Competencia digital de los profesores de inglés en enseñanza primaria del sureste de México

Digital Competence of Elementary School English Teachers in Southeast Mexico

Competência digital de professores de inglês na educação primária no sudeste do México

Sergio Humberto Quiñonez Pech
Universidad Autónoma de Yucatán, México
sergio.quinonez@correo.uady.mx
https://orcid.org/0000-0001-5220-9912

Resumen

Debido a los diversos avances tecnológicos, las tecnologías de información y comunicación (TIC) han transformado la forma en cómo se aprende un idioma. En la actualidad, la educación implementa modelos pedagógicos innovadores que permiten incorporar la tecnología a los diversos procesos de enseñanza y aprendizaje del idioma inglés. Por lo antes mencionado, este artículo describe los resultados de una encuesta sobre el nivel de competencia digital que tienen los profesores de inglés en enseñanza primaria a partir de las dimensiones propuestas por los autores Usher y Pajares (2007), y también se identifican las variables que modifican dicha competencia. El estudio fue cuantitativo de tipo descriptivo y transversal. Los participantes fueron profesores que estuvieron en el Programa de Inglés en Educación Básica de Yucatán (PIEBY). Los resultados demostraron que 81 % de los profesores tienen un nivel de competencia digital bajo. Otro hallazgo importante que se obtuvo fue que se identificaron las dimensiones técnica, pedagógica y de comunicación como necesidades para ser atendidas a través de cursos de capacitación con un nivel básico. Asimismo, se evidenció que las variables de edad y grado máximo de estudios influyen en el nivel de la competencia digital de los profesores. Entre las conclusiones a destacar está que las TIC son herramientas muy importantes para la enseñanza del idioma inglés, ya que ayudan a despertar el interés de los

estudiantes, permite crear un ambiente interactivo, brinda muchos recursos de apoyo y contribuyen a que las clases sean atractivas e innovadoras.

Palabras clave: competencia digital, enseñanza del idioma inglés, enseñanza primaria, TIC.

Abstract

Given the various technological advances, information and communication technologies (ICT) have transformed the way a language is learned. Nowadays, education is implemented through innovative pedagogical models which allow technology to incorporate the various processes of teaching and learning of the English language. For the aforementioned reasons, this article describes the results of a survey on the level of digital competence that English teachers have in elementary school, based on the dimensions proposed by the authors Usher and Pajares (2007), as well as the variables that influence it. The study was quantitative, descriptive and transversal. The participants were teachers who were in the "Program of English in Basic Education in Yucatán" (PIEBY, by its acronym in Spanish). The results demonstrated that 81 % of the teachers have a low level of digital competence. Another important finding that was acquired from the study was that the technical, pedagogical and communication dimensions were identified as necessities to be addressed through training courses on a basic level; likewise, it was proven that the age and maximum degree of study variables influence the level of digital competence in teachers. Among the conclusions to emphasize is that ICT are very important tools for the teaching of the English language, as they help awaken the interest in students, they allow to create an interactive environment, they provide many support resources, and they favor the classes to be attractive and innovative.

Keywords: digital competence, english language teaching, elementary education, ICT.

Resumo

Devido a vários avanços tecnológicos, as tecnologias de informação e comunicação (TIC) transformaram a forma como uma língua é aprendida. Atualmente, a educação implementa modelos pedagógicos inovadores que permitem incorporar a tecnologia nos diversos processos de ensino e aprendizagem da língua inglesa. Diante do exposto, este artigo descreve os resultados de uma pesquisa sobre o nível de competência digital que professores de inglês possuem no ensino fundamental com base nas dimensões propostas pelos autores Usher e Pajares (2007), e as variáveis também são identificadas. que modificam a referida competição. O estudo foi quantitativo, descritivo e transversal. Os participantes foram professores do Programa de Inglês na Educação Básica de Yucatán (Pieby). Os resultados mostraram que 81%

dos professores possuem baixo nível de competência digital. Outra constatação importante obtida foi que as dimensões técnica, pedagógica e de comunicação foram identificadas como necessidades a serem atendidas por meio de cursos de formação com nível básico. Da mesma forma, evidenciou-se que as variáveis idade e grau máximo de estudos influenciam no nível de competência digital dos professores. Dentre as conclusões a serem destacadas, está que as TICs são ferramentas muito importantes para o ensino da Língua Inglesa, pois ajudam a despertar o interesse dos alunos, permitem a criação de um ambiente interativo, fornecem diversos recursos de apoio e contribuem para tornar as aulas atrativas. e inovador.

Introduction

At present, information and communication technologies (ICT) represent an essential tool in the field of education since they support and transform teaching-learning processes, which undoubtedly favors innovation at various educational levels (Cabrera, Sánchez and Rojas, 2016). Valdés, Angulo, Urías, García and Mortis (2011) affirm that the use of technologies in educational programs is relevant because they promote educational quality and facilitate student learning.

With the intention of supporting and developing digital competence, as well as developing language and communication skills in both students and primary school teachers, the federal government, through the Ministry of Public Education [SEP] (October 11, 2017), has developed a series of programs aimed at promoting the insertion and use of ICT in the educational system. Along the same lines, the State Development Plan of Yucatán 2018-2024 (Government of the State of Yucatán, March 30, 2019) establishes that it must "promote the advances and benefits of science and technology in the municipalities and in all educational levels "(p. 329).

The teaching and learning of the language through technology has brought great benefits. Through it, one has access to authentic materials such as online newspapers, webcasts, podcasts and even videos in the target language (Swapna and Tammelin, 2008). Likewise, it allows teachers to develop their digital competence, which consists of the safe and critical use of information technologies and mastery of ICT for work, leisure and communication (Pérez and Monteza, 2013).

An investigation about the perceptions of teachers and students about the use of technology for teaching and learning the English language reported that technology generates an active and interactive role in students and allows teachers to diversify their strategies during

the learning process. teaching and learning (Díaz and Jansson, 2011). On the other hand, García and Rey (2013) carried out a qualitative investigation to find out the teachers' points of view about the use of technology in teaching English. Among the results, it was found that English teachers are aware of the importance of the use of ICT and design activities that involve technology to develop mainly receptive skills; however, they put aside the productive ones, that is, writing and speaking.

Despite all the positive that the use of ICTs in education can mean, Torres and Valencia (2013) point out that basic education teachers, regardless of the discipline, have insufficient technological knowledge and fail to integrate ICTs as support to teaching, so they focus only on the technical aspects. In the case of teaching the English language, audios and videos are the most used by teachers for the development of listening skills (Morchio, 2014); Other technological resources such as the use of educational platforms, mobile applications and web 2.0 tools, which help to diversify and exercise the four skills of the English language, are left out.

