








# Teachers' Use of ICTs in Public Language Education: Evidence from Second Language Secondary-school Classrooms

La enseñanza de lenguas extranjeras y el empleo de las TIC en las escuelas secundarias públicas

-  Dr. Jesús Izquierdo is Full Professor at Juarez Autonomous University of Tabasco (Mexico) (jesus.izquierdo@mail.mcgill.ca) (<http://orcid.org/0000-0002-1647-2833>)
-  Dr. Verónica de-la-Cruz-Villegas is Associate Professor at Juarez Autonomous University of Tabasco (Mexico) (veronika.delacruz@hotmail.com) (<http://orcid.org/0000-0003-3570-2021>)
-  Dr. Silvia-Patricia Aquino-Zúñiga is Full Professor at Juarez Autonomous University of Tabasco (Mexico) (saquinozuniga@gmail.com) (<http://orcid.org/0000-0002-7223-8582>)
-  Dr. María-del-Carmen Sandoval-Caraveo is Full Professor at Juarez Autonomous University of Tabasco (Mexico) (sandovalcaraveo29@hotmail.com) (<http://orcid.org/orcid.org/0000-0002-5482-3032>)
-  Dr. Verónica García-Martínez is Full Professor at Juarez Autonomous University of Tabasco (Mexico) (vero1066@hotmail.com) (<http://orcid.org/0000-0001-5299-3540>)

## ABSTRACT

Worldwide, curricular changes and financial investments are currently underway to promote the integration of technology in public education and English language learning at a young age. This study examines the ICTs that have become part of the daily instructional practices and educational settings of teachers of English who work with young learners in public schools. To this end, this mixed-methods study draws on a quantitative descriptive-exploratory design and a qualitative multiple-case study. The quantitative data were collected through a Likert questionnaire administered to 28 secondary school teachers of English across 17 municipalities in five regions of Southeast Mexico and 2,944 learners. The qualitative data were gathered from a subsample of six teachers through longitudinal classroom observations, teacher and administrator interviews, and school visits. The non-parametric analyses of the quantitative data and the categorical aggregation analyses of the qualitative data reveal that the use of some multimedia and mobile-assisted communication resources is emerging in the L2 public classrooms. In line with findings from other international contexts, variables that seem particular to public education for young learners and their school setting, however, led teachers to prefer using their own technological devices that included laptops, multimedia material, and cellphones, rather than those in the schools.

## RESUMEN

La educación pública está experimentando en diversos países una serie de reformas que favorecen la integración de la tecnología en la educación pública y el aprendizaje del inglés a una temprana edad. El presente estudio mixto examinó el empleo de la tecnología en las prácticas pedagógicas cotidianas de los profesores de inglés en la educación secundaria pública y los recursos tecnológicos de los que disponen normalmente en sus escuelas. Para la fase cuantitativa se empleó un diseño descriptivo-exploratorio, a través de un cuestionario tipo Likert aplicado a 28 profesores y 2.944 alumnos en 17 municipios del sureste mexicano. Para la cualitativa, se empleó un estudio de múltiples casos con un sub-grupo de seis profesores del cual se recolectó información a través de observaciones de clases, entrevistas con docentes y directivos, y visitas a las instalaciones de las escuelas. El empleo de análisis no-paramétrico con los datos cuantitativos y de agregación categórica con los datos cualitativos permitió identificar algunos recursos multimedia y de comunicación móvil que los profesores tienden a emplear de manera cotidiana en el aula. No obstante, diversos factores relacionados con aspectos propios de la educación pública y el contexto escolar influyeron para que los profesores prefirieran sus propios medios tecnológicos tales como ordenadores portátiles, teléfonos inteligentes y materiales multimedia a los disponibles en su institución.

## KEYWORDS | PALABRAS CLAVE

Public education, technology, language learning, English teaching, secondary school education, multimedia resources, mobile assisted communication.

Educación pública, tecnología, aprendizaje de lenguas, enseñanza del inglés, educación secundaria, recursos multimedia, comunicación móvil.



## 1. Introduction

The development of Information and Communication Technologies (ICTs) has created new opportunities for learning and teaching (Felix, 2008; Johnson, Adams Becker, Estrada, & Freeman, 2015). In second/foreign language (L2) education, ICTs can be used, for instance, to expose learners to extensive comprehension and production opportunities in the new language (Izquierdo, 2014; Plass & Jones, 2005), to create learning conditions that are unique to technology-based instruction (Chapelle, 2002; Hulstijn, 2000), and to enhance learner motivation (Izquierdo, Simard & Garza, 2015; Lan, Sung, Cheng, & Chang, 2015). In light of these arguments, in higher education, some initiatives have aimed to blend L2 classroom instruction with complementary ICT-based materials (Leakey & Ranchoux, 2006; Sagarra & Zapata, 2008). Others have explored ICTs for distance L2 learning (Compton, 2009; Harker & Koutsantoni, 2005) or autonomous L2 learning (Figura & Jarvis, 2007; Raby, 2007). Furthermore, in public education for younger learners, local and international agencies have made major financial investments and curricular changes in order to promote the use of ICTs in public sector schools (Johnson & al., 2015; Macaro, Handley, & Walters, 2011; World Bank, 2007).

