doing the activities are clear and well written.

Table 66

Experts' Item 10 Validation Values

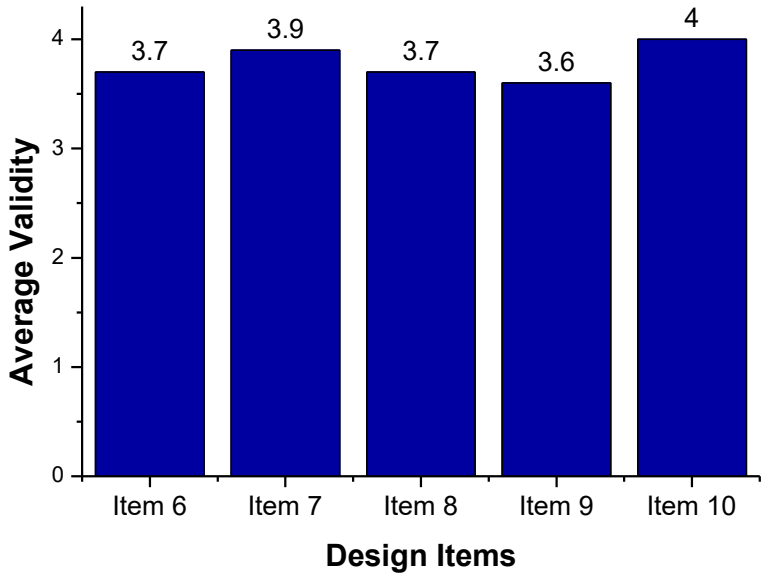
Experts	Values
1	4
2	4
3	4
4	4
5	4
6	4
7	4

According to the mean value $\left(M = \frac{4+4+4+4+4+4+4}{7} = 4\right)$, Item 10 is highly valid, meaning that the instructions and rubrics for doing the activities are absolutely clear and well written.

In Sum. It can be stated that items 6–10 are highly valid, i.e., the learning activities are well realized in terms of design, as reflected in the mean values in Figure 18.

Figure 18

Average Validity of Design Items



Development Items

Item 11. The techno-pedagogical resources deployed adequately support the learning activities.

Table 67

Experts' Item 11 Validation Values

Experts	Values
1	3
2	4
3	4

Experts	Values
4	4
5	3
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 11 is highly valid, meaning that, in effect, the techno-pedagogical resources deployed adequately support the learning activities.

Item 12. Google Classroom can effectively support/work as the main learning platform.

Table 68

Experts' Item 12 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	3
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+3+4+4}{7} = 3.7\right)$, Item 12 is highly valid, meaning that Google Classroom can indeed effectively support/work as the main learning platform.

Item 13. English teachers can be trained to implement the learning activities in a virtual learning environment with their students.

Table 69

Experts' Item 13 Validation Values

Experts	Values
1	4
2	3

Experts	Values
3	4
4	4
5	4
6	4
7	4

According to the mean value $\left(M = \frac{4+3+4+4+4+4+4}{7} = 3.9\right)$, Item 13 is highly valid, meaning that English teachers can definitely be trained to implement the learning activities in a virtual learning environment with their students.

Item 14. The selected techno-pedagogical resources are diverse and flexible in application.

Table 70

Experts' Item 14 Validation Values

Experts	Values
1	3
2	4
3	4
4	4
5	3
6	4
7	3

According to the mean value $\left(M = \frac{3+4+4+4+3+4+3}{7} = 3.6\right)$, Item 14 is highly valid, meaning that the selected techno-pedagogical resources are assuredly diverse and flexible in application.

Item 15. This project provides interactive scenarios where technology is the main axis of English education.

Table 71

Experts' Item 15 Validation Values

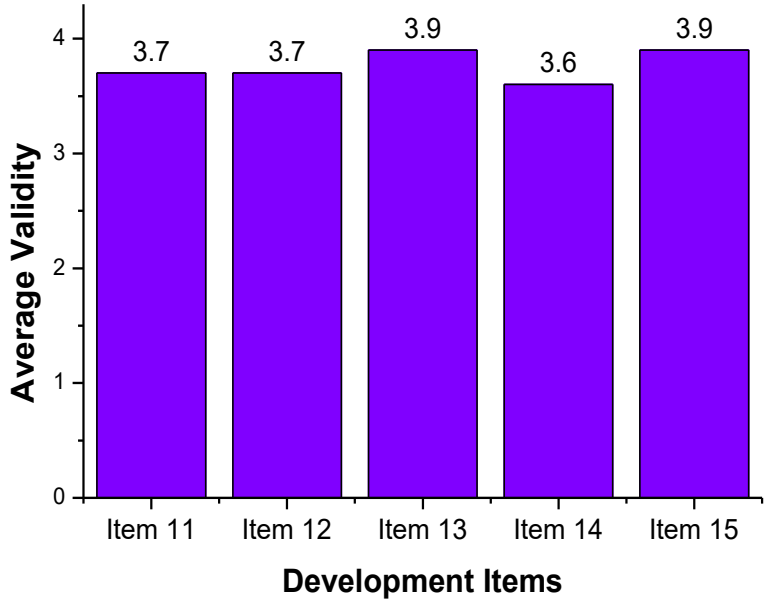
Experts	Values
1	3
2	4
3	4
4	4
5	4
6	4
7	4

According to the mean value $\left(M = \frac{3+4+4+4+4+4+4}{7} = 3.9\right)$, Item 15 is highly valid, meaning that this project presents excellent interactive scenarios where technology is the main axis of English education.

In Sum. It can be stated that items 11–15 are highly valid, i.e., the learning activities are well realized when it comes to development, as reflected in the mean values in Figure 19.

Figure 19

Average Validity of Development Items



Rundown

An overview of the previously analyzed data is presented in Table 72.

