# EXPLORING ICT INTEGRATION IN PRE-SERVICE ENGLISH LANGUAGE TEACHERS IN CALI, COLOMBIA USING A TPACK FRAMEWORK

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## Dedication

**This Master's report is dedicated to the friendship and memory of Aldemar Valencia Martinez. He was who encouraged me in this study and over his last three years of existence, enlightened me with his strength and faith giving me a new appreciation for the meaning and importance of friendship. His example kept me working when I wanted to give up.**

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## Abstract

This study explores pre-service and teacher educators ICT competence levels, usage frequency and their attitude towards ICT integration, as well as their perceptions in using ICT for the teaching of English in three Universities in Cali. This exploratory study was carried out with the participation of 21 Colombian pre-service teachers, and 7 teacher educators. For this study two surveys were used and results revealed that even though teachers are aware of ICT and are able to use some technological tools with pedagogical purpose, ICT integration is not completely achieved.

The findings indicated limited computer usage at institutions, varied levels of technological competence and training. Due to this fact there are few opportunities for ICT integration  The results were aligned with the TPACK model.



Key terms: *Technological Pedagogical Content Knowledge TPACK, technology integration levels, pre-service teachers.*

## **1.** Introduction

With the advent of internet and the Web 2.0, the Information Communications Technology (ICT) in foreign language teaching has been one of the aims of investigation and research. As an English teacher, I am aware of changes in education and especially in the Teaching of English as a foreign Language (TEFL). In my years of teacher preparation, I did not have the resources and access to computers and technology as pre-service or prospect teachers have it today. Since the arrival of the Web 2.0 and new technologies, teachers have been exposed to find new ways and develop strategies to reach the goals of using technology with pedagogical purposes in the Teaching of English as a Foreign Language.

The term ICT in education makes reference to forms of technologies used to store, create, share and exchange information for the improvement of teaching. According to Burton (1999) "ICT is the resulting technology that combines hardware, software, media, and delivery systems, such as desktop, notebook, and handheld computers; digital cameras; local area networking; the Internet and the World Wide Web; CD-ROMs and DVDs; and applications such as word processors, spreadsheets, tutorials, simulations, electronic mail digital libraries, computer-mediated conferencing, videoconferencing, and virtual reality" (p.46). Additionally, if we talk about ICT integration, it can be understood as the way in which learning can be enhanced through the use of technology.

In the English classroom, ICT can provide students the opportunity to develop the required skills to complement and enhance the learning of English through a vast array of resources, tools and applications. According to research, teacher's technological competencies have been found as one of the most important factors influencing technology integration (Baylor

& Ritchie, 2002). In other words to be able to integrate technology in the classroom it is necessary not just to know about technology, but also to be able to use that knowledge with a clear pedagogical purpose. Research has shown that even though the technological skill is necessary, it is not sufficient in and of itself to prompt teachers to use technology in their classrooms (Albion, 2001; Topper, 2004).

ICT integration in the English classroom can be described as an effective tool for innovation and for the renewing of the teaching practice. Technology can facilitate learning processes and increase teachers and students performance in terms of effectiveness and efficiency in education, developing at the same time critical thinking, motivation and autonomy.

From my personal experience and after having worked in various schools, English Centers and English departments, there have always been teachers who enjoy teaching with internet websites and Web 2.0 tools and others who refuse to teach this way and doubt its effectiveness and even consider it a waste of time and an overwhelming task. Previous research done (Arias et al., 2011; Arias, 2012; Ertmer, 2005; McDougald, 2009; Montes & Ochoa, 2006) have evidenced a lack of information related to ICT appropriation and integration in the pedagogical preparation of pre-service (students of foreign languages) teachers in Colombia.

Through the use of ICT in my teaching practice, I discovered that if used appropriately, ICT and technological resources enhance and complement the teaching of languages in a more student-centered way. For me, having ICT skills in my teaching is definitely a plus in the EFL classroom.

There are several reasons for the lack of ICT appropriation and integration in our universities, some identified obstacles to ICT integration may be related to attitude, training, and

motivation of educators or students. One thing is clear and demonstrated by abundant research, technology by itself will not provide the expected outcomes “One thing that has become clear is that the mere introduction of technology in schools will not have the desirable outcomes, that is, technology in and of itself is not a transformative mechanism or a vehicle for change” (Angeli & Valanides, 2009, p. 157).

## 2. Problem formulation

With the growing need of integrating ICT in the teaching of English as a Foreign Language, teacher trainers and educators should provide pre-service teachers with ICT strategies prior to their teaching career because this will encourage student teachers to use technology as well. The Colombian Government and the Ministry of Education following international guidelines and frameworks set by international organizations such as UNESCO and ISTE, established that teachers must have the skill to cope with technological resources and effectively teach the necessary subject matter incorporating technological concepts National Ministry of Education (MEN, 2007. p.21-22). According to the standards set for teachers, teacher preparation programs and instruction should facilitate, design and develop learning experiences and assessment fit for the digital age promoting digital citizenship and engage in ongoing professional development and leadership of technology use (ISTE, 2008; UNESCO, 2008).

Today is necessary to acknowledge that the new generation of teachers cannot be prepared in the same way that their teachers were trained. Due to this educational change, the rapid advancement of technology and the continuous exposure to new developments, education today is the result of continuous transformation in cultural, social, and political environments which impose a more effective professional development of teachers to stay current and up to date with new trends and challenges in education (MEN, 2009).

Since teacher educators today are preparing students that were born and have grown in the digital era, the education challenge is not only to succeed by complying with the different national policies and requirements, it is necessary to integrate ICT in the classroom which implies a greater challenge. Different ICT tools can benefit access to learning, strengthening and

raising students' motivation through interactive processes, but limiting ICT learning to a "technology course" will not make pre-service teachers of English as a foreign language into teachers able to make real use of it.

Web based resources and ICT tools can motivate students' learning because they can learn by themselves, but technologies cannot be isolated and limited to a single course or class. There is abundant research and evidence of the effectiveness of using ICT in the English classroom but little is known about which learning method and pedagogical input should be used for education and training of pre-service teachers. "Often, pre-service teachers learn about technology, content, and pedagogy in separate course work, giving them an incomplete picture of how technology can support student learning" (Mouza & Klein. 2013. p.149). There have been established some barriers and obstacles for ICT to become an integral part of teaching and learning process. Some of these barriers will be discussed, with a special focus on beginning teachers and ICT. In this study, the term "pre-service teachers" will be taken to include teacher education students in universities and other teacher education institutions.