Technological applications and ICT choices for L2 learning and teaching are growing in number, evolving from “traditional” to “intelligent”, and becoming more available to researchers, teachers and learners (Cerezo, Baralt, Suh, & Leow, 2014). Golonka, Bowles, Frank, Richardson and Freynik (2014) reviewed several empirical studies and identified 18 broad types of ICT categories that could be used for L2 instruction, excluding technologies such as laptops, CDs, DVDs, etc. Due to the growing number of studies and technologies, meta-analyses have been conducted to examine the benefits and limitations of particular forms of technologies such as computer-mediated communication (Lin, 2015), glosses (Yun, 2011), management systems (Cerezo & al., 2014), mobile-assisted language learning (Burstion, 2015), and virtual reality (Schwienhorst, 2002), among others.

Despite this growth, Felix (2008:146) notes that “investigations in tertiary settings still dominate the field”. Due to the ongoing efforts to incorporate ICTs in public sector education, Macaro & al. (2011) argue that the kinds of technologies used in primary and secondary schools for L2 teaching and learning deserve investigation. To date, from the L2 literature, two trends for research into the use of ICTs with young learners can be identified. One explores the effects of technology-enhanced instruction on L2 learning in contexts where the regular instructional practices are altered to accommodate for the use of existing ICTs (Guénette & Lyster, 2013; Lan & al., 2015) or ICT systems that were specifically developed for experimentation (Allen, Crossley, Snow, & McNamara, 2014; Edwards, Pemberton, Knight, & Monaghan, 2002). In a review of 117 studies that examined the effects of ICTs in these contexts between 1991 and 2010, Macaro and his colleagues found that multimedia, computer-mediated communication, and the internet constituted the most frequently targeted ICTs in experimental research with young learners. Overall, these studies provide evidence of the L2 cognitive, psychological, and socio-affective language learning dimensions that could be enhanced among young learners through the use of ICTs (Macaro & al., 2011). Other studies examine attitudes towards the potential integration of ICTs in L2 teaching in schools (Felix, 2004). In the survey data, young learners show a preference for the use of ICTs to expand the classroom L2 learning experience (Felix, 2004). In a similar fashion, the survey data reveal that teachers exhibit positive attitudes for the use of technology in public education and consider that the use of technology in public L2 education could enhance learning among young learners (Durán-Fernández, & Barrio-Barrio, 2007).

The extent to which the observed willingness and openness towards ICTs translate into their actual integration in L2 teaching on a daily basis has yet to receive attention, however. Durán-Fernández and Barrio-Barrio (2007), for instance, showed that public sector teachers from approximately 100 educational settings in Spain expressed interest and had experience using ICTs in elementary classrooms, but 73% of them did not report exploiting them. Bax (2003; Chambers & Bax, 2006) argues that ICTs could constitute valuable L2 instructional resources, but teachers have yet to overcome the novelty and unfamiliarity phase to normalize technology in regular instructional practices. In contexts with young L2 learners, the pedagogical and contextual needs that are particular to their educational settings could have an impact on the classroom use of technology (He, Puakpong, & Lian, 2015). Macaro & al. (2011) highlight the need of process-oriented research to document the ICTs that characterize L2 instruction in public contexts. Moreover, further research is needed to examine the ICTs that L2 teachers can access in contexts with limited technological resources, as well as how ICT use is being maximized in these settings (Egbert & Yang, 2004; Jeon-Ellis, Debski, & Wigglesworth, 2005; Taylor & Gitsaki 2003). In light of these issues, the objective of this study was to examine the “current,” rather than the “potential” use of ICTs in public L2 education for young learners. The study was conducted in Mexico, an emerging economy, where major investments and curricular

changes are underway in order to foster both the integration of ICTs in education and the learning of English at a young age in public sector classrooms (Izquierdo, Aquino, García, Garza, Minami, & Adame, 2014; Izquierdo, García, Garza, & Aquino, 2016). In this context, the study addresses this research question: Which ICTs have become normalized in the regular instructional practices and settings of secondary school teachers of English in public schools?

## 2. Material and methods

To achieve our objective and answer the research question, a concurrent triangulation mixed-methods study was conducted. This approach “uses separate quantitative and qualitative methods as a means to offset the weakness inherent within one method with the strengths of the other” (Cresswell, 2009: 213). The quantitative data were collected through a descriptive-exploratory design for the examination of a phenomenon within a group of participants using survey data (Mackey & Gass, 2005). Specifically, Likert questionnaires were administered to the teachers and their learners in

Grade 3, in order to identify ICTs in regular L2 instruction. The qualitative data were collected using a multiple-case study (Cresswell, 2013), with a subsample of teachers. This design allows for an in-depth exploration of a phenomenon within a specific population in a real-life setting (Cresswell, 2013; Thouin, 2014). As this design requires extensive data collection through different instruments, for each teacher, information about ICTs in their instructional practices and contexts was gathered through longitudinal classroom observations, a school visit, and teacher and principal interviews.

