UNIVERSIDAD DE ALMERÍA

GRADO EN ESTUDIOS INGLESES

DE LAS TEORÍAS DE LA EDUCACIÓN A DISTANCIA A LA PRESENCIA ACTUAL DEL E-LEARNING

FROM THE THEORIES OF DISTANCE EDUCATION TO THE CURRENT PRESENCE OF E-LEARNING

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ABSTRACT

Technology is increasingly present in our lives and inevitably conditions the way humans interact with each other. The introduction of ICT devices and the increasing interest in exploring academic horizons through online tools mean that education is evolving as society progresses, but to what extent should the Internet be a substitute for traditional methods? Questions such as this are addressed in this study, which takes distance education theories as a starting point, explores the implication of these educational theories on technology, and concludes in the present day by examining the COVID-19 pandemic and its consequences in this field.

Key words: education, distance education, e-Learning, mobile learning, blended learning.

RESUMEN

La tecnología está cada vez mas presente en nuestras vidas y condiciona inevitablemente nuestra forma de interactuar. La introducción de dispositivos tecnológicos y el cada vez mayor interés por ahondar en fines académicos a través de herramientas en línea hacen que la educación evolucione a la par que la sociedad avanza, pero ¿En qué medida ha de sustituir el Internet a los métodos tradicionales? Preguntas como esta son las que se abordan en este estudio en el que se toman de partida las teorías de la educación a distancia, se camina por la implicación de estas teorías educativas en la tecnología, y se finaliza en la más presente actualidad con la pandemia COVID-19.

Palabras clave: educación, educación a distancia, e-Learning, m-Learning, b-Learning.

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INTRODUCTION

In the past, distance learning referred to an education in which teacher and learner are separated in time and place. As technology has advanced, the factor of time has disappeared thanks to the range of possibilities that are available nowadays. This involvement of technology in teaching is the basis of e-Learning, which has several modalities such as mobile learning and app learning. This concept, just like everything else, has been altered by the pandemic and its role has increased significantly.

OBJECTIVES

The present paper aims to present information about distance education (origins, evolution, theories) and the way technology has invaded this academic field, thus favoring the emergence of e-Learning in primary and secondary schools, colleges, universities and any kind of courses. On the one hand, the purpose is to contrast the need and effectiveness of the use of e-Learning applications in both face-to-face and online teaching environments, suggesting blended learning as a suitable method. On the other hand, given the current situation that has been occurring for over a year due to the global pandemic of COVID-19, it is also shown that this has greatly affected the use of this kind of tools and those that have seen a major growth due to the impossibility of face-to-face teaching.

METHODOLOGY

In order to carry out the theoretical part of this thesis, the collection of information has been conducted through reading, analysis, and comparison of various sources regarding the same content in order to provide comprehensive and contrasted information on the theoretical principles of the central topic of the study. Concerning the practical aspects, which are based on the suggestion of blended learning as the most appropriate way to deliver teaching nowadays, it is supported by academic data, external reports, and personal surveys where the opinion of students and teachers on the inclusion of technological tools in teaching is collected.

JUSTIFICATION

Among the factors that led to the choice of e-Learning as the subject of this study, the most important reason is the current importance of this concept in the context of the pandemic. The way in which it has affected the way in which people teach and learn is worthy of analysis

and commentary, seeking an adequate use of its tools in any academic environment in the immediate future. Therefore, delving into its origins, precedents, and different modalities is seen as necessary to understand how it works and to take advantage of its benefits in the classroom.

1. WHAT IS DISTANCE EDUCATION?

Over thirty years back, Ripley Sims defined distance education using the following words: "the unique and distinguishing feature in the correspondence educating process is that the learner is at a distance from the teacher for much, most, or even all of the time during the teaching-learning processes" (Sims 4). In 2003, Simonson referred to this as an "institutionally based formal education where the learning group is separated and where tele-communications technologies are used to connect learners, resources, and instructors" (Simonson, et al. 28). As of today, the Cambridge Dictionary describes the concept "distance education" as "a way of studying in which you do not attend a school, college, or university, but study from where you live, usually being taught and given work to do over the internet" ("Distance Education"). In this current definition it is noticeable how the Internet has absorbed a huge part of the prominence of this area of education. However, limiting distance education to online learning would be a mistake and could lead to confusion with the new term "eLearning".

Comparing these three definitions of the studied topic, it is clear that its objective and motivation remains the same over the years: providing the opportunity for convenient education to those who cannot attend *in situ* education due to various factors, such as time or location (Kaufman, et al. 19).

1.1. Origins and evolution of distance education

In order to locate the beginnings of distance education it is necessary to go back two centuries: at the end of the 19th century when universities in countries such as Australia, the United States or Canada incorporated this form of teaching (Holmberg 107). Many scholars point out that the starting date of this teaching format is determined by the definition that is understood to be appropriate and that, therefore, this subjectivity makes the precise location of its origin differ (Larreamendy-Joerns & Leindhart 572).

One of the first relevant appearances of distance education appears hand in hand with feminist progress in relation to women's academic rights through The Society to Encourage Studies at Home, founded by Anna Eliot Tiocknor (Bergmann 447). This took place in the United States during 1873 as a tool to oppose the education that patriarchal society deprived women of in that period; thus, this project was intended for women and taught by women (447). The students' main way of learning would be through "memory notes", where they

would explain what they understood as well as comment on the assigned reading (453). Although the method was organised and evaluated by the teacher, the participants would go through the course self-paced, and the purpose of the exams was mainly to test how well the method worked (453).

Obviously, there was no Internet at those times; instead, everything would be done by mail. Internet would break into the classroom as a complement or way of learning from the beginning of the 21st century, just over two decades ago (Lim et al. 59); that is why, prior to this technological appearance, the concepts of "home study" or "independent study" were considered similar to this concept since, being the written word the main method of communication and development of learning and evaluation (Holmberg 108), the interaction in the teacher-student relationship was far less significant than it is nowadays. The evolution of distance education over three different centuries has been supported by various tools throughout its existence: from correspondence courses, through radio education, one-way - and later two-way - teleconferencing, educational television programmes, to today's videoconferencing and the use of websites as the main academic method (Kaufman et al. 19).