Acknowledging the important role of ICT in the teaching of languages and following guidelines established by the national government:

**1. How are pre-service teachers and teacher educators using ICT in three different universities in Cali?**

**2.What is the pre-service teachers' ICT competence level according to the framework set by the National Ministry of Education?**

## 3. Objectives

### 3.1. General objective

To establish the types of ICT available in three different universities in Cali Colombia, and to describe how are they used by educators during classes, using as reference a TPACK model.

### 3.2 Specific objectives

1) To determine ICT competence level of teacher educators according to the framework set by the National Ministry of Education.

2) To examine pre-service teachers' understanding of content, pedagogical and technological knowledge of ICT .

## 4. Relevance

The arrival of Web 2.0 has changed the way we teach and learn today and since I am a teacher who enjoys teaching through the use of technological tools, I value them and implement technological activities in every opportunity I have. Even though I did not grow up with technology, I have been interested and have taken valuable courses and seminars to learn how to integrate technology in the teaching of English as a foreign language. On my own, I spent long hours trying to learn more and more about the possibilities computers offer to educators and it has become not only my deepest interest but also an important asset in my teaching practice.

As I was learning about technology and possibilities to complement a lesson with them, I started integrating them in my classes

. The powerful mix of language, pedagogy and technology provided countless opportunities for students to explore the language from a different perspective and enriched my classes with enjoyment, even grammar and writing activities were well accepted and fun. I discovered incredible sites and Web 2.0 resources through which I could teach my students how to create amazing presentations, read and write online books, design mind maps, learn grammar rules through movie segments, and learn new vocabulary through interactive resources. Moreover, students explored sites in which self-correction played the main role and they were able to raise awareness about their own mistakes enhancing metacognition skills.

I understood that with the implementation of ICT in my classes, the reading and writing practice as well as the speaking activities in which students could record their voices, interact with native speakers or sing their favorite songs along with the computer, made my students realize that the learning of English could be an attainable and enjoyable goal.

Consequently, I became interested in learning about ICT availability and usage in the preparation of future teachers here in my hometown. I found out that the National Ministry of Education had established guidelines for teachers to reach the goal of ICT integration in our classrooms. In this study I will discuss among others, **Barriers to ICT integration**, the **Benefits of integrating technology in the EFL classroom**; UNESCO **ICT frameworks for teachers, National Ministry of Education and ICT,** the TPACK **Technological Pedagogical Content Knowledge Framework** pre-service teacher should have.

# 5. Theoretical framework

## 5.1 Literature review

### 5.1.1 Barriers to ICT integration.

Technological abilities are necessary in today's teaching and learning but without the adequate pedagogical training and as an isolated course, it will not reach its full potential as a teaching strategy. Pre-service teacher education training, according to Pradhan should not only focus on providing technical ICT skills only, but on the use of ICT to achieve learning outcomes (2014).

Main barriers to ICT integration are often related to inadequate training of pre-service teachers which affects their professional development and effective use of technology in their teaching. Ofsted (2002) found a different set of categories; from my point of view they all are the result of inadequate training:

ICT tasks not related to objectives of lessons;

Lack of guidance by teachers;

Lack of knowledge about when to use and when not to use ICT;

Lack of teacher skills and confidence;

Lack of appropriate intervention by teachers; and

Lack of recognition of student expertise in ICT.

Obstacles or barriers to ICT integration in regards to the educational institutions and programs are usually blamed to the limited number of computers, lack of computer skills and teachers' perceptions, attitudes and beliefs which can definitely affect the success of technology integration; barriers to ICT integration can be categorized as: attitude and beliefs, and insufficient knowledge and skill. In this study, only barriers related to the individual (teacher-level) will be discussed.

ICT can facilitate improvements not only in students' technology skills but also in their beliefs and intentions regarding integrating technology into instruction (Anderson, Groulx, & Maninger, 2010; Anderson, Groulx, & Maninger, 2012; Anderson & Maninger, 2007; Hennessy, Ruthven & Brindley, 2004). ICT integration should be understood as a voluntary act and a decision that involves pedagogy and technology for the enhancement and improvement of the teaching experience. Moreover, it is important to acknowledge that success in using technology usage depends on the ability to explore and connect pedagogy and technology "But for teachers to use technology in support of their learning, and to see it as a pedagogically useful tool, they must be confident and competent with the technology they are planning to use" (Topper, 2004, p.304).

For traditional teachers it can be a real challenge to develop the ability to explore new technologies that can complement pedagogy, and this is probably why some of them prefer the traditional teacher-centered classroom; in contrast, new teachers usually feel comfortable dealing with new trends in education and explore innovative ways of teaching. It has also been reported that pre-service teachers who received ICT training possess a stronger sense of self-efficacy with respect to computer use (Brown & Warschauer, 2006). Effective integration of ICT in teaching and learning requires the teacher to understand how ICT deals with pedagogy and content. As a

result, teacher educators are expected to find strategies and approaches to education that would include ICT in their teaching practices for the improvement of language teaching.

As stated by Hugues (2004) technology integrationists possess the unique ability to interpret understand, consider, and decide if technology should be used in order to enhance teaching and learning and the contents of the curriculum; this is to say that as teachers explore the process of technology integration looking for ideal methods in which ICT can be accomplished, teachers will have to examine if those technologies they plan to use are compatible with the curriculum and the expected results "To become technology integrationists teachers need to integrate three knowledge areas: content, pedagogical, and technology". (p. 103)

Some authors have identified influencing factors to ICT integration in teacher preparation programs and instruction on the effectiveness of pre-service education on factors such as university instructors' use of ICT, school readiness, mentor teachers' attitude etc. (Lim et al., 2010). Some authors think that successful integration has to do with attitude, training and institutions accessibility to ICT as argued by Mejia and Puche; who argue that ICT skills facilitate new knowledge approach and the development of these competencies require a positive attitude from pre-service towards ICT technologies and resources. Furthermore, universities and teacher training centers have some responsibility on this matter (2008).

Other authors have found other reasons, Jarvis (2001) states that for ICT integration is it necessary to identify students' needs, social and cultural setting and the learning of technologies that support learning "The art of designing technological support for language learning then lies in identifying the needs of a given set of learners in specific social and cultural settings, and

using the rapidly evolving technologies to support particular learning environments in the most effective way possible" (p.212).