**L2 research shows that in other international educational settings with limited technology, teachers have been able to circumscribe their contextual limitations by exploiting the available institutional resources in combination with their own personal devices and those of their learners. Nevertheless, teachers require assistance in the form of training and teaching literature on the use of technology in L2 instruction, as well as research initiatives that account for their diverse contextual realities and help them maximize the resources to which they have access on a daily basis.**

### 2.1. Context and participants

Approximately 100 teachers from general, state and technical public secondary schools in Southeast Mexico were contacted for the study. Across the three types of public secondary schools, the teaching of English ascribes to the same curriculum, number of instructional hours, and language attainment goals. The study was conducted in Grade 3, as learners had completed the largest number of English instructional hours in the secondary education, and teachers were expected to be consolidating learners’ English language competencies through a variety of instructional practices and resources (Izquierdo & al., 2014).

Table 1 shows the demographics of the 28 Grade 3 teachers of English who consented to participate in the quantitative phase along with their learners. All teachers were native speakers of Mexican Spanish and had learnt English in Mexico. They held undergraduate studies in English teaching, they were familiar with the national curriculum and policies for the integration of ICTs in public education, and they had taught English in Grade 3 for a minimum of two years. Their schools were located across 17 municipalities in five geographical areas with different social and economic profiles. The learners were all native speakers of Mexican Spanish and had completed their previous education in the public system.

For the case-study phase of the study, only six teachers consented to participate. Table 1 displays their demographics. In addition to the teaching and educational background described previously, these teachers demonstrated positive attitudes towards ICTs during the interviews. Furthermore, the school principals had identified them as

being highly motivated teachers and committed to language teaching, professional development and educational innovation in their schools.

## 2.2. Questionnaires

In order to quantitatively examine the integration of ICTs in L2 teaching practices, a four-point scale (i.e., never, rarely, sometimes, often) questionnaire was designed. The methodological principles for its conceptualization emerged from a review of empirical studies that examined L2 instructional practices using Likert-scale questionnaires (Fabila, Minami,

& Izquierdo, 2012). First, a set of items was developed to explore the three kinds of ICTs that Macaro and

others (2011) identified in L2 research with young learners: multimedia (items 2, 4, 12), computer-mediated communication (item 7, 13, 16), and the internet (item 3, 9, 10, 11), in addition to the generic use of computers (item 1, 5, 6, 8, 14, 15). The items were divided in two sections. Items 1 through 8 were included in Section A, and items 9-16 in Section B. Moreover, in order to validate the questionnaire, two versions of each section were developed. Both versions included the same items, but in reverse order.

In order to triangulate the quantitative data, both a teacher and a learner questionnaire were developed. Teachers' and learners' questionnaires included the same items and conformed to the principles outlined previously; but the items were adapted semantically for each respondent type. For instance, in the Teacher Questionnaire, Item 2 stated "I combine the use of textbooks with computer-based video, audio, or other type of computer materials". In the Learner Questionnaire, the same item stated "My teacher uses the textbook with computer-based videos, audio, or other types of computer materials". All teachers and students completed Sections A and B within a week interval in class.

## 2.3. Classroom observations

In order to qualitatively examine the use of ICTs during instruction, longitudinal classroom observations were conducted. "[O]bservations are useful means for gathering in-depth information" (Mackey & Gass, 2005: 186) about L2 classrooms and instruction; thus, the teachers were observed five times in the same Grade 3 class during the two months when they were covering the same curricular unit: Food and eating habits. This shared criterion allowed us to observe comparable lessons across teachers. Observations took place every second week. As a result, our observations covered 30 video-recorded lessons. The length of each lesson was approximately 50 minutes. Five members of the team with extensive research experience in public sector English language education in the Southeast of Mexico watched all the video recordings and completed a checklist, based on the questionnaire items. Then, in focus groups, they discussed their answers for each teacher in regards to the four ICT categories. Discussions were audio-recorded and transcribed.

## 2.4. Interviews

A 30-minute semi-structured interview was conducted with the six teachers and their school principals. According to Mackey and Gass (2005: 173), this instrument allows for the investigation of "phenomena that are not directly observable". Its design revolves around a set of initial questions, while researchers have the freedom to elicit additional information as the interview unfolds. Moreover, "the outcomes are not limited by the researcher's pre-conceived ideas about the area of interest" (Mackey & Gass, 2005: 173). Following these principles, the interviews explored five areas of interest: first, the language curriculum and ongoing educational reforms; second, the relevance of English language education for young learners; third, the potential of ICTs for language teaching and learning; fourth, technological infrastructure and facilities in the school; and finally, teachers' continuing education and professional development. By the request of the participants, the interviews were not audio-recorded. Two of the authors conducted each interview, and teachers and principals were interviewed separately. Upon completion of the interview, the researchers wrote notes on issues the interviewees had addressed for each central question.