Given the aforementioned, this work has two objectives. On the one hand, describe the level of digital competence of English teachers in primary education based on the dimensions proposed by the authors Usher and Pajares (2007); on the other, to identify the variables that influence this competence. Because technology is beneficial for the teaching of the English language, as has already been outlined above, it is important to have information on the current state of the level of digital competence of teachers so that the corresponding institutions can make decisions for the benefit of the needs detected.

Framework

ICT and English language teaching

Today we are all immersed in technological culture. It is used at each educational level: from preschool to higher level. Students have developed a fascination for technology, mainly for videos and social networks (Echeburúa, Labrador & Becoña, 2009). Prensky (2010) calls these people digital natives. In addition to being used to receiving information in a really fast way, these new students are multitasking people, they like to carry out several activities at the same time (look up information with the cell phone, type the information on the computer, listen to music on the tablet, etc.), prefer graphics over text, permanent rewards, and video game-based strategies.

Taking the above into account, Ibrahim (2010) emphasizes the fundamental role that ICTs have in the teaching of the English language. The author remarks that new technologies are much faster than traditional methods, which leads to immediate feedback and interaction in

the teaching and learning process. In addition, they promote the communication skills of students. He himself reinforces the idea that ICT provides new opportunities to learn and practice English inside and outside the classroom; Hence the importance of training teachers in the use of these from a more pedagogical field and not only in the technical aspect (Rangel and Peñalosa, 2013). Moreno (2011) adds a highly positive component of the use of technology in the teaching of English, which is related to psychological factors, specifically self-esteem and affectivity; Language students, especially the most timid, often out of fear of being teased, need a way to practice the language in an environment free of stress and anxiety: the technologies organized by teachers for pedagogical purposes provide a scenario of trust that supports His learning.

The use of ICT in language teaching can provide real scenarios for the practice of the English language. Graddol (2007) mentions that more than 80% of the information found online is in English. Furthermore, in the year 2000 there were more than a billion people learning English; With the rise of technologies, many of these people seek to practice the language through the use of ICT.

ICTs support the teaching of languages in an innovative way: they motivate students and teachers to develop skills such as handling vocabulary, writing, reading, mastering the structure of sentences and phrases corresponding to the language being studied; and in a transversal way, they develop their digital competence, which allows them to implement interactive strategies for work in blended or online modes (Arteaga, 2011; Cajar and Rojas, 2015). Arteaga (2011) supports the idea that teaching a second language using ICT enriches and favors learning, since most people live with technologies in a natural way, since they use them in their daily lives.

Finally, Ramírez, Casillas and Contreras (2014) mention that language teachers, over time and by tradition, have included various technological resources for the development of various English language skills, from cassettes and tape recorders to integration of interactive resources, such as video calls with native speakers of the language who are in another country. English teachers often use more than one technological resource at the same time, the digital blackboard, video projector, laptop or tablet; they also select and implement web 2.0 didactic materials such as videos, content books and work in digital format, podcast, exams, interactive exercises and worksheets (Chacón and Pérez, 2011; Dudeney and Hockly, 2007). Likewise, to promote a multifaceted and innovative learning of the English language and for students to express themselves in a more articulate and creative way in a technological and interactive environment, they use social networks and video calls (Buzzetto, 2012; González, 2012; González y Mayora, 2013).

Teaching competence for teaching the English language

National educational reforms have long been promoting the learning of the English language, as well as a change in teaching practices to favor the mobilization of knowledge, skills and communicative attitudes of the foreign language (SEP, 2011). Currently, an English language teaching teacher must not only be competent from a linguistic point of view, but also from a pedagogical and methodological point of view, since they must be able to direct the teaching-learning process for the development of the four skills of the English language (reading, writing, listening and speaking). Furthermore, they must also be able to implement teaching techniques and procedures in the classroom according to the learning styles and strategies of their students (Páez, 2001).

Based on the proposal by Perrenoud (2004), the SEP (2010) established the competencies that an English language teacher must possess:

1) Master the teaching content of the English language curriculum (knowing).
2) Master the references, functions and structure of the English language (know).
3) Implements learning activities that promote the mobilization of knowledge, skills and attitudes that intervene in the development of the English language (know-how).
4) Creates, adapts, and creatively exploits materials using various theoretical foundations, methods, and second language teaching strategies to promote English language learning (know-how).
5) It promotes the values of citizenship and human rights of the cultures of the second language (knowing how to live together).
6) It adequately addresses the cultural and linguistic diversity, learning styles and starting points of students (knowing how to be).
7) Works collaboratively and creates academic networks in teaching for the benefit of teaching the English language (knowing how to live together).
8) Organize their own continuous training and get involved in processes of personal development and professional self-training (knowing how to be).
9) It incorporates information and communication technologies in the teaching-learning processes of the English language (know-how).

As can be seen in the previous proposal, and taking into account the objective of this work, the teaching of the English language and the use of ICT converge in a precise and effective way inside and outside the classroom (Rodríguez and Gómez, 2017). In this way, in the face-to-face or virtual teaching and learning process of English, the use of ICT and new pedagogical methodologies are combined; This means that there is currently a need for teachers

with a solid digital competence that impacts the educational field, in order to offer quality and innovation in the training of a second language such as English.

Digital competence and teaching the English language

One of the challenges of any teacher today is to focus teaching on the student and make him more active and reflective during the learning process; technologies have served as support in this process. That is why the English teacher has had to change his way of teaching; now he is someone who needs to be competent in the design and efficient use of ICT for teaching the target language. Likewise, they must possess technological skills to design appropriate learning environments for the new century student (Norton and Wiburg, 1998 cited in Villalba 2008). These same authors affirm that the English teacher has to be able to create spaces for interaction and use of the target language, as well as to be able to adapt ICT tools to effectively transmit knowledge. Butler (2011), for his part, indicates that, in this new role where the teacher is a guide for learning, if he uses technology to support the teaching of the English language, he can also develop his digital competence and encourage students language and technology skills.

Gutiérrez (2014) defines digital competence as follows:

Values, beliefs, knowledge, skills and attitudes to properly use technologies, including both computers and different programs and the Internet, which allow and enable the search, access, organization and use of information in order to build knowledge" (p. 54).

Fainholc, Nervi, Romero and Halal (2015) recommend the development of digital competence through the generation of personal virtual learning environments and the use of mobile devices; The interesting thing about doing this is that not only is the technological field covered, but also communication, learning and information management skills are developed, which are important for teaching the English language. In sum, in the new teaching-learning scenarios, the English teacher must know how to communicate, relate and collaborate in digital environments (the use of social networks, platforms, blogs, etc.); It must also be able to critically evaluate information in order to generate knowledge and demonstrate it in higher thinking functions.