1.2. Theories of distance education

Although there is no particular way that has been identified as the right way for this phenomenon to perform, numerous scholars have tried to establish theories on which to rely when putting distance education into practice. In all attempts to create a theory or structural view of how distance education should function, most authors take two key elements as the main features: the teacher and the learner, i.e. the role played by each of them. In the following, several of the theories emerging in the 20th century are presented, all of them listed in "The evolution of theory in distance education", written by Cheryl Amundsen, found in the pages of *Theoretical Principles of Distance Education*, by Desmond Keegan.

1.2.1. Distance Education as Industrial Process

The comparison between distance education and the industrial process appears in the 1960s by Peters, whose underlying principle is that this variant of academic education is analogous to how an industry operates. To support this idea, Peters argues that the way in which distance education was delivered was conditioned by the industrial society that was taking place (Birochi & Pozzebon); in other words, it was shaped by the lifestyle of the people in this period in terms of organisation (Amundsen 56); and, therefore, this distance

education will continue to evolve and transform according to the evolution of the industrial world itself.

This first example, as its creator indicates, is not a theory for distance education, but a very different point of view from the general picture, which is why it is included in the books devoted to this field of learning (56).

1.2.2. A Theory of Transactional Distance and Learner Autonomy

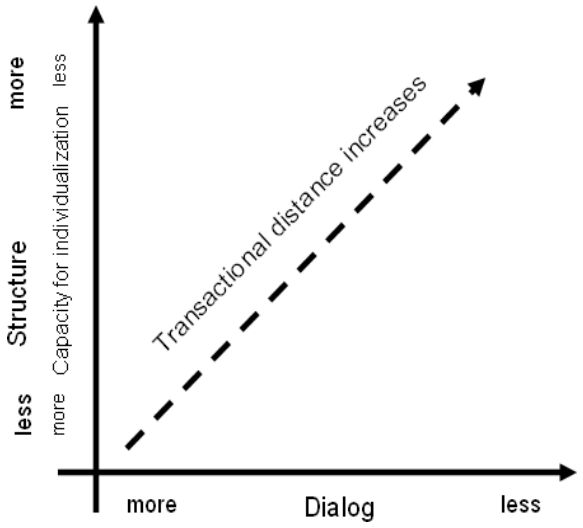
In this case, it is a theory, which was developed by Michael Graham Moore over more than a decade. To properly understand this approach, it is necessary to begin by defining "transactional distance": according to Moore, this concept refers to "the space of potential misunderstanding between the inputs of the instructor and those of the learner" (Shannon 43).

Since education already had theoretical proposals and had been deeply studied, this author wanted to focus on distance and its conditioning of the learning process. Throughout his studies, Moore discusses three elements as the main differentiating factors between education itself and distance education: dialogue, structure, and learner independence.

To begin with, this author refers to feedback in the learner-teacher relationship as the term 'dialogue'. The degree of frequency with which this is given will determine the way of teaching and learning during this process: null dialogue, in which the learner only receives material to complete/study; medium dialogue, in which the teacher offers evaluative comments on the learner's work; and high dialogue, in which the learner and teacher have the possibility of teleconferencing (Amundsen 57). For this factor to be productive, communication must be clear, motivating and interactive (Shannon 44).

The clarity is also conditioned by the second factor: the structure and organisation of the course. In finding an appropriate course structure, it should be borne in mind that the less defined the course structure, the more dialogue is needed - and the less transactional distance - and vice versa, the more structured the course is, the more dialogue and feedback becomes unnecessary and therefore the distance and autonomy from the teacher increases (44).

These two factors condition the need for the learner's capacity for autonomy. Moore argues that a student who is able to work on his or her own and be consistent is more likely to have a good experience in this type of education. The following graph shows how each factor affects the others:



Graph 1. *Transactional Distance in Education* (Bornt).

1.2.3. Börje Holmberg's Theories for Distance Education

Börje Holmberg is considered one of the pioneer theorists of distance education and has proposed different principles for an effective process during the second half of the 20th century.

Like Moore, most of Holmberg's theories of distance education prioritises communication and interaction between teacher and students, as well as the students' capacity for independence and autonomy. However, and unlike Moore, Holmberg does not focus on the structure and organisation of the course itself; on the contrary, he argues for the learner's independent skills and self-paced learning as key to achieving appropriate distance learning. (Amundsen 58). One of the concepts that this author has introduced and assigned crucial significance to is empathy: "feelings of empathy and belonging promote students' motivation to learn and have a favourable influence on learning" (Holmberg 81-82).

More than two decades ago, this author already anticipated that the need for teachers to make use of new technologies both for instruction and for communication between students and professors was going to become increasingly important and, at the same time, easier to carry out due to its constant and rapid development (83-84).

1.2.4. A Theory of Reintegration of the Teaching and Learning Acts

This theory is attributed to Desmond Keegan, one of the most important distance education theorists in history. The theory of the reintegration of teaching and learning acts is based on

the greater concern for an environment favourable to successful education, which, in Keegan's perspective, can be lacking in the absence of face-to-face meetings. Its purpose, therefore, is to try to narrow the gap between the distance learning process and the ordinary classroom experience as much as possible by substituting the oral input of face-to-face lectures with substitute material (Amundsen 59-60). Currently, thanks to the videoconferencing that the new technological tools allow us to maintain, this environmental contrast has been reduced.

1.2.5. A Theory of Communication and Learner Control

Meanwhile, Garrison's understanding suggests that distance education is subject to the evolution of technology and therefore needs to change as it develops. In his theory of communication and learner control, he sets out his idea of how to facilitate good teaching: criticising the theory of other theorists for focusing exclusively on the learner, Garrison also gives importance to the role of the teacher and the communication between them (this is similar to the concept of dialogue) with the help of technology. In terms of learner control, his theory does not support total autonomy; good control requires three intertwined factors: independence, proficiency, and support (Amundsen 61).