Table 72

Abridged Expert Validation Form Data Analysis Results

Dimensions					
Analysis		Design		Development	
Items	Mean values	Items	Mean values	Items	Mean values
1	3.7	6	3.7	11	3.7
2	3.9	7	3.9	12	3.7
3	3.9	8	3.7	13	3.9
4	3.7	9	3.6	14	3.6
5	3.7	10	4	15	3.9
Overall mean value	3.8	Overall mean value	3.8	Overall mean value	3.8
Global mean value				3.8	

Note. A final close-ended question was also asked; “Are the learning activities novel. Yes/No?” This was unanimously answered in the affirmative. It can then be stated that the learning activities are not only novel but also highly validated by a global mean value of 3.8, which is well within the range of 3.5 to 4, equivalent to the maximum (highly valid) grading.

To determine whether the items share common concepts and are in agreement with each other, the Cronbach’s alpha (1951) was also calculated, resulting in a coefficient of 0.881, indicating a good internal consistency (see Appendix G). Furthermore, Cronbach’s alpha not only measures how well one measure of an item differs from another item of the same construct but also how it varies between items (Taber, 2018), which further consolidates the reliability of the instruments used.

Finally, in this respect, it is of import to note that the use of the ADDIE model, expounded both in the theoretical and methodological frameworks, was concatenated with the Index of Learning Styles, providing a double-feedback loop that proved beneficial to both. The latter was also presented in the literature review chapter and used for the analysis, design, and

development of the learning activities at the core of this research. Without the ADDIE model and the ILS, the aforementioned highly probative results couldn't have been attained.

Observations

Just like in the previous form, experts were asked to submit their observations; the difference being that they were presented with the latest version of the learning activities with changes reflecting their prior comments. These observations can be seen in Table 73, along with the researcher's interpretations.

Table 73

Experts' Closing Remarks with Interpretations

Experts	Observations	Interpretations
Expert 2	"Well designed and contextualized giving students a better space for learning!"	It's worth pointing out the steep decrease in observations and particularly suggestions from one form to the other, which is arguably indicative of a positive shift in the way the learning activities were originally presented, written, and oriented. Although the original text was trimmed down and revised, there's still room for improvement as per the expert's closing remarks, since there always is, especially when
Expert 5	"Good job! Interesting proposal in order to improve students' communicative and tech skills."	
Expert 6	"Overall the learning activities are challenging and many are aligned with higher order thinking skills of inferring and synthesizing. I would suggest you consider having less text if these learning activities are designed to be presented directly to students because many will I suppose not read it all. Second, I would suggest you consider the level of the students this is aimed at because the language can be quite challenging for A2 and B1. Finally, you provide a lot of useful background information for students but I would consider when possible, having students do some (not all) of this background research themselves and fill in the graphic organizers with their findings (e.g., "10 Golden Rules for a Good Pronunciation"). You can also consider providing some opportunities for students to come up with their own questions to	

Experts	Observations	Interpretations
	complement those provided by the teacher. Overall, it is a remarkable set of learning activities which can provide scaffolded opportunities for learning."	it comes to something as pliable as writing.

Recommendations

None of the learning activities require that they must be completed thoroughly, but they must rather be dispatched effectively. It is the teacher's responsibility to make sure learners are aptly introduced to the learning activities by providing proper contextualization. Students need to be aware of why they are being taught what they are. This is an aspect the learning activities delve into in depth. However, in no way should teachers feel forced to contextualize solely by going through the learning activities themselves. They're encouraged to make the most out of the activities by relying on their own intuitive knowledge to complement or adapt them to the myriad of situations arising in the FL class. As Expert 6 exemplifies, students could research the 10 rules for good pronunciation based on their findings instead of having them directly provided to them. Alternatively, another teacher might opt to ask students to expand the rules listed after discussing them in class.

Lastly, and most importantly, the teacher shouldn't expect learners to be completely autonomous in this virtual scenario. One must always keep track of the students' progress and reiterate the content as often and as thoroughly as possible by regurgitating it in one's own words for learners to digest in the same fashion as a bird feeding its young. As Expert 6 again exemplifies, the language can be tough to grasp among students, especially given the often lackluster conditions in which English is taught in various classrooms across the country. The lack of opportunity for implementing immersive environments could be mitigated by having students view or access English media (movies, videos, songs, and games) and having them

produce critiques, observations, their understanding of the materials, or anything else likely to spark discussion among the students. These materials could well become the basis of exchange and discussion within the virtual community, helping everyone expand their grasp of the language.

Conclusions

The challenge of integrating ICT with learning is raised in Tselios et al. (2008) who suggest that integrating ICT into teaching forces the rethinking of pedagogical approaches in terms of design and, consequently, the retraining of teachers to move them in that direction. This is a challenge that the 21st century teacher must take on in order to integrate meaningful pedagogical activities into a virtual learning mode. These activities must promote communication, interaction between subjects, student autonomy, the co-construction of knowledge, the awakening of a reflective practice and, ultimately, discipline-related skill sets. To achieve this, ICT must be combined with various pedagogical approaches offering a range of learning activities to people, each with different ways of learning.

In this new context, the learning activities that were designed as part of this research, were laid out and assessed on the basis of the Analysis, Design, and Development phases of the ADDIE model, a novelly applied strategy bolstering both the research methodology and the data analysis process. A panel of renowned experts each contributed their knowledge and experience to quantify and qualify the workability of the activities in an online learning environment. They were instrumental in enriching them epistemologically in keeping with their respective academic disciplines—that is, English, education, ICT, and instructional design. Through the expert judgment form, they endorsed the items that were later used to validate each activity. Thanks to their timely and purposeful observations, the learning activities were revamped not only in terms of presentation but also clarifying the writing. Their input was also instrumental in further consolidating a guide with which teachers and students alike can learn more about the techno-pedagogical resources referenced in the learning activities themselves.