It should be noted that a teacher with a high level of digital competence is capable of identifying the different ways of representing, collecting, distributing, communicating and interacting with information acquired on the Internet (Bauman, 2004). When they use ICT correctly in the classroom, they demonstrate being able to navigate the Internet critically. Thus, they select reliable and useful information, appropriate technological language, include meaningful activities using ICT (such as games, simulations, problem solving, case studies),

are able to develop multitasking and a class sequence including technological resources that have an aim, objective or pedagogical criterion (Fainholc et al., 2015).

It is because of the aforementioned that some institutions have established quality standards for teachers and the use of technology in the classroom. In 2008, the International Society for Technology in Education (ISTE) established the following standards for teachers: creativity and innovation, information seeking and management, communication and collaboration, critical thinking, problem solving, and decision making. decision-making, digital citizenship, technology management and its concepts (ISTE, 2008). For their part, Usher and Pajares (2007) constructed a scale for the perception of digital competence, of which four of its dimensions were used for this study (see table 1).

Tabla 1. Descriptores de las dimensiones de la competencia digital

Dimensiones competencia digital	Descriptor
Técnico	El profesor aplica los principales medios tecnológicos de su entorno en el proceso de enseñanza.
Pedagógico	El profesor planifica la creación de experiencias de aprendizaje auténticas con base al uso de las TIC.
Comunicación	El profesor crea experiencias para hacer contribuciones en las redes sociales y se trabaje de manera colaborativa.
Actitud	El profesor cuenta con la habilidad de organizar y gestionar las TIC haciendo un uso responsable de estos elementos.

Fuente: Usher y Pajares (2007)

It is important to remember that the teacher must use ICT inside and outside the classroom to benefit the teaching-learning process; This is why Lorber (1977) emphasizes the need to develop digital competence, since this guarantees the success of the educational field.

Method

This research had a quantitative approach with a descriptive scope, since it sought to determine how a certain phenomenon manifests itself in a given context (Hernández, Fernández & Baptista, 2013). In the same way, it is considered transectional, because the measurement and collection of the data was carried out at a single moment in time (Cozby and Bates, 2015). Finally, the study design was survey type; It allowed describing the opinion and attitudes of people by recording and analyzing the data they provided during the research process (Isaac

and Michael, 1995). The phases that made up this study were: goal setting, sample planning, data collection, and data analysis and interpretation (Arnau, 1995).

Following the phases of the survey-type study, in its first phase the objectives that would guide the study were set: to describe the level of digital competence of English teachers in primary education based on the dimensions proposed by the authors Usher and Pajares (2007) and identify the variables that play a key role in it.

For the second phase (for the selection of participants), a non-probabilistic sample of an intentional type was used (Casal and Mateu, 2003), since only primary school English teachers who had participated in the Program were taken into account of English in Basic Education of Yucatán (PIEBY). The final sample was comprised of 167 primary school English teachers, of whom 76% (n = 127) were women and 24% (n = 40) were men. Regarding the ages of the participants, the most frequent were those who were between 26 to 35 years old and the least frequent were those who were over 55 years old. Regarding the maximum degree of studies, only 1% (n = 2) of the teachers indicated that they did not have a bachelor's degree; 84% (n = 141) mentioned that they have a bachelor's degree, 1% (n = 2) indicated having completed a specialization, 13% (n = 23) indicated that they have a master's degree and only one professor claimed to have completed a doctorate.

In the third phase (data collection), the questionnaire called Perception of the English language teaching teacher regarding their digital competence was designed, which served to respond to the objectives set out in the study. For the conceptual basis of the instrument, the work carried out by Usher and Pajares (2007) and Cabero, Llorente and Marín (2010) was taken as a reference.

The questionnaire consisted of two sections. The first had the objective of requesting general information: sex, age, teaching experience, last degree of studies, etc. The second section, through 26 items divided into four dimensions: technical, pedagogical, communication and attitude, aimed to know the perception of the primary school English teacher regarding their digital competence.

The scale used in the instrument was Likert type. She had a range of response options that ran from 1 to 5, where 1 = Not at all competent, 2 = Not very competent, 3 = Moderately competent, 4 = Proficient, and 5 = Very competent. This type of scale is one of the most used formats when you want to ask several questions that share the same answer options (Cea D'Ancona, 2001).

The questionnaire was developed to be administered online using Google Forms. This is an easily distributed and accessible collaborative tool that guarantees users to store data with

a high level of security. Thanks to this tool, the instrument could be answered from any device and place; automatically collected the data that would be used in the analysis of the results.

As part of the psychometric analysis carried out on the instrument to determine its reliability and validity, the reagent discrimination test was performed, comparing the scores in each of these. Based on the data obtained, it was determined that participants whose scores were above quartile 75 would be considered digitally competent; On the other hand, if they obtained scores below the 25th quartile, they would be considered limited in terms of their digital competence. This statistical process was carried out through a t test for independent samples (table 2).

Tabla 2. Prueba de discriminación de reactivos

Reactivos	t	P
Realiza un documento escrito con un procesador de texto, por ejemplo: Google Docs, Microsoft Word.	-4.00	0.000
Maneja alguna plataforma, por ejemplo: Moodle, Edmodo, etc.	-5.94	0.000
Crea o edita imágenes mediante algún programa de diseño gráfico, por ejemplo: Gimp, Polarr, Hexels, etc.	-5.99	0.000
Crea presentaciones multimedia e interactivas mediante algún programa, por ejemplo: PowerPoint, Prezi, Emaze, PowToon, etc.	-7.69	0.000
Busca información en Internet con diferentes navegadores, por ejemplo: Explorer, Chrome, Mozilla, Opera.	-3.58	0.001
Desarrolla blogs para sus asignaturas, por ejemplo: Wix.	-7.34	0.000
Utiliza las redes sociales como apoyo a sus asignaturas, por ejemplo: Facebook, Instagram, Pinterest.	-5.93	0.000
Crea videos para sus asignaturas utilizando algún editor de video, por ejemplo: YouTube Video Editor.	-10.23	0.000
Crea *podcasts* para sus asignaturas mediante editores de audio, por ejemplo: Audacity.	-7.37	0.000
Puede conectar equipos de cómputo y audiovisuales (videoproyector, reproductor de películas y audio, bocinas, etc.).	-6.68	0.000
Sintetiza la información mediante tablas, gráficos o esquemas para presentar información a sus estudiantes.	-5.98	0.000
Implementa diferentes estrategias de enseñanza basadas en TIC que favorecen el aprendizaje del idioma inglés, por ejemplo: implementación de juegos interactivos para el aprendizaje de vocabulario en inglés.	-11.14	0.000
Utiliza la videoconferencia como apoyo para el aprendizaje del idioma inglés, por ejemplo: platicar con estudiantes nativos en el idioma.	-9.51	0.000
Identifica necesidades en la enseñanza del idioma inglés que pueden ser abordadas con el uso de las TIC.	-10.42	0.000
Promueve diferentes estilos de aprendizaje para el idioma inglés utilizando las TIC, por ejemplo: visual, auditivo y kinestésico.	-8.67	0.000
Diseña diferentes tipos de evaluación (diagnóstica, formativa y sumativa) para valorar el aprendizaje en el idioma inglés por medio de test en línea, por ejemplo: Hot Potatoes, ThatQuiz, Google Forms.	-8.22	0.000