**Table 1. Participant demographics**

Population	n	Age mean	Male	Fem.	Region					School type		
					1	2	3	4	5	Gen.	State	Tec
Teachers Quantitative	28	42.6	13	15	12	5	2	4	5	17	6	5
Qualitative	6	38	3	3	2		2	1	1	4	1	1
Students	2,944	14	1,354	1,590	548	1,362	344	324	366	1,053	1,152	739

## 2.5. School visits

The researchers arranged one-hour visits to the school facilities where some technology could be found. These facilities included libraries, computer labs, or classrooms with a TV set, a projector, or a computer. Two of the researchers visited the facilities guided by the language teacher. During the visits, the researchers asked questions about regulations for accessing these facilities, training for the use of the equipment, technology/non-technology-based L2 materials available, and access to internet and computer peripherals (printers, scanners, etc.). Field notes were made upon completion of the school visits.

## 3. Quantitative results

In this section, the statistical validation of the questionnaires is presented first. Then, the answers given by the teachers and learners are discussed for the ICT categories. Tables 2 and 3 present the percentage distribution of the 28 teachers and 2944 learners across the questionnaire scale points for each item. In the discussion of the results, the percentages of the “sometimes/often” categories are added up, as they reflect sustained use of technology. Similarly, the percentages in the categories “never/rarely” are merged and interpreted as infrequent use of technology.

In order to test the differences in the answers between questionnaire versions, Mann-Whitney analyses were run. These analyses were selected due to the ordinal nature of the item scales (Fields, 2005). They revealed similar answers for all items in both teacher questionnaire versions, with a probability value above .05. They also revealed that the learners provided similar between-version answers for the items in table 3. Thus, the data from both versions were pooled for the analyses of each respondent type. Cronbach analyses indicated that teachers provided reliable answers in both questionnaire sections, and confirmed a satisfactory reliability level for learners’ answers in Section A and moderate reliability for Section B.

In the questionnaires, multimedia use was examined through items 2, 4, and 12. Item 2 explored the combined use of multimedia with the textbook. In the teacher questionnaire, this item (46.4%) out weighted the other items that explored teacher knowledge of L2 multimedia programs (32.2%) or the use of multimedia to teach a particular aspect of the L2 (10.7%). In the learner questionnaire, only this item (18.4%) yielded reliable results. These findings suggest that teachers use multimedia resources to complement traditional classroom materials, without exploring new instructional initiatives.

Internet/computer-mediated communication (CMC) was analyzed by items 7, 13, and 16 considering that teachers and learners could interact through emails, instant messaging, social networks, etc. In item 7, approximately 46% of the teachers reported using telephone text messages with learners. In the learner questionnaire, 14.4% of

the participants confirmed this. The results further revealed that only a few teachers recommended the use of social networks for L2 practice (28.5%) or L2 communication (25%).

Teachers’ use and promotion of the internet encompassed items 3, 9, 10, and 11. From the outset of the study, the researchers knew that

**Table 2. Teacher questionnaire**

Section A ( $\alpha = .875$ )	No answer	Never	Rarely	Some times	Often
1. Teachers' assistance during technological problems.		42.9%	35.7%	14.3%	7.1%
2. Teachers' combined use of the textbook with computer-based video, audio files.		21.4%	32.1%	35.7%	10.7%
3. Teachers' promotion of internet for language practice at home.		32.1%	32.1%	25.0%	10.7%
4. Teachers' knowledge of language learning programs.		35.7%	32.1%	17.9%	14.3%
5. Use of computers in the class.		35.7%	17.9%	17.9%	28.6%
6. Use of computers for grading and record tracking.	3.6%	28.6%	42.9%	10.7%	14.3%
7. Teachers' use of texting.		35.7%	17.9%	25.0%	21.4%
8. Teachers' promotion of the use of computers in class.	7.1%	35.7%	28.6%	17.9%	10.7%
Section B ( $\alpha = .858$ )					
9. Teachers' use of internet materials.		35.7%	35.7%	21.4%	7.1%
10. Teachers' promotion of websites for language learning.		14.3%	28.6%	35.7%	21.4%
11. Teachers' promotion of internet for language learning.		17.9%	25.0%	35.7%	21.4%
12. Use of computer images/videos for vocabulary teaching.		46.4%	42.9%	7.1%	3.6%
13. Teachers' promotion of social networks for language learning.		28.6%	42.9%	21.4%	7.1%
14. Teachers' requests for in-class technology use (cell phone, tablets, etc.).	3.6%		46.4%	28.6%	21.4%
15. Teachers' request for computer-produced assignments.		28.6%	35.7%	21.4%	14.3%
16. Teachers' use of internet-based communication with learners		64.3%	10.7%	21.4%	3.6%

the schools had no access to internet. Thus, only item 9 focused on its use in class, considering that teachers could produce printouts or download materials from the internet for instruction (Egbert & Yang, 2004). Nonetheless, this item had the lowest response rate in the teacher (28.5%) and learner (11.4%) questionnaires. The questionnaire items with the largest numbers of often/sometimes responses from teachers and students (57.1% and 23.3% respectively) were items 10 and 11. These results suggest that, although teachers do not use Internet-based materials in class, they recommend its use for L2 learning outside of class.