1.2.6. A Three-Dimensional Theory of Distance Education

The three-dimensional theory of distance education takes into account several of the above theories and was proposed by Verduin and Clark (Amundsen 61). They take Moore's theory of transactional distance and learner autonomy, Keegan's reintegration of the teaching learning acts and even Holmberg's concepts as the basis for their theory. From Moore's theory, Verduiny Clark takes up the concepts of dialogue, structure, and autonomy, changing some nuances.

As for dialogue, Moore referred to it as academic feedback, while these scholars bring this idea together with Holmberg's concept of empathy: "this support may range from simply providing directions concerning assignments to substantial motivational or emotional support" (61).

In terms of structure, Verduin and Clark are pioneers in introducing the idea of subject matter (62), i.e. the flexibility of lessons and the method of evaluation has to match the type of content being taught, being higher or lower depending on the requirements of the particular discipline.

Finally, and similar to Garrison's point of view, the question of allowing the learner the autonomy to do the work in the time he or she sets for him or herself will depend on the learner's ability to do it, meaning that if the learner does not have the qualities to be independent, this independence would have to be reduced, and vice versa.

1.2.7. Conclusions

These theories are the basis of distance education and constitute the pillars of today's online learning development. Once these theories have been discussed, several conclusions can be drawn:

- In attempting to create a theory of distance education, scholars are more concerned with the difference between distance and conventional education than with the general concept itself.
- These theories have not been created independently, instead they condition each other and take concepts from another models in an attempt to create a more modern and appropriate one.
- The concepts that have been emphasised the most are the dialogue between the institution and the student, the structure of the course, and the level of independence to be allowed to the participants.
- Despite being made in the last century, many of the authors were already aware of the progress of technologies and the impact of their development, which was seen as necessary for the future evolution of this type of education.

2. EMERGENCE OF ICT: E-LEARNING

2.1. What is e-Learning?

One could say that the difference between learning and e-learning is simply in the "e", and this would be correct. The key is to know what this "e" stands for. One of the pioneers in the field of e-learning, Bernard Luskin, states the following on this question:

> As a learning psychologist, I believe it is important to open our minds to a broader definition and understanding of the "e" in e-learning. To many, the "e" means electronic, but I assert that the "e" means more than electronic when applied to e-learning. It actually means "exciting, empirical, empathetic, extra, emerging, energetic, exceptional, early, eloquent, everywhere, ephemeral, extended, effortless, epic, evangelistic, eclectic, engaging, extended" learning — and more. (Luskin)

Therefore, the “e” that prefixes education is the one that refers to the evolution towards a more complete learning experience that increases its resourcefulness day by day.

As has already been anticipated, e-Learning is not synonymous with distance learning or distance education: while the latter is exclusively concerned with the long-distance teaching and assessment of content between students and teachers, e-Learning refers to the use of online - and offline - technology tools or apps that can take place both in a classroom environment and in a distance learning experience (Lundin), meaning that they “do overlap in some cases, but are by no means identical” (Guri-Rosenblit 467).

However, the definition of e-Learning keeps evolving over time due to the massive development of different techniques and utilities of the applications in recent times, and in addition the incorrect use of related yet not the exact same terms such as “online learning” or “distance education” complicates the task of finding a definitive definition (Bell & Federman 167).

Its introduction to educational experiences comes hand in hand with the emergence of the Internet, thus, in the last two decades, the increase in the use of the Internet in the classroom has been massive, since it helps institutions to “generate new revenue streams, improve access, and offer students greater schedulling flexibility” (165). But how does e-Learning differ from other teaching and learning processes and how does it transform them? Well, according to the article “Theories and models of and for online learning” (2007) by Haythornthwaite, the presence of CMC (computed-mediated communication) modifies different characteristics in the teaching of students at both the group and individual level in the following aspects:

- The possibility of completing activities through forums or personal submissions allows the partial anonymity of the learner to influence in different ways. For example, the interaction may be less direct, but a student who, in face-to-face classes, feels reluctant to participate for whatever reason, can take part more freely in e-Learning environments. At present, this characteristic is still valid, and the relationship between students and teacher, or among students themselves, can become more interpersonal thanks to the voluntary use of webcams and/or microphones in videoconferencing.
- Another of the differential elements of CMC that can be considered a great advantage is the persistence of documents. Students and teachers can consult the results of

activities, the activities themselves, the studied content, online exercises, or comments from classmates in forums at any time (unless a deadline has been set in the application). Nowadays, in many universities, such as the University of Manchester, the classes that take place on campus are recorded and uploaded to the platform immediately; in this way, both students who did and did not attend have that source of information that includes the slides and audio from the lesson available for the rest of the course.

- Closely related to the latter point is another advantage: the locus of engagement. This difference allows the participant greater flexibility in their learning, not only in terms of time but also in terms of place. This third advantage proposed in the article is key today due to the development of smartphones and learning apps - discussed in one of the following sections - which allows the user to access them wherever and whenever they want by using their mobile device; this feature is analysed and commented on in the "mobile learning" section.

E-Learning, therefore, is not presented in a singular shape, but adapts itself to different situations. With this fact, Paulsen (1995) summarises the forms in which e-Learning can develop as follows:

SITUATION OF THE PARTICIPANT/S	METHODS
One-alone	Online databases; online journals; online applications; interest groups; software libraries
One-to-one	Learning contracts; apprenticeships; interviews, collaborative assignments, role plays
One-to-many	Symposiums; lectures; role plays; interviews
Many-to-many	Discussion groups; debates; games; simulations; case studies; brainstorming; Delphi; project groups

Table 1. *Paulsen's classification of e-Learning situations.*

These concepts are taken up and used in the app-related sections that currently exist to discuss their underlying features.

2.2. Theories of learning in e-Learning

Theories of education play a fundamental role in e-Learning models, as the structure, organisation and objectives of these applications revolve around them in order to function as a perfect supplement to teaching. It is therefore necessary to recall the major theories of education in order to understand eLearning models. This is why the three main dominant theories which have the most influence on e-Learning models are Behaviourism, Cognitivism, and Constructivism (Alzaghoul 27).