Explica las ventajas y limitaciones que presentan las TIC para la enseñanza del idioma inglés.	-10.54	0.000
Se comunica con estudiantes por medio de alguna plataforma educativa fuera del horario escolar, por ejemplo: foro, chat, wiki, etc.	-7.96	0.000
Utiliza programas de la web 2.0 (por ejemplo: Google Drive, YouTube, wikis, blogs, etc.) para compartir información académica en la red con sus compañeros profesores y estudiantes.	-12.59	0.000
Utiliza el correo electrónico para propiciar la práctica del idioma inglés (por ejemplo: *pen pals*, escribir textos para practicar lectura y escritura) o para enviar tareas.	-10.84	0.000
Crea espacios de práctica del idioma inglés fuera del salón de clase a través del uso de las TIC. Por ejemplo: actividades o juegos en páginas web educativas, proponer algún clip de video o película en inglés, diseñar actividades *online*, etc.	-15.06	0.000
Desarrolla una actitud abierta y crítica ante las nuevas tecnologías (contenidos, entretenimiento, etc.).	-10.45	0.000
Disposición al aprendizaje continuo y a la actualización permanente.	-7.37	0.000
Evita el acceso a la información conflictiva o ilegal que pueda generar problemas.	-5.64	0.000
Demuestra aspectos éticos y legales al momento de utilizar la información obtenida de Internet, por ejemplo: propiedad intelectual, licencias de distribución.	-7.39	0.000
Fomenta en sus alumnos el uso de las TIC al pedirles que realicen tareas que suponga usarlas (un video, una grabación, un blog, etc.).	-11.85	0.000

Fuente: Elaboración propia

From the analysis of the data observed in table 2, it was determined that the items did discriminate, since the significance value (p) is less than 0.05. Likewise, the statistical test called Cronbach's alpha was run and a value of $\alpha = 0.908$ was obtained. This result demonstrated the reliability of the questionnaire. In this regard, George and Mallery (2003) point out that an alpha coefficient equal to or greater than 0.8 indicates that the instrument is reliable.

Data collection was carried out online, the questionnaire called Perception of the English language teaching teacher regarding their digital competence was sent through the email accounts of the various teachers who participated in the study. The body of the email explained what the purpose of the investigation was; Inside, they were asked to answer the questionnaire in an objective and honest way in order to guarantee the veracity of the results.

Finally, they were informed that the information obtained would be confidential, anonymous and its use would only be for the established research purposes.

In the fourth phase, statistical tests were performed such as obtaining the mean, percentages and frequencies of the data. This in order to categorize the level of digital competence; Student's t test was also performed for independent samples, to determine whether or not there were differences between digital competence and the sex variable. Finally, an analysis of variance was carried out to determine if there was a difference between digital competence and the variables maximum degree of studies, age and years of teaching experience.

Results

In this first part of the results, it is indicated that the quantitative instrument was answered by 167 primary school English teachers: 76% women and 24% men. When analyzing the results obtained, it was evident that 99% of the respondents had a smart cell phone and only 37% had a desktop computer. As can be seen, teachers have mostly mobile technology (see Figure 1).

Figura 1. Porcentaje de los equipos tecnológicos con los que cuenta el profesor de inglés
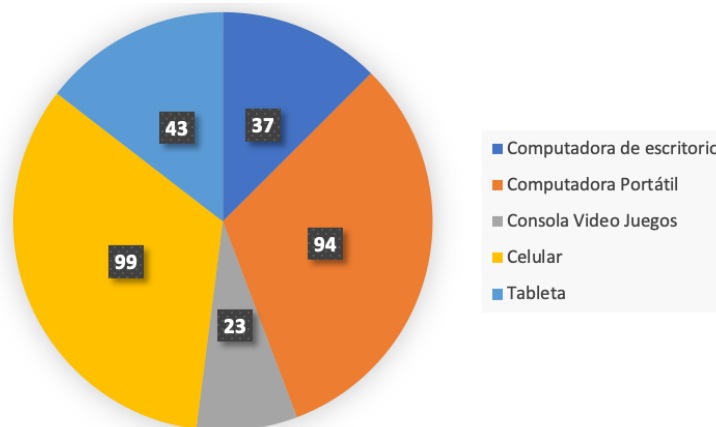
Fuente: Elaboración propia

Another important fact is that 96% of English teachers use applications to play audios and videos on their mobile devices, which is logical since there is a wide variety of applications to teach English that are based on the playback of audios and videos (see figure 2).

Figura 2. Porcentaje de las aplicaciones que utiliza el profesor de inglés
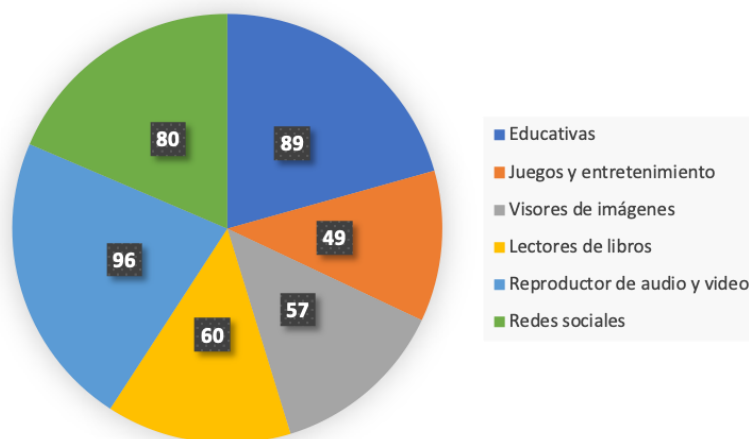
Fuente: Elaboración propia

Similarly, the analysis was able to identify the percentage of time in hours that an English teacher spends connected to the Internet. The longest time was three hours a day (22%) and the shortest time was one hour (11%) (see figure 3).