Following the same line of discussion, some authors found additional reasons for teachers limited use of computers in the knowledge and attitude of pre-service teachers, this situation has been studied by Baylor & Ritchie (2002); who state that "regardless of the amount of technology and its sophistication, technology will not be used unless instructors have the skills, knowledge and attitudes necessary to infuse it into the curriculum" (p. 398). In our national context, this situation has been studied by Díaz-Maggioli who describes technology in teaching as a voluntary act and a decision (2003) arguing in her study that the professional development is a continuous learning process in which the teacher *voluntarily* takes part, with the aim of improving their teaching practices and adjusts them to the needs of their students.

Challenges and requirements are set for Colombian teachers, it is time for them to be in charge of building the innovative environments that fit students' needs and bring together subject matter and technology.

### 5.1.2 Benefits of ICT integration in the EFL classroom

In this digital age, teacher preparation programs at institutions and universities are required to prepare pre-service teachers to adequately use technology in their educational practice. Since teachers deal with innovation, motivation and creativity during all their teaching practice in an effort to present innovative and engaging learning activities to students; teachers must encourage the search for information from different sources. In the teaching of languages Isisag describes ICT as a tool that benefits language learning "The integration of information and

communications technology in teaching and learning is considered as a medium in which a variety of approaches and pedagogical philosophies may be implemented. However, ICT as a teaching aid is more complicated in that it demands more specific skills from the teachers" (p.3 2012).

Through ICT integration in the classroom, is possible to meet the goals of fostering the learning of English, but these cannot be isolated and limited to a single course, as mentioned by Abbit (2011) "this personal use of technology, however, did not easily translate into an integration of technology in teaching and learning, thus demonstrating that knowledge of technology is insufficient, by itself, to foster successful technology integration" (p.286). Since technology can support teaching and learning of any subject matter, the teaching of EFL at universities have also infused technological training into their curriculum. However, by promoting technological competence in pre-service teachers' teaching programs and the importance of ICT integration, is a process that demands the use of multiple strategies.

Some authors have discussed educational computer usage, Baylor and Ritchie (2002) have established two types of computer use in education, one is computers for educational purposes and collaboration and the other is for the development of high order skills; they both have in common that are intended for the measuring individuals and institutions' ICT integration levels. The main benefits observed in the integration of computers in teaching is due to the nature of technology, as today's students are considered as digital natives because they grew up surrounded by technologies such as computers, video games, smartphones, internet and virtual environments computers become a tool and a medium in which students enhance their learning.

Computers are machines that can perform several activities such as repetition, drills that can complement any educational activity; students improve listening and speaking skills through repetition which is necessary in language learning. Specifically, in the field of ELT, the power of ICT cannot be denied as it offers solutions for the problems EFL teachers have to face, such as providing authentic materials to the learners, communication with native speakers, providing a setting for authentic and meaningful communication, increasing immediate feedback which increases student motivation. Furthermore, ICT can be adapted to teaching and learning objectives; pedagogical content; any type of resources and materials; learning environments; teachers' pedagogical aim as well as students' background and learning style among others.

ICT technologies provide teachers with useful resources that help us to innovate, create, communicate, store, exchange and evaluate information promoting the teaching and learning of English. ICT, the Web 2.0 and technological resources for language teaching offer teachers and students the opportunity to explore and complement the teaching of English from different perspectives that were not possible before. Furthermore, as part of a global community technological knowledge has become necessary to belong to the information society. Jung states that English and ICT have become essential literacy skills for a vast amount of non-native English speakers to ensure full participation in the information society (Jung, 2006).

Reading, writing, listening and communicating with others are no longer the same, Web 2.0 and ICT resources and tools provide a vast source of authentic texts which encourage writing skills by providing chances for authentic written communication (Liu et al., 2002). The experience of virtual environments might be one of the reasons for increasing motivation and creativity (Young, 2003).

There is no doubt that ICT motivates students to explore the World Wide Web and its resources but it is also important to consider technology in education as part of a pedagogical process. In the speaking skill development, one of the key elements in successful language learning and which has long been a barrier for language teachers is the opportunity for authentic communication with native speakers (Liu et al., 2002).

Among some of the most used ICT technologies that favor writing skills, it is important to mention word-processors, blogs, wikis, e-portfolios and social networks. As Jarvis (1998) stated "the word-processor continues to play a major role on many courses. One might expect that its popularity is driven by issues of pedagogy and the integration of word-processed writing tasks into the writing syllabus." Several authors have discussed the benefits on reading "interactive storybooks can help primary pupils expand their vocabulary and gain insight into the structure of narrative texts (Segers and Verhoeven, 2002, p.211).

Some of the most important reasons for the learning of languages through ICT integration are according to Warschauer & Meskill (2000) first, online communication is fair, students have the same opportunities for participation second, online communication gives students opportunities to see others' responses and allow time to think before answering; Third it allows students to have opportunities to write and delete, to think and correct own mistakes and finally it allows to communicate outside the classroom and practice with native speakers (Warschauer & Meskill, 2000). To summarize, students find reading, writing, listening and speaking through the use of ICT tools and resources easier because usually web-based resources are authentic and culturally loaded materials which usually contain movement, sounds and animations providing more interactive and easier to understands materials that teachers can easily design and create with the aim of providing meaningful educational learning experiences.

### 5.1.3 UNESCO ICT frameworks for teachers

Internationally, two organizations the International Society for Technology in Education (ISTE) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO), have been the globally leaders in guiding the implementation of technology in education effectively.

UNESCO developed an ICT Competency Framework for Teachers and ISTE set out Standards for Teachers. They both designed the models and guidelines for implementing educational technology in primary and secondary education throughout the world.

| **Area of educational focus** | **'Modules' - Phases of knowledge acquisition** | | |
|---|---|---|---|
| | **Technology literacy** | **Knowledge deepening** | **Knowledge creation** |
| **Understanding ICT in education** | Policy Awareness | Policy understanding | Policy Innovation |
| **Curriculum and assessment** | Basic Knowledge | Knowledge Application | Knowledge Society Skills |
| **Pedagogy** | Integrate technology | Complex problem solving | Self management |
| **ICT** | Basic tools | Complex tools | Pervasive tools |
| **Organization and administration** | Standard classroom | Collaborative groups | Learning Organizations |
| **Teacher professional learning** | Digital Literacy | Manage and guide | Teacher as model learner |

Figure 1: UNESCO ICT Competency Framework for Teachers Framework, Source: UNESCO (2008).