On the one hand, Behaviourism is a theory that was at its peak from the beginning of the last century until the 1970s that focuses on the behaviour of the learner and the changes that develop in the process (Woollard). In other words, in this theory, learning is viewed as "the acquisition of a new behaviour or the modification of behaviour as a result of teaching, training or tutoring" (Woollard).

And it would be before the 1970s that the theory of Cognitivism would arrive to supplant Behaviourism. As the name suggests, the main concern of this theory lies in the mental processes involved in the learning experience of the learner, such as "thinking, remembering, perceiving, interpreting, reasoning, and problem solving" (Clark 176). The mind is, therefore, the main object of study and focus of this theory.

The last of these three theories, constructivism, brings together elements of the two theories already defined:

> The constructivistic approach to teaching and learning is based on a combination of a subset of research within cognitive psychology and a subset of research within social psychology, just as behavior modification techniques are based on operant conditioning theory within behavioral psychology. (Huitt)

In addition to these three, another model that technology designers consider for creating successful e-learning products is Gagne's Nine Events for Instruction (May). This teaching guide proposes nine different steps to follow in order to achieve student learning:

1. Gaining attention;
2. Informing the learner about the objective;
3. Stimulating recall of the prerequisite learning;
4. Presenting the stimulus material;
5. Providing "learning guidence";
6. Eliciting the performance;
7. Providing feedback about performance correctness;
8. Assessing performance;
9. Enhancing retention and transfer. (Wager 6)

As a result of these principles and psychological studies, the creators of technological teaching tools will design their programmes to attempt to provide the most efficient and high quality teaching process possible.

2.3. Models of e-Learning

The principal function of e-Learning models is to describe the extent to which and the way in which technology is used in the learning process (Suryawanshi & Suryawanshi 107). The following are overviews of the most relevant and most widely used models of e-Learning since its emergence:

2.3.1. The ADDIE model

The ADDIE model is one of the most commonly applied methods of creating training programmes in e-learning. Its name is the acronym for the five steps to be followed in its practice: analyse, design, develop, implement, and evaluate (Kurt). Its origins appear in the University of Florida more than five decades ago and, initially, it was focused on military training; however, it was adapted to all types of learning (DeBell). The role of each stage of the process is now described:

- Analyse.

The analysis stage is the one in which the objectives of the programme to be developed are set according to the present situation of the area in which the final product is to be focused (Kurt), i.e. it has to be appropriate in order to ensure that the content offered is interesting, relevant, innovative and effective when it comes to its learning. To achieve all this, creators have to ask themselves numerous questions from an outsider's perspective, such as what is their purpose, who they are targeting, how does the product work, and others.

- Design.

In the design process, the conclusions of the first phase are shaped: the structure of the content to be taught is created, all types of multimedia content that are seen as necessary are included and attention is given to all the details of the product (DeBell). In this phase a strategy has to be followed and its creators have to address their doubts about what kind of education they want to provide, how to motivate the student to learn, how long a lesson should last, what variety of options the student will have, et cetera (Kurt).

- Development.

The development is the creation of the product that after analysis and design of what is to be created takes place and checking whether the plans that have been set out actually work (Kurt). To carry out this testing it is preferable to have a large number of reviewers since only a few could be too subjective (DeBell).

- Implementation.

The implementation phase covers those changes that are made after development to fix any problems or bugs in the application in order to create an academically satisfactory experience. Therefore, this phase is the revision phase of the programme created.

- Evaluation.

Although evaluation is present at all stages of the process, the actual evaluation comes after the course has been completed and an assessment is made of the effectiveness and usefulness of the programme used to see if the desired objectives have been achieved (Kurt). In the case that there were elements to be improved, this improvement would be carried out again and thus be progressively closer to the final objective (DeBell).

Once the ADDIE model has been explained, an illustration of the order of its steps is as follows (Branch):

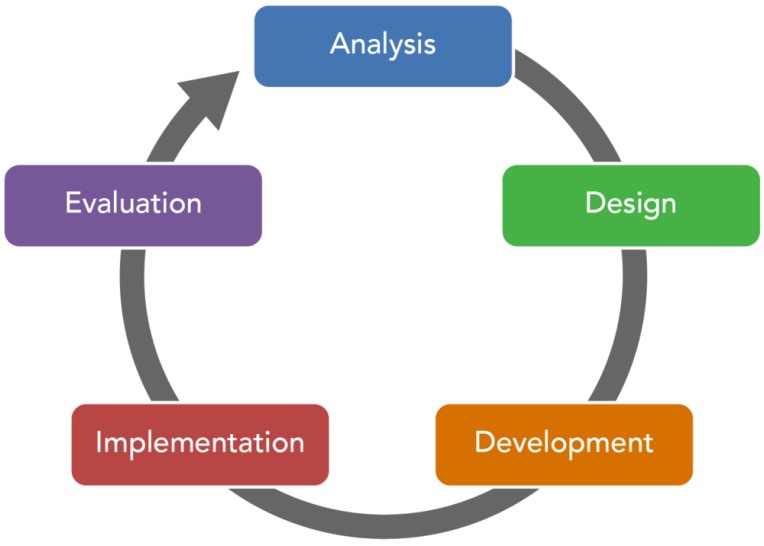


Figure 1. *The ADDIE Model*.

2.3.2. The SAM model

Some may regard the ADDIE model process as too slow due to its "waterfall" system, which is why the SAM (Successive Approximation Model) model emerged as a response by

Michael Allen in order to offer faster design and development than the previous model (Herrholtz). Trina Rimmer (2016) compares and defines this model as the following:

> Unlike ADDIE's five big sequential steps, the Successive Approximation Model (SAM) is a more cyclical process which can be scaled from basic (SAM1) to extended (SAM2), to suit your needs.
>
> SAM1 is the basic SAM process. It can be a good fit for smaller projects that don't require a lot of complicated technology (e.g., video or custom programming) or for smaller teams. This flavor of SAM is a cyclical model with three iterations on the familiar instructional design steps of evaluation/analysis, design, and development. (Rimmer)

Basically, the aim of this kind of model is to realise failures and their consequent improvements more quickly than in ADDIE, making the processes more asynchronous than in the waterfall system where you have to go step by step. In relation to its phases, the preparation stage is different from the ADDIE analysis, as it is closer to a brainstorming session between all parts of the team; in contrast, the iterative design phase is similar to the design from the previous model; and, finally, the development phase is in charge of testing the programme on three different occasions (Sirui).