Figura 3. Porcentaje del tiempo en horas que usan el internet los profesores de inglés
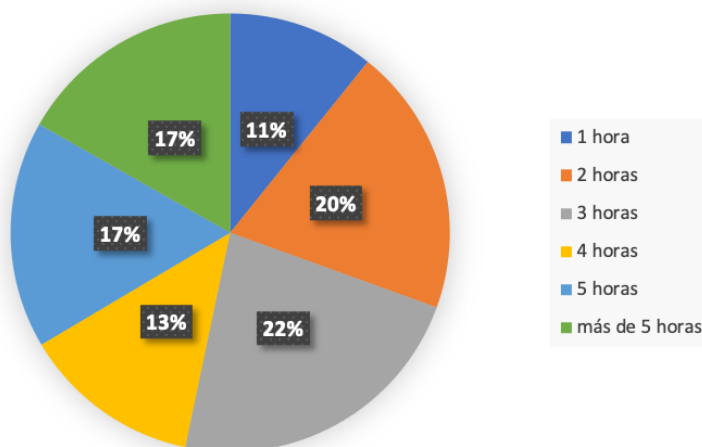
Fuente: Elaboración propia

Now, based on the responses of primary school English teachers, the statistical results of the technical, pedagogical, communication and attitude dimensions that made up the digital competence construct are presented.

First, a frequency and percentage analysis was performed by dimension. The result obtained was analyzed taking into account the following criteria: if less than 70% of the teachers' responses to the assessed aspect were located at a high level on the scale (competent and very competent), it would be recommended that the aspect be worked through training, as it is seen as a necessity to be addressed. Second, and in order to consolidate the previous analysis, the level of digital competence was specifically determined for each dimension; For

this, it was necessary to construct indicators on a scale from 0 to 100. Said indicators were constructed based on the minimum and maximum scores of each of the sections of the questionnaire, and were calculated from the following formula:

$$\text{Indicador} = \left(\frac{\text{Puntuación de la sección} - \text{Puntuación mínima}}{\text{Rango}}\right) \text{X } 100$$

Afterwards, three levels were created to categorize digital competence, namely: if the score was less than 60, the teacher's digital competence would be considered at a low level; if the score was between 60 and 79, digital competence would be considered at a medium level, and if the score was greater than 80 it would be considered at a high level (see figure 4).

Figura 4. Niveles definidos para los indicadores del 0 al 100

Nivel bajo	Nivel medio	Nivel alto
0-60	61-79	80-100
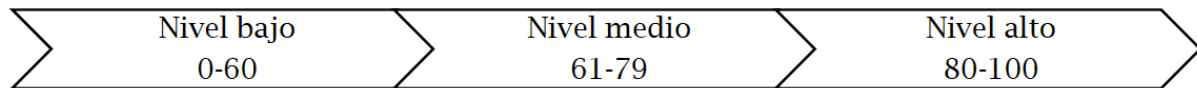
Fuente: Elaboración propia

Next, the results of the technical dimension of the digital competence construct are presented. In table 3 it can be observed that most of the aspects are below 70%, except those that refer to information search on the Internet, office automation and peripheral equipment connectivity.

Tabla 3. Análisis de frecuencias y porcentajes de la dimensión técnica

Aspectos	Escala alta %
Busca información en Internet con diferentes navegadores, por ejemplo: Explorer, Chrome, Mozilla, Opera.	93
Realiza un documento escrito con un procesador de texto, por ejemplo: Google Docs, Microsoft Word.	89
Puede conectar equipos de cómputo y audiovisuales (video proyector, reproductor de películas y audio, bocinas, etcétera).	84
Crea presentaciones multimedia e interactivas mediante algún programa, por ejemplo: PowerPoint, Prezi, Emaze, PowToon, etc.	64
Utiliza las redes sociales como apoyo a sus asignaturas, por ejemplo: Facebook, Instagram, Pinterest.	48
Crea videos para sus asignaturas utilizando algún editor de video, por ejemplo: YouTube Video Editor.	40
Maneja alguna plataforma, por ejemplo: Moodle, Edmodo, etc.	31
Crea o edita imágenes mediante algún programa de diseño gráfico, por ejemplo: Gimp, Polarr, Hexels, etc.	29
Desarrolla blogs para sus asignaturas, por ejemplo: Wix.	14
Crea *podcasts* para sus asignaturas mediante editores de audio, por ejemplo: Audacity.	13

Fuente: Elaboración propia

As evidenced, it is recommended to train English teachers in the implementation of web 2.0 tools in their classes. Also, in order for them to develop their digital competence, it is suggested to motivate them to design their own teaching resources using ICT. Furthermore, the assessment indicator in this dimension was 57 points; taking into account the categorization from 0 to 100, this is a low level.

Table 4 presents the results of the pedagogical dimension. There it is possible to observe that most of the aspects are below 70%, except that which refers to promoting the different learning styles for the English language (visual, auditory and kinesthetic).

Tabla 4. Análisis de frecuencias y porcentajes de la dimensión pedagógica

Aspectos	Escala alta %
Promueve diferentes estilos de aprendizaje para el idioma inglés utilizando las TIC, por ejemplo: visual, auditivo y kinestésico.	76
Implementa diferentes estrategias de enseñanza basadas en TIC que favorecen el aprendizaje del idioma inglés, por ejemplo: implementación de juegos interactivos para el aprendizaje de vocabulario en inglés.	64
Sintetiza la información mediante tablas, gráficos o esquemas para presentar información a sus estudiantes.	62
Identifica necesidades en la enseñanza del idioma inglés que pueden ser abordadas con el uso de las TIC.	62
Explica las ventajas y limitaciones que presentan las TIC para la enseñanza del idioma inglés.	53
Diseña diferentes tipos de evaluación (diagnóstica, formativa y sumativa) para valorar el aprendizaje en el idioma inglés por medio de test en línea, por ejemplo: Hot potatoes, ThatQuiz, Google Forms.	50
Utiliza la videoconferencia como apoyo para el aprendizaje del idioma inglés, por ejemplo: platicar con estudiantes nativos en el idioma.	22

Fuente: Elaboración propia

Based on the comments above, it is important that teachers use technological tools to prepare online assessments and manage virtual conversations with native English speakers. Likewise, it is suggested that they design their own ICT-based teaching strategies to support the development of various English skills (listening, speaking, reading and writing) in a dynamic and innovative way.

The indicator of assessment by the English teacher in this dimension was 63 points; once again, considering the categorization from 0 to 100, this is a low level.