Teachers' "generic" use of computers/laptops in class (items 1, 5, 6, 8, 14, 15) was examined, as learners may be better able to identify this in comparison to the other specific types of ICTs. This was assumed, since many public-school learners have received computers/laptops in the southeast of Mexico through different government initiatives in recent years. In line with this assumption, this category obtained the largest number of reliable items through the statistical analyses in the learner questionnaire. Regarding teacher assistance when learners experience computer issues, similar percentages of learners (21.4%) and teachers (19.1%) selected the often/sometimes choices. As for teacher use of computers/laptops in class, different percentages of teachers (46.5%) and learners (14.4%) confirmed this (item 5), while teachers (25%) and learners (18.2%) acknowledged that teachers used computers for grading and record tracking. Moreover, the results reveal that the teachers ask their learners to use their computer/laptop/tablets in class, but only a few (35.7%) promote their use for completing assignments.

#### 4. Qualitative results

In order to describe ICTs in the English class and the schools, the qualitative data are holistically presented using categorical aggregations (Cresswell, 2013). This analysis type is

relevant for a multiple-case study, as it facilitates the identification of the categories of a phenomenon through commonalities across cases, and the integration of extensive data from different instruments (Cresswell, 2013). Using this type of analysis, the data from the classroom observations, school visits, and interviews are combined into two categories that were set from the onset of the study in line with the research objective. The first category targets the ICTs that are available to teachers in their educational settings. The second category covers the ICTs that are used in the English class. In the reports that follow, the quotation marks indicate words that were used by the participants.

In regards to ICTs in the public schools, the interviewees acknowledged that they were aware of the curricular policies that favour the use of ICTs for educational purposes. Moreover, they felt that the use of ICTs in the language class "could motivate kids to learn English". But, they indicated the school settings lacked ICT infrastructure. During the school visits, it was observed that a few schools had an improvised computer lab in a classroom or a library corner; other facilities consisted of a classroom with one computer or a display. In some schools, L2 learning multimedia CDs, a multimedia projector or laptop could be borrowed from the main office. However, some factors constrained access to these technologies, including one concern related to school regulations. Computer rooms were available only for "subjects in which learners need to develop technological knowledge, which is not the case for the English class". The lack of knowledge of how to operate school equipment also hinders teachers' use of school technologies. Most teachers were concerned about operating "expensive" equipment or dealing with technology malfunctioning. Another reason for avoiding school facilities or equipment was that their use "requires time that could be used more effectively". Some teachers felt that using technology "wasted time", as the learners needed

Section A ( $\alpha = .724$ )	No answer	Never	Rarely	Sometimes	Often
1. Teachers' assistance during technological problems.	7.5%	61.8%	11.6%	9.8%	9.3%
2. Teachers' combined use of the textbook with computer-based video, audio files.	5.1%	63.2%	13.3%	9.2%	9.2%
5. Teachers' use of computers in the class.	6.7%	68.5%	10.5%	7.9%	6.5%
6. Teachers' use of computers for grading and record tracking.	5.7%	65.3%	10.8%	6.8%	11.4%
7. Teachers' use of texting.	4.6%	72.0%	9.0%	6.3%	8.1%
8. Teachers' promotion of the use of computers in class.	5.6%	78.8%	7.0%	4.4%	4.2%
Section B ( $\alpha = .544$ )					
9. Teachers' use of internet materials.	2.4%	74.6%	11.7%	7.2%	4.2%
11. Teachers' promotion of internet for language learning.	1.3%	59.3%	18.2%	12.6%	8.7%
15. Teachers' request for computer-produced assignments.	1.6%	54.6%	19.0%	17.7%	7.1%

in-class time to get to school facilities with technology and then return to their classrooms; they also needed time to start the equipment and “the students get easily distracted”.

As for the ICTs in the English class, the qualitative findings substantiate the quantitative reports in that multimedia and CMC are finding their place in the observed classrooms. Moreover, they point to a remarkable divide in ICT classroom use between the younger and older teachers. Regarding multimedia, the younger teachers had personal laptops, portable speakers, or tablets. These teachers were observed asking learners to work on a textbook passage as they were getting their media files, laptops and speakers ready for the lesson. They were also observed to use media files already available on their laptops. The older teachers were observed using CD players only. Both types of teachers relied on these different technologies to implement listening comprehension exercises, and have students listen and repeat dialogues. In one class, one of the younger teachers distributed a printout with images and a language task from an L2 website. He also referred his students to the website on a few occasions.