The internal steps of each of the three phrases are made clearer in the following image (Sirui):

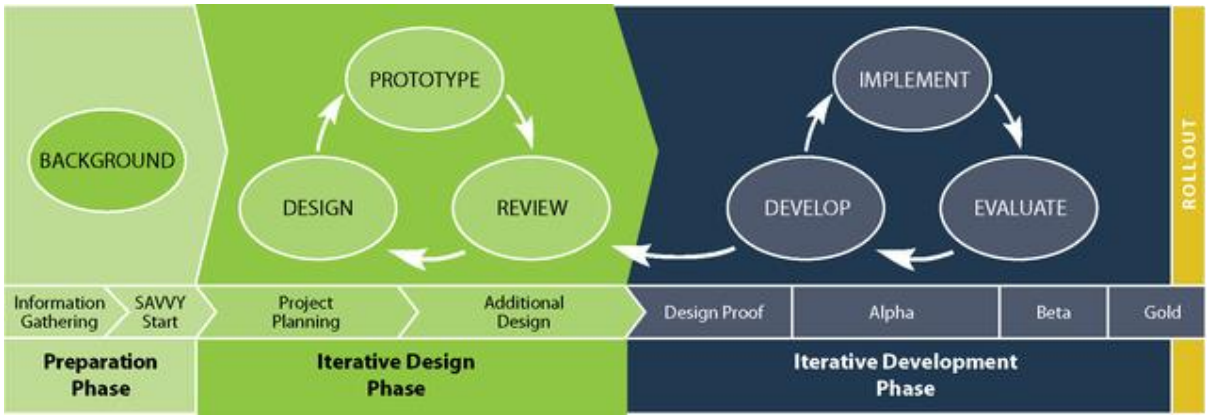


Figure 2. *The SAM model.*

3. MODALITIES OF E-LEARNING

3.1. Mobile learning

The e-Learning modality known as mobile learning refers to all types of educational tools that are accessible to people through small portable devices such as tablets, e-books or mobile phones, i.e. all devices that are independent of electrical supply and allow the user to take them with him or her wherever he or she goes (Ally 184). This huge technological development in terms of mobile devices has greatly increased the last two characteristics

mentioned in the section on e-Learning: freedom of time and place. Mobile learning is thus a learning process that has as its main characteristics ubiquity, portability, flexibility, privacy, interactivity, instant information and collaboration (Ozdamli & Cavus 940).

According to Ozdamli and Cavus (2011), the basic elements of mobile learning are:

- The learner, as apps are developed with the learner's interests in mind and the learner is in charge of taking an active position in the development of learning.
- The teacher, who due to the development of the internet has gone from being an expert to a consultant. In this context, the teacher has to be prepared to make use of the different technological tools that their students can use and motivate them to use them correctly.
- The content, which has to be revised and chosen meticulously so that the product being taught is appropriate and adapted to the level of the participants.
- The environment is another element to take into account due to the wide variety of situations in which mobile learning can take place.
- Finally, assessment plays a vital role in mobile learning, as the device can save the results to be transmitted to the teacher later on, or even work on the participant's weaknesses in greater depth.

3.1.1. Most popular apps for mobile learning

Nowadays, any information one wants to find out is just a click away. However, as easy as it is to find information on the internet, it is also easy to publish it. This can result in the source being unreliable and misleading. Mobile learning apps are a perfect resource both for searching for information and for training learning as they are designed for this purpose. Some of the most used bolie apps of recent times and the functions they perform are described below:

- *Khan Academy*. The origins of this application's success date back to 2006, an application created by Salman Khan that compiles short videos explaining academic content on a specific topic (Huang et al. 25). These topics can be related to mathematics, medicine, health, biology, economics, teaching itself, and many more fields found in more than 4000 videos that have already been played more than 200 million times (30). These videos are accessible through the app itself: once in the search box, users have the option of typing in the content they are looking for or

entering the subject they are interested in, the level they are at and the specific content for that grade selected.

- *EdX*. This tool is a platform created by leading institutions such as Harvard University. By offering high level courses of top quality available to everyone, they aim to "enhance teaching and learning on campus and online, and advance teaching and learning through research" (EdX). From their website visitors can search for the type of content they are looking for by entering subject (more than 20 options), partner, programme, level (introductory, intermediate and advanced), type of avaliability (future, present, or past), and the language in which it is taught (also more than 20 options).
- *Quizlet*. This app is more interactive than the previous ones as it is educational and formative through games. In this way, users can compete alone or with opponents in games of memory and skill, which helps them to master the content on which the activity is focused. This app, which was created to be used individually, developed ways of creating games for teachers to develop concrete activities for their students (Kolodny), something that would turn this app into the next e-learning modality to be explained: blended learning.

3.2. Blended learning

Blended learning is a teaching modality in which learning techniques used in a physical environment are complemented with the technological tools of e-Learning or m-Learning (explained below). In this way, the course will be effective both for those learners who are comfortable in a traditional learning environment and for those who find web-based training motivating and/or helpful in developing their knowledge (Lawless & McGarry).

Within this modality there are two different models: the disruptive model and the sustained model (Santos). The difference between these two types of programmes lies in the role that technology plays in the course (protagonist or secondary):

- In the case of the disruptive model, the main part of the course takes place at a distance via online platforms, with very infrequent face-to-face meetings to conduct particular activities.
- On the other hand, the sustained model is the most popular and widely used blended learning method (Santos). This approach consists of integrating technological tools into the face-to-face teaching environment as an efficient complement

The inclusion of technology in face-to-face courses has many advantages for both teachers and students. Thanks to these online and offline resources, learners can access sources of information that do not exist in their classroom, or forms of assessment that are more dynamic than traditional ones; it also allows the teacher to deliver specific content to a particular group of students if required; or, for example, it allows students who are unable to attend class from time to time to find the content online.