The following table presents the results of the communication dimension. From the analysis of table 5 it can be seen that all aspects are below 70%.

Tabla 5. Análisis de frecuencias y porcentajes de la dimensión comunicación

Aspectos	Escala alta %
Utiliza programas de la web 2.0 (por ejemplo: Google Drive, YouTube, wikis, blogs, etc.) para compartir información académica en la red con sus compañeros profesores y estudiantes.	43
Crea espacios de práctica del idioma inglés fuera del salón de clase a través del uso de las TIC. Por ejemplo: actividades o juegos en páginas web educativas, proponer algún clip de video o película en inglés, diseñar actividades *online*, etc.	40
Utiliza el correo electrónico para propiciar la práctica del idioma inglés (por ejemplo: *pen pals*, escribir textos para practicar lectura y escritura) o para enviar tareas.	33
Se comunica con estudiantes por medio de alguna plataforma educativa fuera del horario escolar, por ejemplo: foro, chat, wiki, etc.	21

Fuente: Elaboración propia

As can be seen in table 5, it is advisable to train English teachers to work with technology that allows interaction and management of the teaching and learning processes in blended and distance modes. As in the previous cases, the assessment indicator in this dimension was low, since it registered 42 points.

The following table presents the results of the attitude dimension. From the analysis of table 6 it can be observed that most of the aspects are above 70%, except those that have to do with promoting the use of ICT in students and the ethical aspect when using information obtained from the internet.

Tabla 6. Análisis de frecuencias y porcentajes de la dimensión actitud

Aspectos	Escala alta %
Disposición al aprendizaje continuo y a la actualización permanente.	85
Evita el acceso a la información conflictiva o ilegal que pueda generar problemas.	80
Desarrolla una actitud abierta y crítica ante las nuevas tecnologías (contenidos, entretenimiento, etc.).	70
Demuestra aspectos éticos y legales al momento de utilizar la información obtenida de Internet, por ejemplo: propiedad intelectual, licencias de distribución.	68
Fomenta en sus estudiantes el uso de las TIC al pedirles que realicen tareas que suponga usarlas (un video, una grabación, un blog, etc.).	47

Fuente: Elaboración propia

English teachers need to design and develop teaching strategies that encourage their students to use ICT; It is also vital that they know and implement the code of ethics when using information obtained from the internet. It should be added to what has been commented that the indicator of assessment by the English teacher in this dimension was 74 points. Unlike the rest, this one was considered at an average level.

In a third phase of the statistical analyzes and with the idea of answering the second objective of the study, the variables that influence the digital competence of English language teachers were identified. First, it was determined whether there was a significant difference between the gender variable and the digital competence of primary school English teachers. For this, a t-test for independent samples was performed. Table 7 shows that there is no difference between the digital competence of English teachers with the variable sex ($p > 0.05$).

Tabla 7. Comparación de la competencia digital con la variable sexo

Variable sexo				
Sexo	$\overline{x}$	D.S.	t	p
Hombre	59.1	16.7	.561	.577
Mujer	61.3	19.3		

Fuente: Elaboración propia

Likewise, through an analysis of variance, the digital competence of primary school English teachers was compared according to their age, maximum degree of studies and teaching experience. These results are presented in Table 8.

Tabla 8. Comparación de la competencia digital con las variables edad, grado máximo de estudios, especialidad del grado y experiencia docente

Variables	*F*	*p*
Edad	4.0	.004
Grado máximo de estudios	3.1	.015
Experiencia docente	1.7	.167

Fuente: Elaboración propia

As can be seen, the variables of age and maximum degree of studies show influence on the digital competence of primary school English teachers (p <0.05). The only variable studied that did not show influence was related to the teaching experience ($p > 0.05$).

Discussion

Based on the results obtained, the respondents who participated in the study supported having the necessary technology (mobile devices and Internet connection) to design and implement innovative strategies to benefit the teaching-learning process of the English language. They also supported the development of their digital competence.

Derived from the analysis of the dimensions that make up the digital competence construct (Usher and Pajares, 2007), the teachers showed a low level in the technical, pedagogical and communication dimensions. These results are similar to those found by Rangel and Peñalosa (2013), who mention that teachers do not perceive themselves competent during the pedagogical implementation of ICT, since they have problems integrating them into the design and development of their didactic planning; They also comment that they always receive technical training courses and not the didactic use of ICT. Consequently, as commented, English teachers need to consolidate their competence in planning and applying the main technological means for the development of the skills that support the English language, as well as creating collaborative experiences in international contexts for meaningful learning. . The aforementioned is linked to what is established by ISTE (2008), regarding its standards in the use of ICT, since said institute considers it important to develop creativity, communication skills, collaborative work and responsible use of technologies for the benefit of innovation and educational quality. Along the same lines, Ibrahim (2010) and Arteaga (2011) emphasize the fundamental role that the implementation of ICT has in the teaching of the English language,

since they favor and motivate learning. In addition to this, Dudeney and Hockly (2007) confirm that the use of technologies such as social networks and videoconferences can provide real and innovative scenarios for collaborative work in international contexts.

Continuing with the result of the analysis of the dimensions, the attitude was the best valued with a medium level. This is similar to that evidenced by Ruiz and Hernández (2018), who highlight the importance of having a good attitude and predisposition for the development of digital competence. The English teachers in this study showed a good attitude, as they consider technology a great benefit for teaching English. They are also open-minded and willing to learn and work with ICT.

Thanks to statistical analysis, it was evidenced that the age variable was shown to have an influence on the digital competence of English teachers. It should be remembered that most of the respondents were between 25 and 36 years old. Mortis, Valdés, Angulo, García and Cuevas (2013) agree with the fact that new teachers, by being in frequent contact with ICT, feel more competent to integrate these technologies into their teaching. Also the academic degree was confirmed as another variable of influence in digital competence. Most of the respondents demonstrated that they had a master's or bachelor's degree. In this regard, Zempoalteca, González, Barragán and Guzmán (2018) mention that the academic degree is a relevant factor among primary school teachers. Their study showed that the higher the academic degree, the greater the integration of ICT in the teaching-learning processes.

As has been reinforced in this work, technology by itself does not constitute a transforming element of the teaching of the English language, which is why it is necessary to develop the digital competence of teachers, who act as guides or facilitators in the process teaching and learning.