The National Council for Accreditation of Teacher Education (NCATE, 2008) provided guidelines and benchmarks for programs, courses, teaching, candidate performance, scholarship, service, and an accountability unit. UNESCO (2011a) provided a list of activities that serve as indicators of teachers' usage of ICT:

- Lectures;
- Reading comprehension;

 Customized support to specific students;

 Search for information in books, in magazines and/ or on the Internet;

 Organizing group and collaborative work between students;

 Production of materials by students;

 Debates and presentations made by students to the whole class;

 Development of spreadsheets and graphics with the students;

 Theme projects or assignments;  Playing educational games;

 Contributing to the community through theme projects;

 Teaching to use computers and the Internet (cited by UNESCO (2011a) Brazilian Internet Steering Committee,2013: SurveyE2, page 377).

### 5.1.4 National Ministry of Education and ICT for Colombian teachers.

An identified aim of the Colombian Ministry of Education is the integration of ICT learning across the curriculum through interdisciplinary learning MEN (2012). The Colombian government highlighting the need for teachers to be prepared to use technology in the classroom and aiming to enhance the pedagogical competence, governments has increased enrollments, created quality resources available to all and improved literacy skills training, facilitating access to the use of hardware and software resources and tools. The Colombian government and its education departments, aware of educational advantages obtained through the use of ICT in the classroom, invested significantly in infrastructure and national programs such as "A que te cojo ratón", developed to promote the learning, use and implementation of ICT in the classroom; and “Computadores para Educar”, the highest social impact program of the national government aiming to generate equity through the use of ICT while promoting quality education.

All of these programs were the result of the efforts of the presidency of the Colombian Republic, the Ministry of ICT, MEN, ICT Fund and SENA (National Service of learning). Additionally, in 2007, the Colombian National Program of Media Usage and New Technologies established a policy regarding the integration of ICT in Colombia's Educational System with the aim of reaching the goal of "second language competencies in learning environments contextualized and inclusive that privilege use and appropriation of ICT" (MEN, 2007. p.43 ).

Therefore, The Colombian government has been developing strategies aiming to best prepare teachers to use and effectively integrate technology into instruction. The strategies and programs that promote appropriation of ICT in Colombia have focused in two directions:

1) To promote the training of educators in ICT in order to improve teaching and learning processes while transforming traditional teaching practices, fostering educational innovation.

2) To foster the access to infrastructure and ICT technological devices. With appropriate training for teachers, The Plan Nacional Decenal de Educación 2006 -2016 expects their improvement and innovation in their teaching practices, this program focuses in the necessity of integrating ICT into the educational projects, and demands the participation of all faculty and staff in order to reach this goal (CEP, 2010. p.53)

The Plan Colombia ICT 2008-2019 establishes the development of an inclusive educational system, that provides autonomous and collaborative learning opportunities mediated through ICT. The most important and urgent today is to develop the competencies of digital and technological tools, in order to integrate ICT in the teaching practices. It is clear that teachers need to know not only the use but also information on how to integrate them in the classroom and finally, how to apply them in their daily teaching practice and from different approaches.

MEN proposes ICT competencies for teachers oriented to the development of pedagogical, communicative, administrative, research and technological competencies set in three different phases: Exploring, Integration, and Innovation in ICT (MEN, Recursos Educativos Digitales Abiertos, 2012). An identified aim of the Colombian Ministry of Education is the integration of ICT learning across the curriculum through interdisciplinary learning (MEN, 2009). The government is concerned about how to best prepare teachers to use and effectively integrate technology into instruction.

To be able to reach these objectives, the plan proposes specific actions in three strategic areas; infrastructure management, (equipment, connection and settings) content management( the curriculum, standards and ICT integration levels and aims) and finally human resource management (understood as teachers and students). Colombia has taken action in these three areas with the support of the Ministry of Technology and Information and communication (www.mintic.gov.co), the Education Secretariat (www.redacademica.edu.co) and the educational site Eduteka, aiming to reach the goals of using ICT in schools. According to the Colombian Ministry of Education, MEN, English teachers should be competent to use and apply ICT technologies and established five levels of competency.

1) Communicative

2) Investigative

3) Pedagogical

4) Technological

5) Management

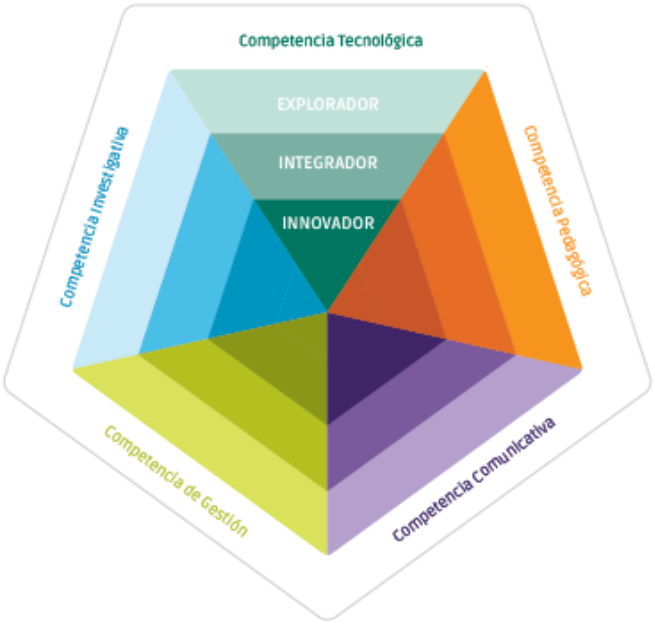



Fig 1. Pentagon of ICT competencies

http://www.colombiaaprende.edu.co/html/micrositios/1752/articles-318264_recurso_tic.pdf

These competencies are structured in three different levels or degrees of knowledge, and are identified as: Explorer or the teacher who is aware of technological tools and is capable of integrating some of them in his teaching practice.

Integrator is the teacher who uses some technological tools in accordance with his role, subject area, level, context and pedagogical purpose; and finally the Innovator, is the teacher who has an ample knowledge of a variety of technological tools and can design environments that privilege solutions to problems identified in his context. These competencies are also intertwined with the technological, communicative, pedagogical, investigative and management areas.

The Colombian National Program of Media Usage and New Technologies established a policy regarding the integration of ICT in Colombia's Educational System and it is the aim to

reach the goal of “second language competencies in learning in contextualized and inclusive educational environments that privilege the use and appropriation of ICT” (MEN, 2008. p.23).

The Plan Colombia ICT 2008-2019 establishes the development of an inclusive educational system, that provides autonomous and collaborative learning opportunities mediated through ICT.