3.2.1. Most popular apps for blended learning

In blended learning there is a wide variety of apps with different functions. More and more frequently, teachers and professors are using technology to complement their classes and give them a more dynamic and motivating approach for students. These are some of the most commonly used technological platforms in a face-to-face environment or on those occasions when physical presence does not take place:

- *Kahoot*. This platform is one of the most popular among students and is based on the creation of quizzes where pupils compete against each other. The quizzes can be searched and chosen by the teacher or even created by the tutors themselves to suit the subject being taught. The scoring system works in such a way that everyone who gets a correct answer will receive points based on how fast they were at answering the quiz. All the answers are given simultaneously, which makes the class progress at the same time and ensures a dynamic lesson.
- *Photomath*. This application can be used both in the classroom and at home as it is a tool specifically for mathematical calculations. The functioning of this app is simple: the user takes a picture of the mathematical equation and the program will give the result, including each step that has to be done to get to the final answer.
- *Blackboard Collaborate*. This tool is used by many universities and allows participants of the same course to meet in videoconferences scheduled by the teacher. It is used for those occasions when the lesson is delivered virtually. In these videoconferences, students can participate in two ways: written (via chat) or oral (using their microphone). This videoconference can be complemented with the use of webcams and content shared on screen by the professor or by the students to whom the lecturer has given the role of presenter.

3.3. Language learning through e-Learning

One of the areas that has grown the most alongside the impressive development of technology in the last few decades is second-language learning through websites and apps (Loewen et al. 294). For years, the use of computers or technological devices in language classes has been very common, especially in groups where students have easy access to these kind of tools (Warschauer & Meskill 303).

These applications have proven to be effective in developing participants' skills in reading, speaking and listening; however, the question of whether this type of autonomous learning is better than face-to-face courses is somewhat undefined given the questionable objectivity and number of studies carried out on this comparison, with opinions varying as much as that their outcome is equal or even better, or that their participants lack in-depth training. (Loewen et al. 295). This emergence of technological tools has conditioned the way language teachers train, as now they are not only concerned with teaching the language itself, but they also focus their instruction on the correct use of certain applications that serve as a complement to the acquisition of a language (Warschauer & Meskill 308). In the following section, some of the most successful technological tools (apps and websites) focused on a second language acquisition in recent times are presented.

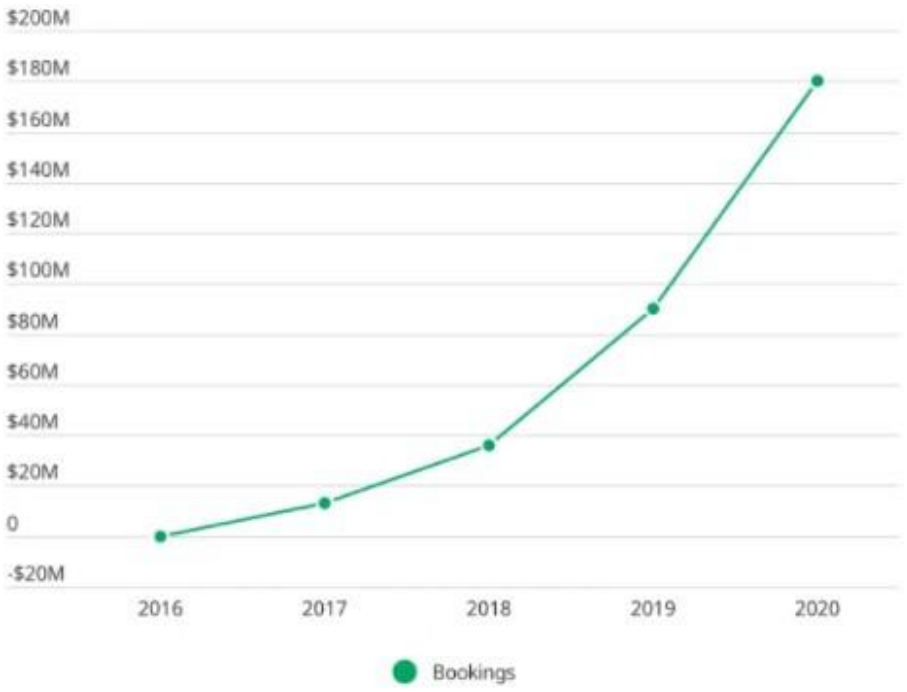
3.3.1. Most used apps for language learning

As indicated above, second language apps can adopt two approaches: (1) as a learning supplement or support such as dictionaries or translators; or (2) apps focused on the teaching of that language.

Regarding the sources that serve as support for activities in a second language, *WordReference* is a prime example. This website/application is one of the most recommended dictionaries, one of the 500 most visited websites in the world and reaching the top 100 in countries such as France, Spain, Italy and all of Latin America (Kellogg). Once on the website, users are able to focus their search on a variety of 18 languages. The languages in which it specialises most (Spanish, English, and French) not only have a dictionary and translator function but also offer options related to grammar, verb conjugations, and synonyms and antonyms. Related to these last two elements, another website that enhances the quality of English language activities is *Thesaurus*, a website which, as its name suggests, allows the user to find numerous synonyms and antonyms for any term and thus enrich their

vocabulary. In addition, from this site it is also possible to book online individual or group lessons with teachers.

On the other hand, the apps that stand out the most in terms of teaching a second language thoroughly are *Duolingo* and *Babbel*. Launched almost 10 years ago, *Duolingo* is an online application that allows its users to learn 27 different languages (Teske 393). This mobile app adapts to the user's needs and even motivates training with reminders with a set time of use per day. When logging in, participants can either start from basic vocabulary or complete a level test to ensure that the content offered is useful. From there, *Duolingo* assigns the user a level among the eight different sections - each one more complete and complex than the last - and the goal is to complete them all by being consistent. *Babbel* has very similar functions to *Duolingo*, the difference lies mainly in tthe fact that *Duolingo* is open access and in order to use *Babbel* it is necessary to subscribe. Both include rewards and achievements as part of the motivation to improve. In contrast, duolingo subscriptions are optional, and as this graph shows, the increase in recent years is remarkable:



Graph 2. *Duolingo Bookings' Increase* (Mascarenhas).