Regarding CMC, the teachers were observed using text messages for teacher-learner communication, or to communicate with the parents. Moreover, one of the younger teachers indicated that CMC constituted a valuable technology for L2 practice. She reported having tried an information exchange task through a cellphone instant message application with some learners in one of her classes, as a requirement of a continuing L2 education program in which she was participating. She reported that her students liked the activity; she felt it was a “real kind of thing” for learners to use English, since they have this application on their phones and use it for real-life communication. Another young teacher acknowledged having an internet social network account, and learners would sometimes send him postings with messages in “Spanglish”. He thought it was an alternative for students to use “some English in real communication”.

## 5. Discussion and conclusion

This study examined the ICTs that have become part of the regular instructional practices and educational settings of L2 teachers in public secondary school education. In the observed contexts, the percentage of the educators who reported using ICTs with young learners is in line with reports from other international public education contexts (Durán-Fernández & Barrio-Barrio, 2007). The qualitative data support previous research findings that highlight teachers’ willingness and interest in ICTs for L2 education (Durán-Fernández & Barrio-Barrio, 2007; Felix, 2004). Although our findings suggest that L2 teachers are making efforts and finding ways to overcome the technological constraints in their public education settings (Egbert & Yang, 2004; Taylor & Gitsaki, 2003), both the quantitative and qualitative evidence of our study converge in that the integration of technology in L2 education in the observed public classrooms is still in its early stages.

Specifically, our results indicate that Multimedia and CMC tools are making their way into the public classrooms (Johnson & al., 2015; Macaro & al., 2011). In our context, Multimedia use seems to be emerging in public L2 instruction to complement the textbook, or to replace normalized technologies for L2 listening or oral practice. This use constitutes an initial move towards ICT-enhanced instructional practices, but underrepresents the potential of ICTs for L2 education (Plass & Jones, 2005), particularly among young L2 learners (Edwards & al., 2002). Regarding CMC, the use of cell phone text messages constituted a normalized communication technology in the L2 class. Nonetheless, CMC use is far from creating meaningful input and output L2 learning opportunities (Lin, 2015). The L2 teachers used text messages in Spanish to accomplish managerial tasks with parents and learners. Moreover, L2 use in text messages was limited to “throwing in a couple of words in English” for learners to realize that English can be used for real communication outside the class; thus, the use of CMC serves a L2 motivational purpose only.

Although methodological aspects of the mixed-methods design of the study could influence the ecological and face validity of our results (Cresswell, 2009; 2013), the diversity of school contexts represented in the study, the convergence in the data collected from various sources and through different data collection instruments, and the number of participants provide a high level of representativeness with regard to instructional conditions across public sector education settings. In this regard, our data clearly indicate that the normalization of ICTs for L2 education in these classrooms is hindered by some factors that are particular to the contexts of public sector education with young learners (He, Puakponk, & Lian, 2015; Johnson & al., 2015). In the study, a striking finding was that teachers do not use the available institutional technologies; and thus, these technologies do not constitute a valuable resource for L2 teaching. Principals often acknowledged the efforts of the school to have some technology available, and pinpointed that the L2 teachers “do not like using them to enhance their teaching”. Instead, teachers bring their own

technology into the L2 class. Explanations for this teacher behaviour related to overwhelming regulations and limited access to the facilities, technical support, time investment, and training, to mention but a few. This evidence and that from other international settings (Chambers & Bax, 2006; He, Puakponk, & Lian, 2015) raise concerns about the effectiveness of public school policies for encouraging teachers to benefit from the (limited) ICTs in their educational settings. Moreover, they raise questions about the extent to which current educational policies and curricular guidelines need to be reconceptualized in order to help teachers maximize the resources available in their school settings (Johnson & al., 2015; World Bank, 2007).

While the generalizability of our findings for other educational settings in other emerging economies deserves further exploration in future research (Johnson & al., 2015; Izquierdo & al., 2014), our findings substantiate the argument that “[t]eachers do not often have the adequate support systems to transition their good ideas beyond their own classrooms” (Johnson & al., 2015: 1). L2 research shows that in other international educational settings with limited technology, teachers have been able to circumscribe their contextual limitations by exploiting the available institutional resources in combination with their own personal devices and those of their learners (Egbert & Yang, 2004; Jeon-Ellis & al., 2005). Nevertheless, teachers require assistance in the form of training and teaching literature on the use of technology in L2 instruction (Compton, 2009; Johnson & al., 2015), as well as research initiatives that account for their diverse contextual realities and help them maximize the resources to which they have access on a daily basis (Taylor & Gitsaki, 2003; Guénette & Lyster, 2013).

### Funding and acknowledgements

This work was supported by the Mexico’s National Research Council for Sciences and Technology (Strategic Research Grant: Tabasco) (TAB-2010-C19-144479). We thank the participants for their contribution to our work, Stephen Davis for his valuable feedback on previous versions of this manuscript, and our research assistants for their enthusiasm throughout the realization of this Project.