From this perspective, “teachers today need to know not only the subject area knowledge, but also how to transform the teaching of contents through the effective use of technology” (MEN, 2007.p. 21-22).

### 5.1.5 TPACK Technological Pedagogical Content Knowledge Framework

The **TPACK** (Technological Pedagogical Content Knowledge) identified as the knowledge that educators need in order to successfully integrate technology into their teaching.

The TPACK framework shows the interaction of knowledge about how to teach, what to teach, and how to do so with the use of ICT. The combination is described as Technological Pedagogical Content Knowledge (TPACK). Effective pre-service teachers are those who know not only the understanding of content and technology but also the relationship between pedagogy and technology and pedagogy and content (Polly et al., 2010; Koehler, Mishra & Yahya, 2007). Meaningful use of ICT in the classroom requires the teachers to integrate technological resources with pedagogical strategies in order to appropriately teach any subject matter. This integrated form of contextualized knowledge is described as the TPACK (Mishra & Khoeler, 2006).

As a standard practice, pre-service teachers should first be able to understand the linkages between "technological knowledge", "pedagogical knowledge", and "content knowledge" before they can become creative in the use of ICT in schools (Mishra & Koehler, 2006). In order to measure technological and pedagogical abilities a TPACK framework can serve as a measuring tool "When considering the application of the various methods and procedures for measuring TPACK, it is important to consider that the TPACK framework can serve both as a model for the requisite knowledge of teachers for technology integration as well as a model of how innovative technology integration emerges" (Abbit, 2011, p. 295).

The foundation of TPACK, in its current form, was developed through a series of design experiments (Koehler & Mishra, 2005; Koehler, Mishra, Hershey, & Peruski, 2004; Koehler, Mishra, & Yahya, 2007; Mishra & Koehler, 2005, 2007; Mishra, Peruski, & Koehler, 2007)

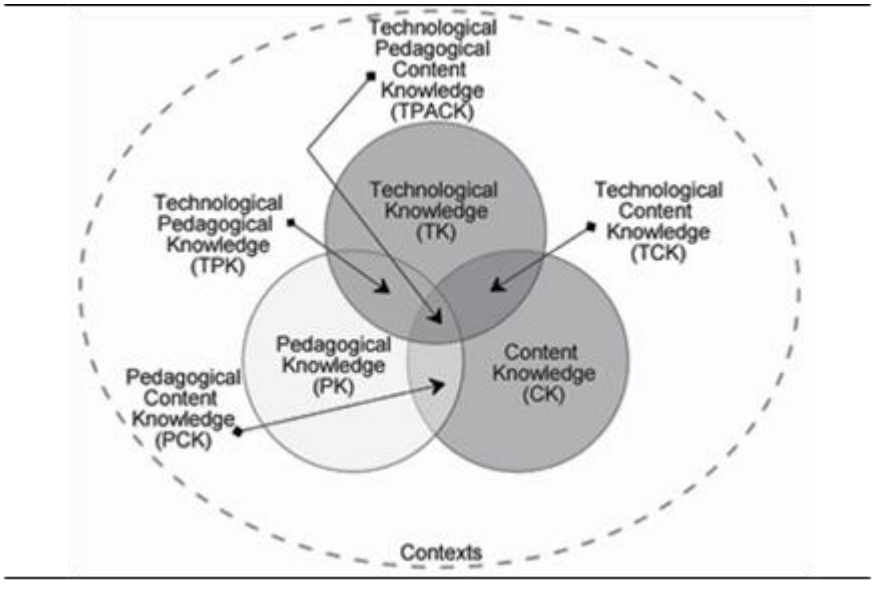



*Figure 2.* The Technological Pedagogical Content Knowledge framework (Mishra & Koehler, 2006, p. 1025)

The TPACK framework initially developed by Shulman (1986) argued that teachers master a powerful combination of content knowledge and pedagogical knowledge. This "know-how" was described as pedagogical content knowledge (PCK), This is the methodology used by each individual teacher when teaching a subject matter.

Mishra and Koehler (2006) complemented Shulman's work; to the original content knowledge CK and pedagogical knowledge PK, added the technological knowledge TK having as a result (TPCK) used to represent how teachers make "intelligent pedagogical uses of technology" (Koehler, Mishra, & Yahya, 2007, p. 741).

This original acronym TPCK was later changed to TPACK (Thompson & Mishra, 2007). The TPACK framework, as depicted by Mishra and Koehler (2006) can also be explained as:

Pedagogical content knowledge **(PCK**) defined as the "knowledge of pedagogy that is applicable to the teaching of specific content" (p. 14). ).

Technological content knowledge **(TCK),** "which is the knowledge of the different technologies that can be used in the classroom" (p.15).

Technological pedagogical knowledge **(TPK),** "which is the knowledge of which technologies can be used in a given pedagogical context" (p.15).

Technological pedagogical content knowledge **(TPACK),** involves the proper combination of content, pedagogy, and technology knowledge, including the skill of teaching with technology. It is the knowledge of how, when, and why to use technology (Mishra & Koehler, 2006, p. 1017).

In general, there are different ways of measuring the TPACK of pre-service teachers. In most cases, this can be done by conducting self-reporting surveys using pre- and post-surveys or course-specific surveys, the use of a "technology integration assessment rubric", a test-retest method, and performance-based measurements like the individual task-based assessment (Albion, Jamieson-Proctor & Finger, 2010; Koh, Chai & Tsai, 2010; Koehler & Mishra, 2005; Schmidt et al., 2009;).

Abbit (2011) has defined and discussed TPACK's importance as an assessment framework tool and given insight about researchers' findings by using other kinds of measuring tools "TPACK has emerged as a representation of the knowledge required to use technology in an educational setting in ways that are contextually authentic and pedagogically appropriate" (Abbit, 2011, p.281).

## 6. Methodological proposal

### 6.1 Research method

Here I will detail the research methodology employed in this study. After stating the research questions, I will provide information about setting, participants, and instruments. The research methodology is mixed qualitative and quantitative which would provide information about the actual use of technology in each university studied.

Surveys are useful in order to make the process of data collection easier, the downside of surveys has to do with questions not responded due to not completely understood or forgotten to answer.

## 6.2 Research Questions:

Considering the need for ICT integration and looking at challenges imposed to Colombian educators in relation to the ICT literacy skills development:

1. What types of ICT are available and how are they used by language teachers in three universities in Cali?

2. What is the language teachers' ICT competence level according to the framework set by the National Ministry of Education?