As a conclusion to this section, based on this graph, it can be affirmed that an increasing number of people are opting for this type of platform as a way of learning a language, valuing its flexibility in terms of schedule, location and autonomy.

4. E-LEARNING: A SOLUTION IN TIMES OF A PANDEMIC

4.1. e-Learning: a necessary move

Now, why are online learning tools being proposed as a solution to education in times of COVID-19? In recent years, universities and colleges have been paying more attention to electronic resources, adapting to new technologies; however, the emergence of COVID-19 has greatly accelerated the use and popularity of "language apps, virtual tutoring, video conferencing tools, or online learning software" (Li & Lalani). The reason for this lies in the fact that measures adopted to control the spreading of the virus required the closure of the academic centres (such as social distancing or quarantine), thus affecting "1.6 billion learners in more than 200 countries" (Pokhrel & Chhetri 133), i.e., "94% of the world's student population" (133).

Therefore, e-Learning can be seen as a solution since by its use content can continue to be delivered and assessed in a risk-preventing way, taking education forward and stopping it from stagnating through applications such as those mentioned in previous sections and others to be discussed later.

4.2. Controversy

However, the use of the Internet as a replacement for traditional education during the pandemic is not free of controversy. For example, this is mainly due to the fact that transferring lessons and information sources entirely to technological tools implies ignoring those cases in which families do not have the same economic and social resources (Waller et al. 244). This inequality in private education centres is practically non-existent and the adaptation to the telematic route was much quicker and more effective than in public centres, where inequality, both in terms of individuals and the lack of resources of the centre itself, is much more present (Cabrera 130).

But the controversy is not limited to the economic field; what about those students who need special attention? Restrictive measures such as quarantine and school closures can cause people with Special Education Needs and Disabilities (SEND) a great deal of stress by disrupting the routines they are used to, as well as placing parents in the role of having to do the work that professionals do in the classroom, a situation that can often be overwhelming for the families (Asbury et al. 1772). Families with children who require special attention report an increase in worry from their children, an increase in anxiety and also a lack of

control of the situation at times; they admit that they would like professional help to guide them on how to approach the situation both academically and mentally (1780).

4.3. COVID-19 and the emergence of apps

As has already been anticipated on several occasions, due to the pandemic, some applications have increased their users in an enormous way. The video conferencing apps such as Google Classroom and Zoom have grown the most exponentially, the first having increased its number of users by 40 million since last year, and Zoom is being proposed for future uses related to parental control of in-person lessons and meetings.

5. SURVEYS ON E-LEARNING

5.1. Methodology

The aim of these surveys is to analyse the importance, effectiveness and use of complementary technology tools in the academic environment for both students and lecturers in the pre-COVID-19 era and in the COVID-19 era. This study has been carried out by conducting two different surveys: one aimed at Spanish university students and the second at professors. These surveys were completed in Spanish to guarantee the comprehension of the questionnaire, which mainly consisted of 13 multiple-choice questions (14 in the case of the students) and 2 short-answer opinion questions. The number of participants for the student survey is 119 while the number of participants for the professor survey is reduced to 35.

5.2. E-Learning survey for students

N	Questions	Answers
1	Do you know what e-Learning is?	• Yes (55.1%) • No (2.,2%) • I'm not sure (23.7%)
2	How often have online resources been used in classes you have attended? (Before the COVID-19 pandemic)	• Very often (26.1%) • Every week (16%) • Not too often (49.6%) • Never (8.4%)

3	Have you ever submitted assignments online?	• Yes (97.5%) • No (2.5%)
4	"I prefer to do online activities rather than in-class activities"	• I agree (36.1%) • I don't agree (42%) • I don't have a preference (21.8%)
5	Do you/have you ever made use of learning apps? (e.g. Duolingo)	• Yes (75.6%) • No (24.4%)
6	How important do you consider the use of the Internet for learning?	• Very (52.9%) • Fairly (43.7%) • Kind of (3.4%) • Barely (0%)
7	Do you think it is important that professors know how to use and make use of online tools?	• Yes (95%) • No (5%)
8	Based on your experience during the pandemic, do you consider that professors have made correct use of online tools?	• Yes, they have made a correct use (4.2%) • Most of them have (42%) • No, they should be more prepared (41.2%) • Most of them have not (12.6%)
9	Do you think online tools are an educational advance?	• Yes (94.1%) • No (5.9%)
10	"I participate more in face-to-face lessons than in online	• I agree (53%)

	ones”	• I do not agree (20.5%) • I participate the same (26.5%)
11	“Interactive apps and games as *Kahoot* encourage me to participate”	• I agree (85.5%) • I do not agree (14.5%)
12	“Learning apps are a very flexible and effective way of learning”	• I agree (53.4%) • They must be used as complementary support (39.8%) • I do not like them (6.8%)
13	“My university’s online platform is well prepared”	• I agree (51.7%) • I do not agree (48.3%)
14	“I would like to receive online feedback from my professors more quickly”	• I agree, it takes too long (50%) • Depends on the professor (44.9%) • I have not had that problem (5.1%)
15	According to your experience, what is the biggest advantage of online courses/lessons?	Most common elements in the answers (86): - Flexibility (32.1%) - Comfort (28.3%) - Time saving (18.8%)
16	According to your experience, what is the biggest disadvantage of online courses/lessons?	Most common elements in the answers (87):

		- Distractions (38.4%) - Deshumanisation of the educational process (18.2%) - Teachers' inability to use online tools (15.9%)

5.3. E-Learning survey for professors

N	Questions	Answers
1	Do you know what e-Learning is?	• Yes (94.3%) • No (5.7%)
2	How often do you make use of technological tools (online and offline) during your lessons? (Before the COVID-19 pandemic)	• In every lesson (20%) • Often (31.4%) • Sometimes (42.9%) • As least as possible (5.7%)
3	Have you ever used apps to prepare the structure or contents for your lessons?	• Yes (61.8%) • No (38.2%)
4	How important do you consider the use of the Internet for the learning of your students?	• Very (37.1%) • Fairly (48.6%) • Kind of (11.4%) • Barely (2.9%)