### References

- Allen, L.K., Crossley, S.A., Snow, E.L., & McNamara, D.S. (2014). L2 Writing Practice: Game Enjoyment as a Key to Engagement. *Language Learning & Technology*, 18(2), 124-150. (<http://goo.gl/j6BGnN>) (2016-04-30).
- Bax, S. (2003). Call: Past, Present and Future. *System*, 31, 13-28. [https://doi.org/10.1016/S0346-251X\(02\)00071-4](https://doi.org/10.1016/S0346-251X(02)00071-4)
- Burston, J. (2015). Twenty Years of MALL Project Implementation: A Meta-analysis of Learning Outcomes. *ReCALL*, 27, 4-20. <https://doi.org/10.1017/S0958344014000159>
- Cerezo, L., Baralt, M., Suh, B., & Leow, P. (2014). Does the Medium Really Matter in L2 Development? The Validity of CALL Research Designs. *Computer Assisted Language Learning*, 27(4), 294-310. <https://doi.org/10.1080/09588221.2013.839569>
- Chambers, A., & Bax, S. (2006). Making CALL Work: Towards Normalisation. *System*, 34(4), 465-497. <https://doi.org/10.1016/j.system.2006.08.001>
- Chappelle, C. (2002). Computer-assisted Language Learning. In R. Kaplan (Ed.), *The Oxford Handbook of Applied Linguistics* (pp. 498-505). New York: Oxford University Press.
- Compton, L. (2009). Preparing Language Teachers to Teach Language Online: A Look at Skills, Roles, and Responsibilities. *Computer Assisted Language Learning*, 22, 73-99. <https://doi.org/10.1080/09588220802613831>
- Cresswell, J. (2009). *Research Design. Qualitative, Quantitative, and Mixed-methods Approaches*. Thousand, Oaks, CA: Sage.
- Cresswell, J. (2013). *Qualitative Inquiry and Research Design. Choosing among Five Approaches*. Thousand, Oaks, CA: Sage.
- Durán-Fernández, A., & Barrio-Barrio, J.F. (2007). Disposición y uso de recursos informáticos para la enseñanza-aprendizaje del inglés: Una descripción a partir de una muestra en cien centros públicos de Educación Infantil y Primaria de la Comunidad de Madrid. *Porta Linguarum*, 8, 193-223. (<http://goo.gl/eHTyRD>) (2016-04-30).
- Edwards, V., Pemberton, L., Knight, J., & Monaghan, F. (2002). Fabula: A Bilingual Multimedia Authoring Environment for Children Exploring Minority Languages. *Language Learning & Technology*, 6(2), 59-69. (<http://goo.gl/ZvBx9f>) (2016-04-30).
- Egbert, J., & Yang, Y.F. (2004). Mediating the Digital Divide in CALL Classrooms: Promoting Effective Language Tasks in Limited Technology Contexts. *ReCALL*, 16, 280-291. <https://doi.org/10.1017/S0958344004000321>
- Fabila, A., Minami, H., & Izquierdo, J. (2012). La escala de Likert en la evaluación docente. Acercamiento a sus características y principios metodológicos. *Perspectivas Docentes*, 50, 31-40. (<http://goo.gl/BztbXh>) (2016-04-30).
- Felix, U. (2005). Analysing Recent CALL Effectiveness Research - Towards a Common Agenda. *Computer Assisted Language Learning*, 18, 1-32. <https://doi.org/10.1080/09588220500132274>
- Felix, U. (2004). A Multivariate Analysis of Secondary Students’ Experience of Web-based Language Learning. *ReCALL*, 16, 129-141. <https://doi.org/10.1017/S0958344004001715>
- Fields, A. (2005). *Discovering Statistics using SPSS*. London, UK: Sage.
- Figura, K., & Jarvis, H. (2007). Computer-based Materials: A Study of Learner Autonomy and Strategies. *System*, 35, 448-468. <https://doi.org/10.1016/j.system.2007.07.001>
- Golonka, E., Bowles, A., Frank, V., Richardson, D., & Freynik, S. (2014). Technologies for Foreign Language Learning: A Review of Technology Types and Their Effectiveness. *Computer Assisted Language Learning*, 27, 70-105. <https://doi.org/10.1080/09588221.2012.700315>