Future educational materials could be assessed by means of the expert validation form, since all of its measured items proved to be systematically sufficient, clear, coherent, and relevant according to the data analysis results from the expert judgment form, leading to a high degree of validity. It is to be noted that this form of evaluation is useful for preparing educational materials, which to be effective, must be scrutinized by a sizable and experienced number of specialists before being implemented in teaching. Consequently, the expert judgment form is an invaluable instrument and needs to be used at the evaluation phase of the instructional design process, rather than being disregarded or relegated to a minor role.

However, the full potential of the learning activities at the core of this, or any similar research, can truly be attested only once they've reached a wide-ranging audience and widespread acceptance in academic and scholarly circles; only then can one be really able to ascertain their scope, relevance, and how much interest they have attracted to the mitigation of the environmental effects of paper production, use and disposal. In the interim, prospective research studies could be conducted to gauge their ongoing application by digital means. However, this would require the will of teachers to engage in the research to inform learning outcomes. To this end, a feedback form was posted on the learning activities website to shed light on the sentiment elicited by them and see whether they can stand the test of time in today's fast moving educational landscape and why. In addition, further improvements to the learning activities may be effected based on these very same sentiments. This way, such activities would stand a greater chance of being perceived as relevant in the education realm as times goes on and as a response to the learners' personal needs and expectations, taking advantage of IT enabled social networking and the ever-expanding technological possibilities in online education.

In effect, digital learning is rapidly becoming the wave of the future and will most likely be the norm in 2021 in light of the COVID-19 pandemic conditions, which remain critical at the time of writing. It will and has to keep benefitting from the convenience that technology offers. Old, soon to be irrelevant models will have to adapt and evolve to take advantage of the new opportunities that technology affords us under the present circumstances. Furthermore, with the numerous innovative techno-pedagogical resources being simultaneously developed or updated to enhance quality of learning, the world is expected to welcome a new era of online education in the coming years, bringing about an unprecedented and worldwide revolution.

One can only imagine the final benefits that such a scenario might afford:

- no more regional school boards with disparate programs and standards as students can be reached and receive the exact same education country-wide wherever they are geographically as long as they have access to Internet and technological devices, along with the basic skills to make efficient use of them;
- the development of distance learning programs for both governments and educational institutions, as well as for the private sector that wouldn't have to set aside resources for maintaining physical learning facilities;
- given the format and scope of networked connectivity, the interaction possibilities would expand way beyond the confines of school walls;
- the end of bussing; kids can learn in the comfort of their own homes;
- the end of "gotcha" school inspections, regulations, and penalties;
- the social skills and character-building of students can be enriched through the experience of engaging with other students from different parts of the world and different backgrounds in ways they normally wouldn't be able to in a face-to-face setting;

- the learning styles present in the virtual classroom can be catered to by taking advantage of the myriad possibilities offered by e-learning tools and media, from the realization of debates through videoconferencing apps to the creation of wikis on various topics of interest, embedding personalized instruction into the fabric of a learner's everyday world;
- the end of reliance on paper, relieving pressure on our dwindling forests; and
- probably, a whole slew of benefits that can't be fathomed yet…

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environment. *IEEE Transactions on Learning Technologies*, *8*(1), 31–42. http://dx.doi.org.bdigital.udistrital.edu.co:8080/10.1109/TLT.2014.2354038

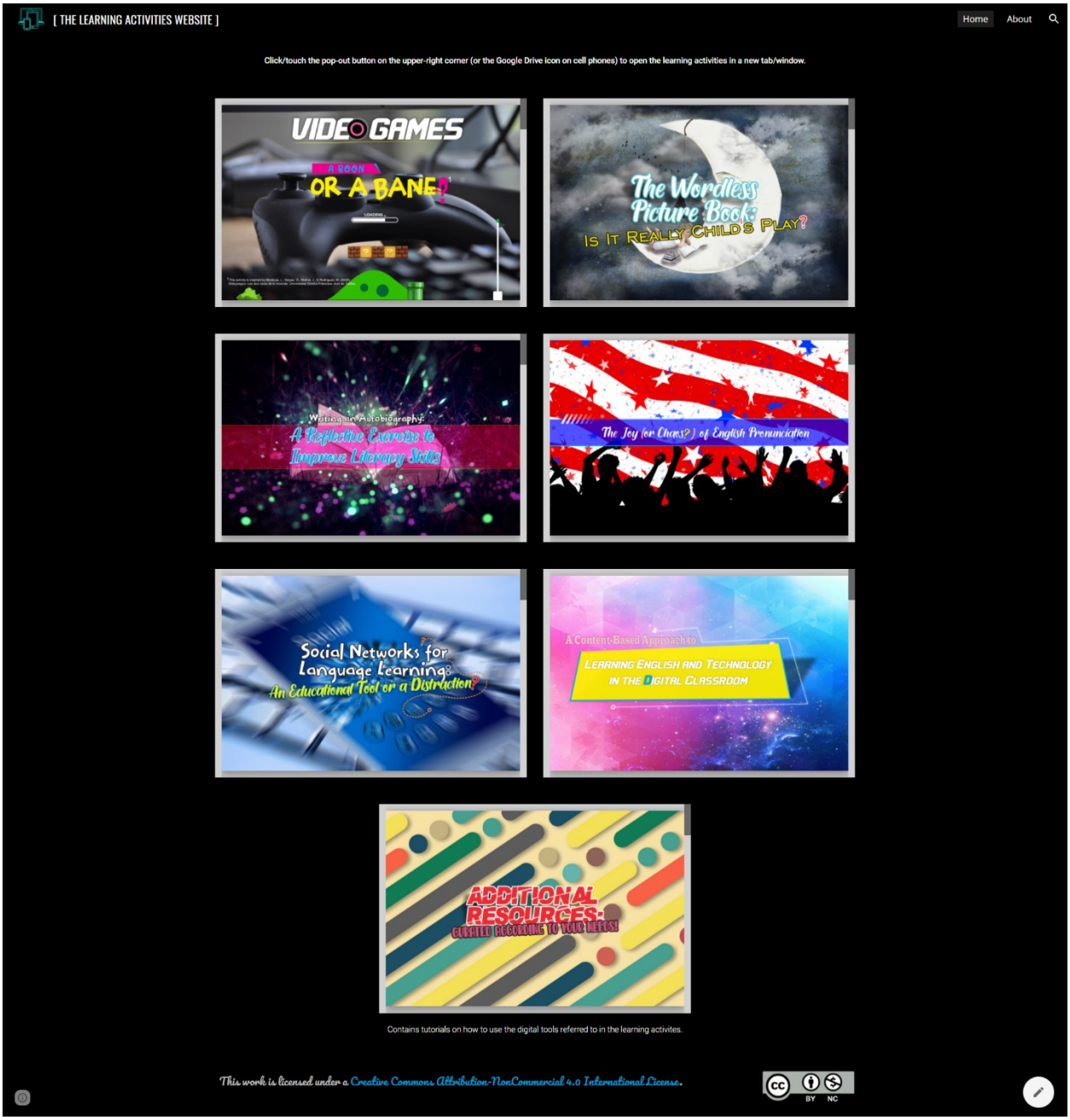
Yamagata-Lynch, L. C. (2014). Blending online asynchronous and synchronous learning. *International Review of Research in Open and Distance Learning*, *15*(2), 189–212. https://doi.org/10.19173/irrodl.v15i2.1778