## 6.3 Type of research

This research is a mixed study. The purpose of this research is to describe the usage of ICT by educators teachers analyzing ICT assigned value, current knowledge and competence level according to the pentagon of competencies established by the National Ministry of Education.

### 6.3.1 Participants

This study focuses on exploring ICT use and its access in English language classes. The participants in the study were pre-service teachers in a teacher education program of three national universities en Cali, Colombia and 7 educators. The pre- service teachers who were part of this current study were students at different semesters of the Licensure Program on Languages Education from three different universities and the educators were 7 professors of the same

program of study. There were a total of 28 participants, 15 females representing 62% and 13 males representing 38%. Their ages ranged from 16 to 50.

The criteria of selection was based on three characteristics; they all had, to some extent, 1) technological skills and knowledge, 2) were currently studying/teaching languages at undergraduate level of a Licensure program of languages in Cali 3) they all had demonstrated English language skills.

Table 1.

*Characterization of participants by age, gender, teacher experience and computer use frequency in the classroom.*

| Participants | | Gender | | Age | Area of study/teaching | | Teaching experience | | Frequency of technology use | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | | English | other | Yes | No | Always | 1/week | 1/month |
| Students | 21 | 11 | 10 | 16-36 | 21 | | 4 | 17 | 14 | 5 | 2 |
| Educators | 7 | 2 | 5 | 26- 50 | 6 | 1 | 7 | 0 | 1 | 3 | 1 |

**6.3.2 Setting**

Cali is located in the department of Valle del Cauca. Furthermore, the city is one of the most developed zones of Colombia in technological, academic and scientific areas. The Colombian higher education system is composed of technical institutes focused on vocational education, university institutions focused on technological education, and universities focused

on undergraduate and postgraduate education. It has 12 universities and only three offer programs of teaching English in languages programs. This study took place at three universities at the School of Languages located in the southern area of Cali, Colombia. .

The three universities offer undergraduate programs in Bilingual Education (English-French, English-Spanish). The three institutions are considered to differ from their performance level, innovation capacity and contextual characteristics in ICT.


plan de estudios

| SEMESTRE I | CREDITOS |
|---|---|
| Curso I Campo socio Político Filosófico y Humanísticos | 3 |
| Constitución Política | 3 |
| Curso I Campo Comunicación y Lenguaje | 3 |
| Competencias integradas Inglés I | 4 |
| Competencias integradas Francés I | 4 |
| Historia y Epistemología de la Pedagogía | 3 |
| **SEMESTRE II** | **CREDITOS** |
| Curso II Campo socio Político Filosófico y Humanísticos | 3 |
| Curso II Campo Comunicación y Lenguaje | 3 |
| Competencias integradas Inglés II | 4 |
| Competencias integradas Francés II | 4 |
| Fonética y Fonología de LLEE | 3 |
| Teorías del Desarrollo y Aprendizaje | 3 |
| **SEMESTRE III** | **CREDITOS** |
| Electiva General (Curso III Campo Social Político Filosófico y Humanístico) | 3 |
| Electiva General (curso III Campo Comunicación y lenguaje) | 3 |
| Competencias integradas Inglés III | 4 |
| Competencias integradas Francés III | 4 |
| Lingüística General | 3 |
| Modelos Educativos y Pedagógicos | 3 |
| **SEMESTRE IV** | **CREDITOS** |
| Electiva General (Curso IV Campo Científico Natural) | 3 |
| Curso I Campo Teológico | 3 |
| Competencias integradas Inglés IV | 4 |
| Competencias integradas Francés IV | 4 |
| Didáctica de las Lenguas Extranjeras | 3 |
| Currículo | 3 |
| **SEMESTRE V** | **CREDITOS** |
| Curso I Campo Científico Natural | 3 |
| Curso I Campo Gestión | 3 |
| Competencias integradas Inglés V | 4 |
| Competencias Integradas Francés V | 4 |
| Electiva del Área I | 3 |
| Pragmática y Análisis del Discurso | 3 |

| SEMESTRE VI | CREDITOS |
|---|---|
| Curso II Campo Científico Natural | 3 |
| Electiva General (Curso II Campo Tecnológico) | 3 |
| Competencias integradas Inglés VI | 4 |
| Competencias integradas Francés VI | 4 |
| Epistemología de la Lengua Extranjeras | 3 |
| Electiva del Area II | 3 |
| **SEMESTRE VII** | **CREDITOS** |
| Curso III Campo Científico Natural | 3 |
| Curso I Campo Investigativo | 3 |
| Competencias integradas Inglés VII | 4 |
| Competencias integradas Francés VII | 4 |
| Practica Pedagógica | 3 |
| Procesos Evaluativos | 3 |
| **SEMESTRE VIII** | **CREDITOS** |
| Electiva de la Disciplina Inglés I | 4 |
| Electiva de la Disciplina Francés I | 4 |
| Práctica Pedagógica II | 4 |
| Investigación Educativa | 3 |
| Electiva del Area III | 3 |
| **SEMESTRE IX** | **CREDITOS** |
| Electiva de la Disciplina Inglés II | 4 |
| Electiva de la Disciplina Francés II | 4 |
| Practica Pedagógica III | 4 |
| Trabajo de grado I | 3 |
| **SEMESTRE X** | **CREDITOS** |
| Electiva de la Disciplina Inglés III | 4 |
| Electiva de la Disciplina Francés III | 4 |
| Trabajo de grado II | 3 |

University 1)

The Undergraduate Licensure Program In Foreign languages (English -French) of university 1 has as its mission to provide adequate training in foreign languages in the academic and work field, autonomous and creative with an excellent academic level.