- Guénette, D., & Lyster, R. (2013). Written Corrective Feedback and its Challenges for Pre-service ESL Teachers. *The Canadian Modern Language Review*, 69(2), 129-153. <https://doi.org/10.3138/cmlr.1346>
- Harker, M., & Koutsantoni, D. (2005). Can it be as Effective? Distance versus Blended Learning in a Web-based EAP Programme. *ReCALL*, 17, 197-216. <https://doi.org/10.1017/S095834400500042X>
- He, B., Puakpong, N., & Lian, A. (2015). Factors Affecting the Normalization of CALL in Chinese Senior High Schools. *Computer Assisted Language Learning*, 28(3), 189-201. <https://doi.org/10.1080/09588221.2013.803981>
- Hulstijn, J.H. (2000). The Use of Computer Technology in Experimental Studies of Second Language Acquisition: A Survey of Some Techniques and Some ongoing Studies. *Language Learning & Technology*, 3, 32-43. (<http://goo.gl/OOIYJM>) (2016-04-30).
- Izquierdo, J. García, V., Garza, G., & Aquino, S. (2016). First and Target Language Use in Public Language Education for Young Learners: Longitudinal Evidence from Mexican Secondary-school Classrooms. *System*, 61, 20-30. <https://doi.org/10.1016/j.system.2016.07.006>
- Izquierdo, J. Simard, D., & Garza, G. (2015). Multimedia Instruction & Language learning Attitudes: A Study with University-students. *Revista Electrónica de Investigación Educativa*, 17(2), 101-115. (<http://goo.gl/0UNNTf>) (2016-04-30).
- Izquierdo, J. (2014). Multimedia Instruction in Foreign Language Classrooms: Effects on the Acquisition of the French Perfective and Imperfective Distinction. *The Canadian Modern Language Review*, 70(2), 188-219. <https://doi.org/10.3138/cmlr.1697>
- Izquierdo, J., Aquino, S., & al. (2014). Prácticas y competencias docentes de los profesores de inglés: Diagnóstico en secundarias públicas de Tabasco [Instructional Practices and Teaching Competencies of EFL Teachers: Evidence from Public Secondary Schools in Tabasco]. *Sinéctica*, 42, 1-25. (<https://goo.gl/nrYmy6>) (2016-04-30).
- Jeon-Ellis, G., Debski, R., & Wigglesworth, G. (2005). Oral Interaction around Computers, in the Project-oriented CALL Classroom. *Language Learning & Technology*, 9, 121-145. (<http://goo.gl/G1q6Hc>) (2016-04-30).
- Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2015). *NMC Horizon Report: 2015 K-12 Edition*. Austin, Texas: The New Media Consortium (<http://goo.gl/S8lo6x>). (2016-04-30).
- Lan, Y.J., Sung, Y.T., Cheng, C.C., & Chang, K.E. (2015). Computer-supported Cooperative Prewriting for enhancing Young EFL learners' writing performance. *Language Learning & Technology*, 19(2), 134-155. (<http://goo.gl/efq31H>) (2016-04-30).
- Leakey, J., & Ranchoux, A. (2006). BILINGUA. A Blended Language Learning Approach for CALL. *Computer Assisted Language Learning*, 19, 357-372. <https://doi.org/10.1080/09588220601043016>
- Lin, H. (2015). A Meta-synthesis of Empirical Research on the Effectiveness of Computer-mediated Communication (CMC) in SLA. *Language Learning & Technology*, 19(2), 85-117. (<http://goo.gl/ezQcCx>) (2016-04-30).
- Mackey, A., & Gass, S. (2005). *Second Language Research. Methodology and Design*. Mahwah, NJ: Lawrence Erlbaum.
- Macaro, E., Handley, Z., & Walter, C. (2011). A Systematic Review of CALL in English as a Second Language: Focus on Primary and Secondary Education. (State-of-the-Art Article). *Language Teaching*, 45(1), 1-43. <https://doi.org/10.1017/S0261444811000395>
- Plass, J., & Jones, L. (2005). Multimedia Learning in Second Language Acquisition. In R.E. Mayer (Ed.), *The Cambridge Handbook of Multimedia* (pp. 467-488). New York, NY: Cambridge University Press.
- Raby, F. (2007). A Triangular Approach to motivation in Computer Assisted Autonomous Language Learning (CAALL). *ReCALL*, 19, 181-201. <https://doi.org/10.1017/S0958344007000626>
- Sagarra, N., & Zapata, G. (2008). Blending Classroom Instruction with Online Homework: A Study of Student Perceptions of Computer-assisted L2 Learning. *ReCALL*, 20, 208-224. <https://doi.org/10.1017/S0958344008000621>
- Schwienhorst, K. (2002). The State of VR: A Meta-Analysis of Virtual Reality Tools in Second Language Acquisition. *Computer Assisted Language Learning*, 15(3), 221-239. <https://doi.org/10.1076/call.15.3.221.8186>
- Yun, J. (2011). The Effects of Hypertext Glosses on L2 Vocabulary Acquisition: A Meta-analysis. *Computer Assisted Language Learning*, 24(1) 39-58. <https://doi.org/10.1080/09588221.2010.523285>
- Taylor, R.P., & Gitsaki C. (2003). Teaching WELL in a Computerless Classroom. *Computer Assisted Language Learning*, 16, 275-294. <https://doi.org/10.1076/call.16.4.275.23412>
- Thouin, M. (2014). *Réaliser une recherche en didactique*. Montreal: Multimondes.
- World Bank (2007). *Ampliar oportunidades y construir competencias para los jóvenes. Una agenda para la educación secundaria*. Bogotá: Banco Mundial y Mayol Ediciones.