Appendix A: Learning Activities

Click Figure 20 to access the learning activities website.

Figure 20

The Learning Activities Website Homepage



Appendix B: Consent Letter

_____ __, 2020

Dear _____,

By way of this letter, I cordially and respectfully request your evaluation and respective observations in the validation of a series of learning activities at the core of a master's thesis entitled *Generation of Novel Activities for English Learning and Teaching: A Learning Styles Approach*. In order to do this, I first invite you to read the section entitled: "Expert Judgment Form." As a specialist with a keen interest in teaching, I would like to have your considered observations about the sufficiency, clarity, coherence, and relevance of the learning activities. Your assessment will allow me to improve the design and contents of such activities before turning them in.

As you may already know, I'm currently enrolled in the Master of Education (M.Ed.) program in technology at Universidad Distrital Francisco José de Caldas. My main objective is to generate novel activities for learning English via the use of digital educational resources while targeting different learning styles as expressed in Richard M. Felder and Barbara A. Soloman's model (n.d.). At the same time, such activities are intended to be freely published on the internet for use by English teachers and students, mainly in the basic secondary and middle English course of studies in Colombia. Hopefully, I would also like my endeavor to raise awareness and interest in the development of electronic educational activities, leading to, among other things, the mitigation of the environmental footprint of paper production.

Please rest assured that your assessment will be processed anonymously and confidentially and will be used solely for the purposes of my master's thesis. In closing, I would

like to thank you in advance for your collaboration; your involvement will be an invaluable contribution to enriching the outcome of my research.

I'm looking forward to your reply.

Sincerely,

James Montoya

Cali, Colombia

Appendix C: Expert Judgment Form

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: _____

Areas of professional experience: _____

Years of professional experience: _____

Current position: _____

Workplace: _____

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Categories and indicators used by the experts:

Table 74

Categories and Indicators for Expert Judgment

Categories	Indicators
Sufficiency The items within the same dimension suffice to measure this dimension.	1. The items are insufficient to measure the dimension. 2. The items measure some aspects of the dimension but do not represent the full dimension. 3. A few items must be added in order to fully assess the dimension. 4. The items are sufficient.
Clarity The item can be understood easily, i.e., syntax and semantics are appropriate.	1. The item is unclear. 2. The wording of the item requires several modifications or a very large modification in terms of meaning or word order. 3. Some of the terms in the item require very precise modifications. 4. The item is clear, with appropriate semantics and syntax.
Coherence The item is logically related to the dimension or indicator it's measuring.	1. The item bears no logical relationship to the dimension. 2. The item has a tangential relationship to the dimension. 3. The item has a moderate relationship to the dimension it's measuring. 4. The item is completely related to the dimension it's measuring.
Relevance The item is essential or important, i.e., it must be included.	1. The removal of the item wouldn't affect the measurement of the dimension. 2. The item is somewhat relevant, but another item may be covering what this item is measuring. 3. The item is rather important. 4. The item is very relevant and should be included.

Note. Adapted from Escobar-Pérez and Cuervo-Martínez (2008).

According to the aforementioned indicators, rate each item numerically as appropriate in your judgment.

Table 75

Form A

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.					
	The learning activities could be applied to different contexts (national or international).					
	The learning activities are ambitious.					
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.					
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.					

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.					
	The learning activities cater to a wide range of learning styles.					
	The learning activities are relevant and varied.					
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.					
	The instructions and rubrics for doing the activities are clear and well written.					
Development	The techno-pedagogical resources deployed adequately support the learning activities.					
	Google Classroom can effectively support/work as the main learning platform.					
	English teachers can be trained to implement the learning					

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	activities in a virtual learning environment with their students.					
	The selected techno-pedagogical resources are diverse and flexible in application.					
	This project provides interactive scenarios where technology is the main axis of English education.					

Note. Own elaboration.

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: _____

Appendix D: Expert Validation Form

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 76

Form B

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.				
	The learning activities could be applied to different contexts (national or international).				
	The learning activities are ambitious.				
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.				
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.				