University 2)

MALLA CURRICULAR. PROGRAMA DE LICENCIATURA EN LENGUAS EXTRANJERAS

| AREAS | I | II | III | IV | V | VI | VII | VIII | IX | X |
|---|---|---|---|---|---|---|---|---|---|---|
| Inglés 36 créditos | Habilidades Integradas en Inglés I 4 | Habilidades Integradas en Inglés II 4 | Habilidades Integradas en Inglés III 4 | Habilidades Integradas en Inglés IV 4 | Tipol. Disc. Orales Inglés V 4 | Tipol. Disc. Escritas Inglés VI 4 | Composición Inglés VII 4 | Literatura Inglés VIII 4 | Literatura Inglés IX 4 | |
| Francés 36 créditos | Habilidades Integradas en Francés I 4 | Habilidades Integradas en Francés II 4 | Habilidades Integradas en Francés III 4 | Habilidades Integradas en Francés IV 4 | Tipol. Disc. Orales Francés V 4 | Tipol. Disc. Escritas Francés VI 4 | Composición Francés VII 4 | Literatura Francés VIII 4 | Literatura Francés IX 4 | |
| Electiva prof. (inglés francés) 18 créditos | * 3 | * 3 | | * 3 | * 3 | | * 3 | | | * 3 |
| Lengua Materna 12 créditos | Lenguaje y Creatividad 3 | Composición en Español I 3 | Composición en Español II 3 | | | | Sem. Enseñanza del Español 3 | | | |
| Fundamentos Lingüísticos 18 créditos | Introducción al estudio del lenguaje 3 | Fonología y Morfología 3 | Sintaxis y Semántica 3 | Análisis Del Discurso 3 Psicolingüis. 3 | Sociolog. 3 | | | | | |
| Pedagogía Didáctica 24 créditos | | | Sem. de Pedagogía I 3 | | Sem. de Pedag. II 3 | Sem. Ling. Aplicada 3 | Didáctica Lenguas Ext. I 3 | Didáctica Lenguas Extranjeras II 3 | Introduc. Práctica Docente 3 Sem. Pedagogía III 3 | Práctica Docente 3 |
| Investigación 15 créditos | | | | | | Investigación en el Aula I 3 | Investigación en el aula II 3 | Seminario Investigac. 3 | Seminario Trabajo de Grado 3 | Trabajo de Grado 3 |
| Electivas Comp. 12 créditos | | * 3 | | * 3 | | | | * 3 | | * 3 |
| TOTAL CREDITOS | 17 | 20 | 17 | 20 | 17 | 17 | 20 | 17 | 17 | 9 |

The program offers a high level of proficiency in Foreign language with a solid pedagogical training that enables him/her to respond to the educational and social changes. It also prepares students with new technology skills and high human quality based on ethical values.

University 3)

The program offers to train professional teachers in education, passionate and interested in the development of the students' highest potential; aware of their needs and capabilities.

### 6.3.3 Instruments

The instrument used was a teacher educators survey and a pre-service teachers survey. Based on the results of these surveys, data were analyzed based on the access and use of ICT in pre-service teachers in three universities, ICT integration based on a TPACK model, and obstacles and perceptions of pre-service teachers and educators.

### 6.3.4 Survey

Two surveys were administered, pre-service and educators' survey. These surveys were taken and adapted from http://ccti.colfinder.org/toolkit/ict-toolkit/pages/06.html.

These surveys were administered to 7 teacher educators and 21 student teachers of Bilingual language programs. In this study a survey is used to collect data and it was based on a pre- service teachers ICT knowledge. It contains 13 items for measuring pre-service teachers' self-assessments of the four TPACK domains: participants answered questions using the following five-level Likert scale: 1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree. (Appendix 1). Educators' survey has 13 questions in a Likert scale and 9 open-ended questions about value given to ICT (Appendix 2).

These instruments were developed with the aim of measuring demographic information. Age, gender, and semester of study. This survey joins the pedagogical knowledge and the technological knowledge expected to complement the teaching of the English language. The general purpose of the study is to determine the access, use and appropriation of ICT of students and educators of English teaching programs in three local universities.

The questionnaire survey in this study had 5 questions about demographic information and a total of 13 questions about ICT. Questions 1 through 4 were categorized as technological knowledge; Questions 5 through 7, as pedagogical knowledge; 8 through 10, content knowledge; and 11 through 13, TPACK. In addition, the survey aimed at giving an overview of the teachers' attitudes in the use of technology in general and in the teaching of English. The participants in this study described their use and access to technological equipment of the universities where the survey was carried out, how much and how often they were used by the teachers in order to determine frequency and usage. Through the answers given by teachers the survey revealed the teachers' opinions and direct and indirect reasons for the use or not use of ICT in the classrooms.

## 7. Results, analysis and discussion

The first step to organize and analyze data was identifying and defining categories: It is stated from the beginning that the present study will mainly focus on ICT use and access, which, is the core of this study. Two main categories were found; student- teachers or *pre-service teachers* and teacher instructors or *educators.*

First, I identified from the survey four main categories of study: content knowledge or knowledge about ICT tools and resources; pedagogical knowledge, the use of ICT tools for pedagogical purposes; technological knowledge or the ability to adopt and adapt technological tools and infuse them into the educational scenario; and TPACK, the understanding of pedagogical, content and technological knowledge translated as the ability to transform technological tools to use them in the pedagogical dimension of the teaching of English as a foreign language.

Second, I defined the criteria of each category, addressing the characteristics of the questions and its relevance in the aforementioned categories. Third, I analyzed and described main categories CK, PK, TK and subcategories CTK, CPK, TPK,

Finally, I established relationships among the various categories, as well as between categories and subcategories TPACK.

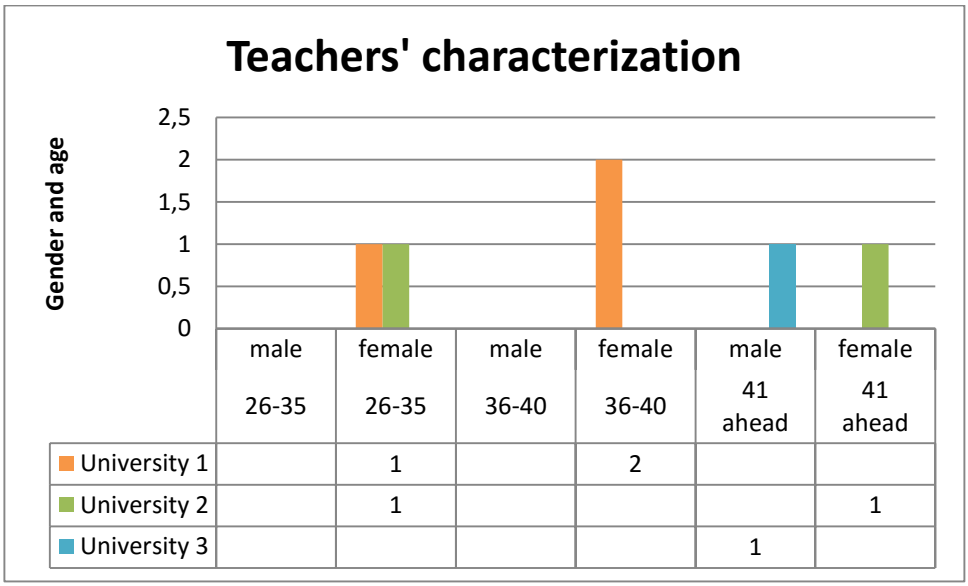



*Figure 1*. Teacher educators' characterization

This graph depicts the characterization of teacher educators, evidencing 2 females age range 26-35, 2 females of range 35-45 and 1 male and 1 female range in 41 ahead.