5	"Internet is a necessary complement to teaching nowadays"	• I agree (100%) • I do not agree (0%)
6	"Learning apps are a very flexible and effective way of learning"	• I agree (45.7%) • They must be used as complementary support (42.9%) • I do not like them (11.4%)
7	Do you consider that you are sufficiently familiar with the use of online tools?	• Yes, I have not had any problems (48.6%) • No, at times I have felt overwhelmed by the situation (51.4%)
8	Have you found out new online tools due to the pandemic?	• Yes (91.4%) • No (8.6%)
9	Do you think you will make more use of these kinds of resources in future face-to-face lessons?	• Yes (91.4%) • No (8.6%)
10	Do you consider that student participation in online classes has been higher or lower than in face-to-face classes?	• Higher (28.6%) • Lower (71.4%)
11	Did you need help from students to understand the functioning of the applications used?	• Sometimes (51.4%) • Never (48.6%)
12	"Interactive apps and games as *Kahoot* encourage me to participate"	• I agree (91.2%) • I do not agree (8.8%)
13	As a lecturer for the University of Almeria, have you participated in training courses for the use of the	• Yes (32.3%) • No (16.1%)

	BlackboardLearn platform?	• I do not work for the University of Almeria (51.6%).
14	What advantage would you highlight of delivering online content and assessment? (If this has been your situation)	Most common elements in the answers (25): - Comfort (40%) - Use of TICs and a lot of attractive tools for the students (20%) - None (12%)
15	What has been the worst thing about being forced to teach online? (If this has been your situation)	Most common elements in the answers (28): - Lack of closeness and consequently less attention from the students (48.2%) - Connection problems (20.6%)

5.4. Conclusions of the study and comparisons

Regarding the concept in general, teachers show a higher level of knowledge than students. Both groups agree in their opinion on the frequency of the use of online tools in the main lessons they attend or teach; however, students reflect that the internet plays a much more important role in their learning development than their teachers believe.

There are a number of opinions that are a common factor between the two groups. Generally speaking, both groups see the internet and its tools as a suitable, effective, and motivating complement to traditional education. Nevertheless, the fact that all of the professors who participated see the use of the internet as a necessary complement to current teaching, but yet a percentage of them try to use it as minimally as possible, shows a generation gap in the teaching system. This fact becomes even more evident when it is noted

that 95.8% of students say that at least a minority of the teachers who have taught them during the pandemic have not been able to make proper use of online educational tools, of whom more than half claim not to be sufficiently familiar with them and have required the students to understand some online platforms. As a solution, this could be solved with a greater emphasis on preparation for the implementation of these tools through training programmes and courses focused on pedagogical skills.

In terms of the advantages of taking the course online due to the COVID-19 pandemic, the comfort of being able to work from home was very prominent in both groups. In contrast to the teachers, the students attached greater importance to another element: flexibility. Students see as an advantage the fact of being able to connect from anywhere as long as they have a connection and the fact of being able to carry out activities in a more relaxed and autonomous way, although some of the participants have also shown this to be a disadvantage as they consider that the freedom makes them lose interest. Among others, time, money and paper savings are advantages found in the statements of both sides of the debate.

Concerning the disadvantages, both teachers and students consider distractions and the dehumanisation of the educational process to be the biggest drawbacks of online learning. The loss of being together with classmates and colleagues and the uncertainty of knowing whether students are paying attention and understanding the content taught are factors that make most participants, both teachers and students, prefer face-to-face classes to virtual ones. In addition to this, other elements reported by both groups include connection problems, the difficulties that some teachers may face when dealing with online programmes, the reduced control of teachers over students and the lack of mutual feedback.

6. CONCLUSIONS

Through these different sections, the aim has been to present the journey from the emergence of distance education already two centuries ago to the most current update with education suffering the conditioning blow that has caused and continues to cause the COVID-19 pandemic.

After having gathered information from sources such as theorists, studies, and newspapers, there are different elements to be mentioned as a conclusion to this paper:

- One of the main conclusions is that education is subject to, and therefore conditioned by, the social context in which it takes place. This can be seen both from the theories of the last century regarding distance education, where phenomena such as the

industrial society or advances in psychology had direct repercussions on the way a course was structured and taught, and today, given the impact technology has had on all fields of society, as has been explained above.

- Technology, of course, is another aspect to mention in this final section. The growth in interest in creating an appropriate way of teaching has grown along with the accessibility of the internet for families. The vast array of information, innovative tools, interactive applications, and increasingly comprehensive courses thanks to the development of web-based learning systems, which are just a click away, has led more and more people to opt in and participate in this way of learning, and enabled even more teachers to try to make use of them to improve the effectiveness of their lessons.
- Once the two modalities of e-Learning have been exposed and understood, the question arises as to which is more effective or suitable. In this case, after the studies carried out and the information presented, it seems that mobile learning is a very interesting and attractive option due to the flexibility of place and time it presents, however, as far as an academic course is concerned, the full virtual delivery of the course can present problems that would be solved with blended learning. The fact that the whole teaching is conducted online can present problems such as lack of communication, dehumanisation of the educational process, lack of interest and lack of control of the teachers, as well as merely electronic problems such as connection. These disadvantages would not occur in a face-to-face environment that alternates its classes and activities with virtual experiences, thus creating a humane and innovative teaching environment, thus taking advantage of the benefits of the traditional method and technology; i.e., sustained model of blended learning is considered to be the preferred option.
- Moreover, the current pandemic has had a huge impact on the educational field and technology has stepped up to play a major role. As can be seen in question 9 of the questionnaire to educators, 9 out of 10 of them consider that, when the pandemic is over, they will make more use of online resources in face-to-face lessons than they used to.

In short, the sections presented suggest a huge presence of technology in today's education system, which seems likely to become more and more important as the years go by and

which, if used correctly and combined with the traditional education system, can be a breakthrough full of advantages for students and teachers. This could be achieved through investment in education, thereby encouraging and improving access to and use of online programmes for academic institutions.

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