Dimensions	Items	1	2	3	4
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.				
	The learning activities cater to a wide range of learning styles.				
	The learning activities are relevant and varied.				
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.				
	The instructions and rubrics for doing the activities are clear and well written.				
Development	The techno-pedagogical resources deployed adequately support the learning activities.				
	Google Classroom can effectively support/work as the main learning platform.				
	English teachers can be trained to implement the learning activities in a virtual				

Dimensions	Items	1	2	3	4
	learning environment with their students.				
	The selected techno-pedagogical resources are diverse and flexible in application.				
	This project provides interactive scenarios where technology is the main axis of English education.				

Note. Own elaboration.

Are the learning activities novel? Yes/No

Observations (optional): _____

Appendix E: Expert Judgment Form Answers

Expert 1

Respected expert: You have been selected to evaluate the document entitled “Expert Judgment Form” designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert’s names and surnames: _____

Educational background: Doctor in Education

Areas of professional experience: Curriculum, leadership, foreign language development

Years of professional experience: 15

Current position: Part time

Workplace: Universidad Nacional Abierta y a Distancia - UNAD

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 77

Expert 1's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.	4	3	3	4	It requires an orientation and accompaniment of the teacher at the instructional level for the studentIt requires an orientation and accompaniment of the teacher at the instructional level for the student
	The learning activities could be applied to different contexts (national or international).		3	3	4	The activities can be applied, however it is necessary to verify that the resources that are added in the different scenarios are available and not blocked for their adequate access
	The learning activities are ambitious.		3	3	4	The proposed activities have good intentions, they can improve

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		3	3	4	There is coherence between the different elements proposed and evidence of sequentiality
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.		3	3	3	It is pertinent to propose a diagnostic activity at the beginning that allows the student and the program to identify the level of learning, as well as the level of competence in the management of virtual resources by the student
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	3	3	3	3	Due to the type of methodology and approach, there are additional elements to those used or suggested.
	The learning activities cater to a wide range of learning styles.		3	3	4	This aspect can be improved since it is limited to 4 communication skills, omitting

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
						other categories in the process of language acquisition, this aspect can be improved
	The learning activities are relevant and varied.		3	3	3	The proposed activities are acceptable, they can better focus the level of acquisition and production in the foreign language
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		3	3	4	The graphics are relevant, it is necessary to take into account the copyright. At the instructional level, there is too much text that opoca the level of focus that is presented in the proposal, other types of vignettes can be created, speech bubbles that give a better environment to the learning environment

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	The instructions and rubrics for doing the activities are clear and well written.		3	3	4	The rubrics are relevant and consistent. Better layout, text size and color
Development	The techno-pedagogical resources deployed adequately support the learning activities.	3	3	3	3	It can be enriched with additional resources that focus mostly on acquisition or production and that tend to be more interactive and would help the purpose presented.
	Google Classroom can effectively support/work as the main learning platform.		3	3	4	This resource is acceptable for being flexible and commonly used, it is pertinent and it would be acceptable to think of an additional option as a risk aspect.
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		3	3	4	Orientations to other teachers are required to understand the strict or instructional design, the strategies and approach, times and resources

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
						used in the proposal
	The selected techno-pedagogical resources are diverse and flexible in application.		3	3	4	Contains these elements
	This project provides interactive scenarios where technology is the main axis of English education.		3	3	4	Contains these elements

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: 11/27/2020

Expert 2

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: Specialist in educational management projects

Areas of professional experience: Design and application of methodologies and materials for teaching general English, business English, English for specific purposes, and Spanish as a foreign language

Years of professional experience: 8

Current position: Teacher / Instructional designer

Workplace: SENA - UNESCO

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 78

Expert 2's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts	4	4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	and monitor progress.					
	The learning activities could be applied to different contexts (national or international).		4	3	4	
	The learning activities are ambitious.		4	3	4	
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		4	4	4	
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.		4	4	4	
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	4	4	3	3	
	The learning activities cater to a wide range of learning styles.		4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	The learning activities are relevant and varied.		4	4	4	
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		4	4	4	I did a very detailed review of the material. Methodologically it is very good and innovative in that it is novel in making use of current communication technologies and easily accessible to the target audience. Contextualization is very good. However, as far as the presentation is concerned, I see an aspect to be improved and that is the large amount of text in the slides. I believe that text should be used sparingly in charts, maps, etc. to make it more entertaining and dynamic.

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	The instructions and rubrics for doing the activities are clear and well written.		4	4	4	
Development	The techno-pedagogical resources deployed adequately support the learning activities.	4	4	4	4	
	Google Classroom can effectively support/work as the main learning platform.		4	3	4	
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		3	3	3	
	The selected techno-pedagogical resources are diverse and flexible in application.		4	4	4	
	This project provides interactive scenarios where technology is the main axis of English education.		3	4	4	

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? No

Which? _____

Expert's signature: _____

Date: November 27th, 2020

Expert 3

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: Master's Degree in ICT Tools for Education

Areas of professional experience: teaching, ICT, foreign languages.

Years of professional experience: 8

Current position: University teacher. ICT designer (education project MEN) at Univalle.

Workplace: Universidad del Valle

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 79

Expert 3's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.	4	4	4	4	
	The learning activities could be applied to different contexts (national or international).		4	4	4	
	The learning activities are ambitious.		4	4	4	
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		4	3	4	Some of them could be for different levels.
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for		3	3	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	the proposed learning activities.					
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	3	4	4	4	
	The learning activities cater to a wide range of learning styles.		4	4	4	
	The learning activities are relevant and varied.		4	4	4	4th skills well-presented and worked!
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		3	4	4	Some of them are difficult to read, however they are well-designed and presented!
	The instructions and rubrics for doing the activities are clear and well written.		4	3	4	It would be nice to have different resources for teachers and students, I mean, certain guides for students and others for teachers. Sometimes it makes it easier to follow.