Conclusion

As seen in this study, the majority of English teachers in primary education categorized at a low level the various aspects that make up the dimensions of digital competence; only 19% of them obtained a high level (≥ 80 points). This makes it clear that digital competence must be developed from a basic level. The aspects to be improved are those related to the management of educational platforms, creation or editing of images, development of blogs, podcasts, videos for their subjects and, in general, the creation of interactive spaces for the practice of the English language. The need for training in the design of technology-supported didactic planning and in the ethical use of the Internet was also detected. The proposed actions are aligned with what is stipulated by the federal and state governments, in the sense that the insertion and use of ICT should be promoted, with the intention of developing digital competence and language skills in

teachers and students of the different educational levels, and thus motivate the learning of the English language and achieve internationalization.

That said, it is important to train English teachers to develop their digital competence, since emerging pedagogies demand the use of technologies in face-to-face and non-face-to-face environments. Do not forget: the teaching and learning of the English language constantly uses new technological platforms and teachers cannot ignore this, since they are the main media for the meaningful learning of students at any educational level.

Finally, we cannot not mention that the covid-19 pandemic has forced us to change our way of seeing life. Education, like a large part of social institutions, has had to adapt and, in part, reformulate itself. The face-to-face modality to teach was limited and insufficient. Although the virtual modality was already part of the educational field, we had never been in the situation of resorting to it as the only way to continue teaching. This brings with it a great need to be digitally competent, with the sole purpose of getting ahead and facing the new challenges that arise day by day in our already changing society.

References

Arnau, J. (1995). *Metodologías cuantitativas en la investigación psicológica*. Barcelona, España: Experimental.

Arteaga, C. (2011). Uso de las TIC para el aprendizaje del inglés en la Universidad Autónoma de Aguascalientes. *Apertura, 3*(2). Recuperado de http://www.udgvirtual.udg.mx/apertura/index.php/apertura/article/view/206/221.

Bauman, Z. (2004). *Modernidad líquida*. México: Fondo de Cultura Económica.

Butler, M. (2011). The history of CALL: The intertwining paths of technology and second/foreign language teaching. *International Journal of Computer-Assisted Language Learning and Teaching*, *1*(1). Retrieved from https://www.igi-global.com/journal/international-journal-computer-assisted-language/41023.

Buzzetto, N. (2012). Social Networking in Undergraduate Education. *Interdisciplinary Journal of Information, Knowledge, and Management*, *7*(1), 63-90. Retrieved from http://www.ijikm.org/Volume7/IJIKMv7p063-090Buzzetto611.pdf.

Cabero, J., Llorente, M. del C. y Marín, V. (2010). Hacia el diseño de un instrumento de diagnóstico "competencias tecnológicas del profesorado universitario". *Revista Iberoamericana de Educación, 7*(52). Recuperado de https://core.ac.uk/download/pdf/51388280.pdf.

Cabrera, J., Sánchez, I. y Rojas, F. (2016). Uso de objetos virtuales de aprendizaje OVAS como estrategia de enseñanza-aprendizaje inclusivo y complementario a los cursos teóricos-prácticos. *Educación en Ingeniería*, *11*(22). Recuperado de https://www.educacioneningenieria.org/index.php/edi/article/view/602.

Cajar, M. y Rojas, B. (2015). *Influencia de las TIC en el desarrollo de competencias comunicativas del idioma inglés en los estudiantes del grado quinto de la institución educativa Montessori sede primaria de Pitalito - Huila 2014*. (tesis maestría). Universidad Norbert Wiener, Pitalito (Huila).

Casal, J. y Mateu, E. (2003). Tipos de muestreo. *Revista de Epidemiología y Medicina Preventiva*, *1*(1), 3-7.

Cea D'Ancona, M. (2001). *Metodología cuantitativa. Estrategias y técnicas de investigación social*. Madrid, España: Síntesis.

Cozby, P. and Bates, S. (2015). *Methods in Behavioral Research* (12th ed.). New York, United States: McGraw-Hill Education.

Chacón, C. y Pérez, C. (2011). El podcast como innovación en la enseñanza del idioma inglés como lengua extranjera. *Pixel-Bit. Revista de Medios y Educación*, (39), 41-54. Recuperado de https://recyt.fecyt.es/index.php/pixel/article/viewFile/61449/37462.

García, M. and Rey, L. (2013). Teachers' Beliefs and the Integration of Technology in the EFL Class. *HOW Journal*, *20*(1). Retrieved from https://www.howjournalcolombia.org/index.php/how/article/view/23.

Díaz, C. H. y Jansson, L. (2011). El aprendizaje del inglés y el uso de tecnologías: percepciones de estudiantes y profesores de inglés del nivel secundario chileno. *Matices en Lenguas Extranjeras*, (5), 1-37. Recuperado de https://revistas.unal.edu.co/index.php/male/article/view/44697.

Dudeney, G. and Hockly, N. (2007). *How to Teach English with Technology*. England: Pearson.

Echeburúa, E., Labrador, F. y Becoña, E. (2009). *Adicción a las nuevas tecnologías en adolescentes y jóvenes*. Madrid, España: Pirámide.

Fainholc, B., Nervi, H., Romero, R. y Halal, C. (2015). La formación del profesorado y el uso pedagógico de las TIC. *Revista de Educación a Distancia*, (38). Recuperado de https://revistas.um.es/red/article/view/234081/179851.

Gobierno del Estado de Yucatán. (30 de marzo de 2019). Plan Estatal de Desarrollo de Yucatán 2018-2024. *Diario Oficial del Gobierno del Estado de Yucatán*. Recuperado de http://www.yucatan.gob.mx/docs/transparencia/ped/2018_2024/2019-03-30_2.pdf.

González, P. (2012). Uso de las nuevas tecnologías en la enseñanza de lenguas extranjeras. *Revista de Lenguas para Fines Específicos*, *18*, 183-212. Recuperado de http://lfe.ulpgc.es//resources/0233536_00018_0008.pdf.

González, Y. y Mayora, C. (2013). Percepciones de estudiantes de bachillerato sobre el uso de una red social para la enseñanza del inglés como lengua extranjera: una investigación acción. *Anales de la Universidad Metropolitana*, *13*(2), 65-90. Recuperado de https://dialnet.unirioja.es/servlet/articulo?codigo=4709825.

George, D. and Mallery, P. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference, 11.0 update* (4th ed.). Boston, United States: Allyn & Bacon.

Graddol, D. (2007). *English Next Indian*. United Kingdom: The British Council. Retrieved from https://www.britishcouncil.in/sites/default/files/english_next_india_-_david_graddol.pdf.

Gutiérrez, I. (2014). Perfil del profesor universitario español en torno a las competencias en tecnologías de la información y la comunicación. *Pixel-Bit, Revista de Medios y Educación,* (44). Recuperado de https://recyt.fecyt.es/index.php/pixel/article/view/61651/37662.

Hernández, R., Fernández, C. y Baptista, M. (2013). *Metodología de la Investigación* (6.ª ed.). Ciudad de México, México: McGraw-Hill.