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Development	The techno-pedagogical resources deployed adequately support the learning activities.	4	4	4	4	
	Google Classroom can effectively support/work as the main learning platform.		4	4	4	
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		4	4	4	Having different guides would be more helpful(teachers-students)
	The selected techno-pedagogical resources are diverse and flexible in application.		4	4	4	
	This project provides interactive scenarios where technology is the main axis of English education.		4	4	3	

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: 29th Nov 2020

Expert 4

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: Master's Degree in ICT in Education

Areas of professional experience: Foreign language (Spanish and English), e-learning instructional design

Years of professional experience: 10

Current position: Instructional designer

Workplace: DINTEV

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 80

Expert 4's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.	4	4	4	4	
	The learning activities could be applied to different contexts (national or international).		4	4	4	
	The learning activities are ambitious.		4	4	4	
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		4	4	4	
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.		4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	4	4	4	4	
	The learning activities cater to a wide range of learning styles.		4	4	4	
	The learning activities are relevant and varied.		4	4	4	
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		4	4	3	A lot of text on some slides. Some of them are too dark. Text in white can be hard to read sometimes.
	The instructions and rubrics for doing the activities are clear and well written.		4	4	4	
Development	The techno-pedagogical resources deployed adequately support the learning activities.	4	4	4	4	
	Google Classroom can effectively support/work as the		4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	main learning platform.					
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		4	4	4	
	The selected techno-pedagogical resources are diverse and flexible in application.		4	4	4	
	This project provides interactive scenarios where technology is the main axis of English education.		4	4	3	

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: November 30th 2020

Expert 5

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: BA in Modern Languages and Master in Education.

Areas of professional experience: E-learning processes in Higher Education.

Years of professional experience: 15

Current position: Coordinadora Académica Digital

Workplace: Universidad del Rosario

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 81

Expert 5's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual	4	4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	environment with a teacher's guiding hand to steer the students' efforts and monitor progress.					
	The learning activities could be applied to different contexts (national or international).		4	4	4	
	The learning activities are ambitious.		4	4	4	
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		4	4	4	
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.		4	4	4	
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	4	3	4	3	I suggest including "metacognition".
	The learning activities cater to a wide		4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	range of learning styles.					
	The learning activities are relevant and varied.		3	3	4	How? methods? ABP, Cases, Projects, Challenges, etc.
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		4	4	4	
	The instructions and rubrics for doing the activities are clear and well written.		4	4	4	
Development	The techno-pedagogical resources deployed adequately support the learning activities.	4	4	4	4	
	Google Classroom can effectively support/work as the main learning platform.		4	4	4	
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	The selected techno-pedagogical resources are diverse and flexible in application.		3	4	4	Refers to… media, formats, types?
	This project provides interactive scenarios where technology is the main axis of English education.		4	4	4	

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: 30th November 2020

Expert 6

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: 1973-75; Cambrian College of Arts and Technologies – Audio-Visual Technologist Program | 1975-77; Laurentian University – Teacher's Assistant Program; production of audio-visual teaching aids and psycho-social education minor

Areas of professional experience: Audio-Visual Techniques in Educational Environments

Years of professional experience: 32

Current position: Retired

Workplace: Various grammar schools and high schools throughout my career

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 82

Expert 6's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students'	4	3	4	4	Some of the directions were a bit unclear to me, but that may be an artefact of cultural and system

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	efforts and monitor progress.					differences, Canada vs Colombia
	The learning activities could be applied to different contexts (national or international).		3	4	4	Minor adjustments allowing for socio-cultural differences may be in order, but the basic concepts are sound and exportable
	The learning activities are ambitious.		3	4	3	Not quite up on the Colombian standards for each grade, but some seem a bit over ambitious to me especially in an ESL context with no opportunity for full immersion
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		4	4	4	
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.		3	4	4	If a Canadian scale was applied, this would get a solid 4 across the board

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	3	4	4	4	
	The learning activities cater to a wide range of learning styles.		3	4	4	Each activity attacks the material from different angles, soliciting different skill sets and preferences
	The learning activities are relevant and varied.		4	4	4	
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		3	3	3	Aesthetic presentation is important, but we can't have all flash and no content. Noted spots where the graphics interfered with readability
	The instructions and rubrics for doing the activities are clear and well written.		3	4	4	Grammar and vocabulary are clearly non-native in some areas and could be made more fluid, but it has more to do with style and doesn't really impact meaning
Development	The techno-pedagogical resources deployed	4	4	4	4	Perfection is not of this world, but I

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	adequately support the learning activities.					don't know where to take points off in this aspect
	Google Classroom can effectively support/work as the main learning platform.		4	4	4	As long as the teacher has a strong understanding of the strengths and limitations of the platform and students are familiarized with it
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		3	4	4	PROPER training is key. Older teachers may have a steeper learning curve to climb…
	The selected techno-pedagogical resources are diverse and flexible in application.		4	4	4	The technological resources can be made to do whatever the teacher imagines – the real flexibility requirements lie with him
	This project provides interactive scenarios where technology is the main axis of English education.		3	4	3	Our technical capabilities evolve so rapidly that this assessment is fine for today but may lose relevance with time

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: 03-12-2020

Expert 7

Respected expert: You have been selected to evaluate the document entitled "Expert Judgment Form" designed by M.Ed. candidate, James Montoya, as part of his research to become a master of education in technology.

The evaluation of the instrument is of great relevance in validating the learning activities. The results obtained from such evaluations will be considered and used efficiently, contributing to both the research area and its present and future applications. Your collaboration is greatly appreciated.

Expert's names and surnames: _____

Educational background: Mg. in Education

Areas of professional experience: Foreign Languages

Years of professional experience: 12

Current position: Professor

Workplace: Universidad Icesi

Research objective:

Generate novel activities for learning and teaching English by using digital educational resources while targeting different learning styles.

Aim of the expert:

Assess the instrument for validating learning activities according to the criteria established under the ADDIE model while taking into account each of the corresponding items.

Test objective:

Didactically evaluate ADDIE-based learning activities.

Table 83

Expert 7's Form A Response

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.	4	4	4	4	
	The learning activities could be applied to different contexts (national or international).		4	4	4	
	The learning activities are ambitious.		4	4	4	
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.		4	4	4	You can add and be more precise with learning strategies.
	The proficiency level identified (elementary [A2] and pre-intermediate [B1])		4	4	4	

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	is appropriate for the proposed learning activities.					
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.	4	4	4	4	
	The learning activities cater to a wide range of learning styles.		4	4	4	
	The learning activities are relevant and varied.		4	4	4	
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.		4	4	4	Be aware with some colors (yellow, grey,...) and fonts, sometime it is difficult to read.
	The instructions and rubrics for doing the activities are clear and well written.		4	4	4	
Development	The techno-pedagogical resources deployed adequately support the learning activities.	4	4	4	4	You can add and be more precise with learning strategies.

Dimensions	Items	Suffi-ciency	Clarity	Coher-ence	Rele-vance	Observations
	Google Classroom can effectively support/work as the main learning platform.		4	4	4	
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.		4	4	4	
	The selected techno-pedagogical resources are diverse and flexible in application.		4	4	4	
	This project provides interactive scenarios where technology is the main axis of English education.		4	4	4	

At the end of the evaluation please answer the following questions if you deem it necessary:

Is there a dimension that is part of the construct that wasn't evaluated? _____

Which? _____

Expert's signature: _____

Date: Thursday, December 3rd, 2020

Appendix F: Expert Validation Form Answers

Expert 1

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 84

Expert 1's Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.			✔	
	The learning activities could be applied to different contexts (national or international).			✔	
	The learning activities are ambitious.				✔
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.			✔	
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.			✔	

Dimensions	Items	1	2	3	4
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.			✔	
	The learning activities cater to a wide range of learning styles.			✔	
	The learning activities are relevant and varied.			✔	
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.				✔
	The instructions and rubrics for doing the activities are clear and well written.				✔
Development	The techno-pedagogical resources deployed adequately support the learning activities.			✔	
	Google Classroom can effectively support/work as the main learning platform.			✔	
	English teachers can be trained to implement the learning activities in a virtual				✔

Dimensions	Items	1	2	3	4
	learning environment with their students.				
	The selected techno-pedagogical resources are diverse and flexible in application.			✔	
	This project provides interactive scenarios where technology is the main axis of English education.			✔	

Are the learning activities novel? Yes

Observations (optional): _____

Expert 2

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 85

Expert 2's Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.				✔
	The learning activities could be applied to different contexts				✔

Dimensions	Items	1	2	3	4
	(national or international).				
	The learning activities are ambitious.				✔
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.				✔
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.				✔
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.				✔
	The learning activities cater to a wide range of learning styles.				✔
	The learning activities are relevant and varied.				✔
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.				✔

Dimensions	Items	1	2	3	4
	The instructions and rubrics for doing the activities are clear and well written.				✔
Development	The techno-pedagogical resources deployed adequately support the learning activities.				✔
	Google Classroom can effectively support/work as the main learning platform.				✔
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.			✔	
	The selected techno-pedagogical resources are diverse and flexible in application.				✔
	This project provides interactive scenarios where technology is the main axis of English education.				✔

Are the learning activities novel? Yes

Observations (optional): Well designed and contextualized giving students a better space for learning!

Expert 3

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 86

Expert 3's Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.				✔
	The learning activities could be applied to different contexts (national or international).				✔
	The learning activities are ambitious.				✔
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.				✔
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.				✔

Dimensions	Items	1	2	3	4
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.				✔
	The learning activities cater to a wide range of learning styles.				✔
	The learning activities are relevant and varied.				✔
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.				✔
	The instructions and rubrics for doing the activities are clear and well written.				✔
Development	The techno-pedagogical resources deployed adequately support the learning activities.				✔
	Google Classroom can effectively support/work as the main learning platform.				✔
	English teachers can be trained to implement the learning activities in a virtual				✔

Dimensions	Items	1	2	3	4
	learning environment with their students.				
	The selected techno-pedagogical resources are diverse and flexible in application.				✔
	This project provides interactive scenarios where technology is the main axis of English education.				✔

Are the learning activities novel? Yes

Observations (optional): _____

Expert 4

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 87

Expert 4's Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.				✔
	The learning activities could be applied to different contexts				✔

Dimensions	Items	1	2	3	4
	(national or international).				
	The learning activities are ambitious.				✔
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.				✔
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.				✔
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.				✔
	The learning activities cater to a wide range of learning styles.				✔
	The learning activities are relevant and varied.				✔
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.				✔

Dimensions	Items	1	2	3	4
	The instructions and rubrics for doing the activities are clear and well written.				✔
Development	The techno-pedagogical resources deployed adequately support the learning activities.				✔
	Google Classroom can effectively support/work as the main learning platform.				✔
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.				✔
	The selected techno-pedagogical resources are diverse and flexible in application.				✔
	This project provides interactive scenarios where technology is the main axis of English education.				✔

Are the learning activities novel? Yes

Observations (optional): _____

Expert 5

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 88

Expert 5's Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.			✔	
	The learning activities could be applied to different contexts (national or international).				✔
	The learning activities are ambitious.				✔
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.			✔	
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.				✔
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.				✔

Dimensions	Items	1	2	3	4
	The learning activities cater to a wide range of learning styles.				✔
	The learning activities are relevant and varied.			✔	
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.			✔	
	The instructions and rubrics for doing the activities are clear and well written.				✔
Development	The techno-pedagogical resources deployed adequately support the learning activities.			✔	
	Google Classroom can effectively support/work as the main learning platform.			✔	
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.				✔
	The selected techno-pedagogical resources are			✔	

Dimensions	Items	1	2	3	4
	diverse and flexible in application.				
	This project provides interactive scenarios where technology is the main axis of English education.				✔

Are the learning activities novel? Yes

Observations (optional): Good job! Interesting proposal in order to improve students' communicative and tech skills.