Ibrahim, A. (2010). Information & Communication Technologies in ELT. *Journal of Language Teaching and Research*, *1*(3), 211-214. Retrieved from http://dx.doi.org/10.4304/jltr.1.3.211-214.

Isaac, S. and Michael, W. (1995). *Handbook in Research and Evaluation*. San Diego, United States: EDITS Publishers.

International Society for Technology in Education [ISTE]. (2008). ISTE Standards for Educators. Retrieved from http://www.iste.org/standards/iste-standards/standards-for-teachers.

Lorber, M. (1977). *Objectives, methods and evaluation for secondary teaching*. New Jersey, Pearson.

Morchio, M. (2014). El rol de las TIC en la clase de inglés. Ponencia presentada en el Congreso Iberoamericano de Ciencia, Tecnología, Innovación y Educación. Buenos Aires, del 12 al 14 de noviembre de 2014. Recuperado de www.oei.es/historico/congreso2014/memoriactei/753.pdf.

Moreno, T. (2011). Didáctica de la Educación Superior: nuevos desafíos en el siglo XXI. *Perspectiva Educacional*, *50*(2). Recuperado de https://www.redalyc.org/articulo.oa?id=333327290003.

Mortis, S., Cuervo, A., Armenta, J., López, R. y Salazar, O. (2013). Competencias digitales en docentes de educación secundaria. Municipio de un Estado del Noroeste de México. *Perspectiva Educacional, Formación de Profesores*, *52*(2), 135-153. Recuperado de https://www.redalyc.org/articulo.oa?id=333328170007.

Páez, V. (2001). El profesor de idiomas: sus cualidades y competencias. *Revista Comunicación*, *11*(3). Recuperado de https://www.redalyc.org/pdf/166/16611306.pdf.

Pérez, C. y Monteza, C. (2013). Nuevos problemas del aprendizaje en la era digital. Competencias digitales y nuevas formas de aprender. *Actualidades pedagógicas*, (61). Recuperado de: https://ciencia.lasalle.edu.co/cgi/viewcontent.cgi?article=1208&context=ap

Perrenoud, P. (2004). *Diez nuevas competencias para enseñar*. Querétaro, México. Recuperado de https://www.uv.mx/dgdaie/files/2013/09/Philippe-Perrenoud-Diez-nuevas-competencias-para-ensenar.pdf.

Prensky, M. (2010) *Nativos e inmigrantes digitales*. Institución Educativa SEK. Recuperado de https://www.marcprensky.com/writing/Prensky-NATIVOS%20E%20INMIGRANTES%20DIGITALES%20(SEK).pdf.

Ramírez, A., Casillas, M. y Contreras, C. (2014). La incorporación de las TIC a la enseñanza universitaria de los idiomas. *Debate Universitario*, *3*(5), 123-138. Recuperado de https://www.uv.mx/personal/mcasillas/files/2015/12/ARM-TIC-en-idiomas.pdf.

Rangel, A. y Peñalosa, E. (2013). Alfabetización digital en docentes de educación superior: construcción y prueba empírica de un instrumento de evaluación. *Pixel-Bit. Revista de Medios y Educación*, (43), 9-23. Recuperado de https://recyt.fecyt.es/index.php/pixel/article/view/61545.

Rodríguez, R. y Gómez, M. (2017). Competencias digitales en la enseñanza-aprendizaje del inglés en bachillerato. *Campus Virtuales*, *6*(2). Recuperado de http://uajournals.com/ojs/index.php/campusvirtuales/article/view/185

Ruiz, M. y Hernández, V. (2018). La incorporación y uso de las tic en educación infantil. Un estudio sobre la infraestructura, la metodología didáctica y la formación del profesorado en Andalucía. *Píxel-Bit. Revista de Medios y Educación*, (52), 81-96. Recuperado de https://idus.us.es/handle/11441/68941.

Secretaría de Educación Pública [SEP] (2010). *Marco para el diseño y desarrollo de programas de formación continua y superación profesional para maestros de educación básica*. México: Secretaría de Educación Pública. Recuperado de https://gaebc.files.wordpress.com/2011/11/perfil-de-desemped0b5o.pdf.

Secretaría de Educación Pública [SEP] (2011). *Plan de Estudios 2011. Educación Básica*. México: Secretaría de Educación Pública. Recuperado de https://www.gob.mx/cms/uploads/attachment/file/20177/Plan_de_Estudios_2011_f.pdf.

Secretaría de Educación Pública [SEP]. (11 de octubre de 2017). El plan y los programas de estudio para la educación básica: aprendizajes clave para la educación integral. *Diario Oficial de la Federación*. Recuperado de http://www.dof.gob.mx/nota_detalle.php?codigo=5500966&fecha=11/10/2017.

Swapna, K. y Tammelin, N. (2008). *Integrar las TICS para la enseñanza/aprendizaje de segundas lenguas. Una guía para instituciones educativas europeas de Secundaria, Universidad y Educación para adultos*. Austria: Johannes Kepler Universität Linz. Recuperado de https://ensinodelinguascomtic.files.wordpress.com/2010/03/livro_integrar_las_tic_en_ensenanza-aprendizaje_de_lenguas_2008.pdf.

Torres, C. y Valencia, L. (2013). Uso de las TIC e internet dentro y fuera del aula. *Apertura*, *5*(1). Recuperado de http://www.udgvirtual.udg.mx/apertura/index.php/apertura/article/view/381/319.

Usher, E. and Pajares, F. (2007). Self-Efficacy for Self-Regulated Learning: A Validation Study. *Educational and Psychological Measurement*, *68*(3), 443-463. Retrieved from https://journals.sagepub.com/doi/10.1177/0013164407308475.

Valdés, A., Ángulo, J., Urías, M., García, R. y Mortis, S. (2011). Necesidades de capacitación de docentes de educación básica en el uso de las TIC. *Pixel-Bit. Revista de medios y educación,* (39). Recuperado de: https://www.redalyc.org/articulo.oa?id=36818685016

Villalba, M. (2008). Recursos de la web 2.0 para la enseñanza de idiomas. Recuperado de https://ced.enallt.unam.mx/ciberestrategias/wp-content/uploads/2009/11/villalba_web2.pdf.

Zempoalteca, B., González, J., Barragán, J. y Guzmán, T. (2018). Factores que influyen en la incorporación de las Tecnologías de la Información y la Comunicación en universidades públicas: una aproximación desde la autopercepción docente. *Revista de la Educación Superior*, *47*(186). Recuperado de http://resu.anuies.mx/ojs/index.php/resu/article/view/348.