Expert 6

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 89

Expert 6's Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher's guiding hand to steer the students' efforts and monitor progress.				✔
	The learning activities could be applied to different contexts (national or international).				✔
	The learning activities are ambitious.				✔

Dimensions	Items	1	2	3	4
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.				✔
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.			✔	
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.			✔	
	The learning activities cater to a wide range of learning styles.				✔
	The learning activities are relevant and varied.				✔
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.			✔	
	The instructions and rubrics for doing the activities are clear and well written.				✔

Dimensions	Items	1	2	3	4
Development	The techno-pedagogical resources deployed adequately support the learning activities.				✔
	Google Classroom can effectively support/work as the main learning platform.				✔
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.				✔
	The selected techno-pedagogical resources are diverse and flexible in application.				✔
	This project provides interactive scenarios where technology is the main axis of English education.				✔

Are the learning activities novel? Yes

Observations (optional): Overall the learning activities are challenging and many are aligned with higher order thinking skills of inferring and synthesizing. I would suggest you consider having less text if these learning activities are designed to be presented directly to students because many will I suppose not read it all. Second, I would suggest you consider the level of the students this is aimed at because the language can be quite challenging for A2 and B1. Finally, you provide a lot of useful background information for students but I would consider

when possible, having students do some (not all) of this background research themselves and fill in the graphic organizers with their findings (e.g., “10 Golden Rules for a Good Pronunciation”). You can also consider providing some opportunities for students to come up with their own questions to complement those provided by the teacher. Overall, it is a remarkable set of learning activities which can provide scaffolded opportunities for learning.

Expert 7

On a scale of 1 to 4—1 being the lowest score (strongly disagree) and 4 being the highest score (strongly agree)—rate the learning activities.

Table 90

Expert 7’s Form B Response

Dimensions	Items	1	2	3	4
Analysis	The learning offered can be carried out in a virtual environment with a teacher’s guiding hand to steer the students’ efforts and monitor progress.				✔
	The learning activities could be applied to different contexts (national or international).				✔
	The learning activities are ambitious.			✔	
	The activities are consistent with their stated specific objectives, learning standards, assessment paths, etc.				✔

Dimensions	Items	1	2	3	4
	The proficiency level identified (elementary [A2] and pre-intermediate [B1]) is appropriate for the proposed learning activities.				✔
Design	The learning activities chosen are a perfect reflection of the current trends in the field; cognitivist, constructivist, and social constructivist.				✔
	The learning activities cater to a wide range of learning styles.				✔
	The learning activities are relevant and varied.				✔
	The aesthetic presentation of the learning activities (e.g., colors, frames, backgrounds, images in text, fonts, bold type, etc.) makes them attractive.			✔	
	The instructions and rubrics for doing the activities are clear and well written.				✔
Development	The techno-pedagogical resources deployed adequately support the learning activities.				✔
	Google Classroom can effectively				✔

Dimensions	Items	1	2	3	4
	support/work as the main learning platform.				
	English teachers can be trained to implement the learning activities in a virtual learning environment with their students.				✔
	The selected techno-pedagogical resources are diverse and flexible in application.			✔	
	This project provides interactive scenarios where technology is the main axis of English education.				✔

Are the learning activities novel? Yes

Observations (optional): _____

Appendix G: Cronbach's Alpha

The Cronbach's alpha $\left(\alpha = \frac{k}{k-1}\left(1 - \frac{\sum V_i}{V_t}\right)\right)$ is a measure of internal consistency (Tavakol & Dennick, 2011)—that is, "the degree of interrelationship or homogeneity among the items on a test, such that they are consistent with one another and measuring the same thing" (American Psychological Association, n.d.), which can be calculated for any construct and is often used in statistics. A higher Cronbach's alpha represents a greater degree of internal consistency than a lower value. The Cronbach's alpha was computed to determine the internal consistency of the expert validation form, as follows:

Table 91

Cronbach's Alpha of Form B

Experts	Item values															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Expert 1	3	3	4	3	3	3	3	3	4	4	3	3	4	3	3	49
Expert 2	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	59
Expert 3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	60
Expert 4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	60
Expert 5	3	4	4	3	4	4	4	3	3	4	3	3	4	3	4	53
Expert 6	4	4	4	4	3	3	4	4	3	4	4	4	4	4	4	57
Expert 7	4	4	3	4	4	4	4	4	3	4	4	4	4	3	4	57
Variance (V_i)	0.204	0.122	0.122	0.204	0.204	0.204	0.122	0.204	0.245	0.000	0.204	0.204	0.122	0.245	0.122	
The sum of the variances of each item ($\sum V_i$)	2.531															

The variance of the total column (V_t)	14.245
Number of items (k)	15
Cronbach's alpha value (α)	0.881

Note. According to Hair et al. (2019), the threshold of internal consistency varies according to the research. For an exploratory study, a lower coefficient is acceptable (0.60 to 0.70), but values between 0.70 and 0.95 (≤ 0.95) "represent 'satisfactory to good' reliability levels" (p. 775). Thus, it can be stated that the Cronbach's alpha value of the expert validation form shows a high degree of internal consistency, thereby attesting to the reliability of the evaluation process.