From university 1, three teachers were studied; 2 females and one male, from university 2, two female teachers; and from university 3, two male teachers. Their ages range from 26 to 50. The graph below shows that all surveyed teachers own a computer with internet access at home. The survey was aimed at finding out the teachers' beliefs and knowledge of different

computer software, and their pedagogical use. Teachers of two institutions complained about lack of equipment, connectivity and training at their institutions. *Figure*. 2.

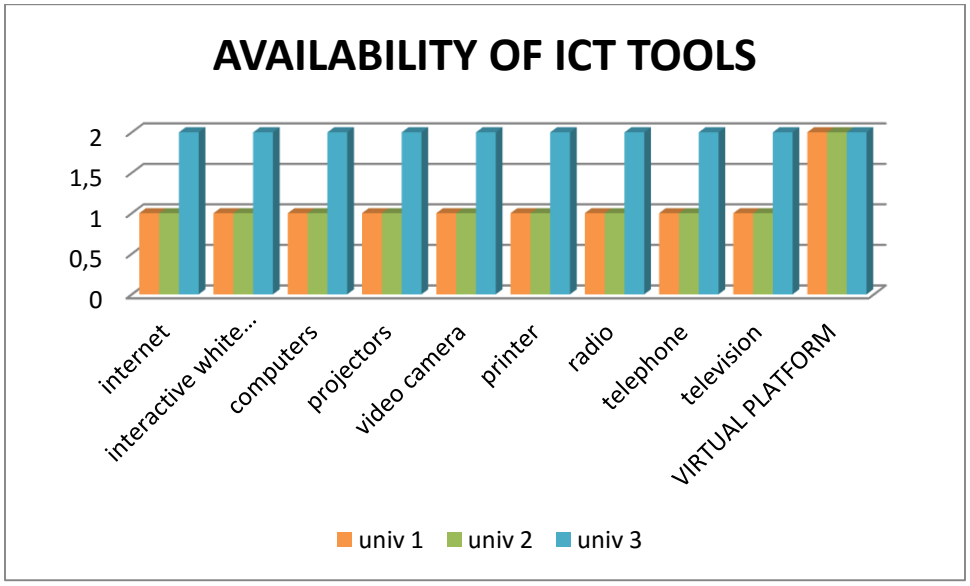



Figure. 2. In this figure is evidenced the availability of ICT tools in the classroom .

Table 2. Use of ICT tools for pedagogical purpose PCK in Educators (Knowledge of pedagogy and Content):

| pedagogical knowledge USE OF ICT TOOLS FOR PEDAGOGICAL PURPOSES | Aim | AGE | | | | | | | | university | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 18-25 | | 26-35 | | 36-40 | | 41 ahead | | 1 | 2 | 3 |
| INDICATOR | To create educational scenarios supported by ICT. | male | female | male | female | male | female | male | female | | | |
| University 1 | | | | | 2 | | 1 | | | | | |
| University 2 | | | | | 1 | | | | 1 | | | |
| University 3 | | | | | | | | 1 | | | | |
| Do you own a computer and have access to internet? | | | | | | | | | | 3 | 2 | 1 |
| Establishes the general setting of the educational scenario using ICT for the development of content. | | | | | | | | | | 0 | 0 | 1 |
| Designs evaluations through the use of ICT to improve time and resource management | | | | | | | | | | 0 | 1 | 1 |
| Establishes guidelines to effectively communicate and share information through the use of ICT | | | | | | | | | | 1 | 1 | 1 |
| Establishes the use of ICT for the access and search of quality information in the educational context | | | | | | | | | | 1 | 1 | 1 |
| | To implement learning experiences supported by ICT in the educational context | | | | | | | | | | | |
| Promotes communication and shares content and activities effectively with and among students through the use of ICT | | | | | | | | | | 2 | 1 | 1 |
| Describes, organizes and informs through the use of ICT, the activities to be done in the educational context | | | | | | | | | | 1 | 0 | 1 |
| Evaluates based on ICT to optimize time and resources in the educational context | | | | | | | | | | 0 | 0 | 1 |
| Promotes and uses ICT for access and search of quality information in an educational context. | | | | | | | | | | 1 | 0 | 1 |
| | To evaluates effectiveness of educational scenarios supported by ICT | | | | | | | | | | | |
| Takes advantage of using ICT in educational scenarios, in terms of time, resources, access to information, exchanging and storage of information. | | | | | | | | | | 0 | 0 | 1 |

The data from this survey show that instructors are aware about the benefits of using technology, but ICT usage in the classroom is very low, these findings show that educators do not involve technology in their pedagogical methodology (TCK). Table 3. TCk in educators. (Knowledge of technology and content)

| | AIM | Age and gender | | | | | | | | | | UNIVERSITY | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge and technology TCK | | 18-25 | | 26-30 | | 31-34 | | 35-40 | | 41 ahead | | 1 | 2 | 3 |
| INDICATOR | To create educational scenarios supported by ICT. | male | female | male | female | male | female | male | female | male | female | 3 | 2 | 1 |
| 1 | | | | | 2 | | 1 | | | | | | | |
| 2 | | | | | 1 | | | | 1 | | | | | |
| 3 | | | | | | | | | | 1 | | 3 | 2 | 1 |
| -Is aware of ICT importance in terms of time flexibility and resource management | | | | | | | | | | | | 3 | 2 | 1 |
| Is aware of the importance of using technology to approach content. | | | | | | | | | | | | 3 | 2 | 1 |
| Is aware of ICT benefits in the search for quality information in the educational context | | | | | | | | | | | | 3 | 2 | 1 |
| INDICATOR | Implement learning experiences supported by ICT in the educational context | | | | | | | | | | | | | |
| Understands ICT tools functionality in communication sharing and the improvement in time and resources management | | | | | | | | | | | | 3 | 2 | 1 |
| Is aware of ICT tools functionality to access and search for quality information | | | | | | | | | | | | 3 | 2 | 1 |
| INDICATOR | Evaluate effectiveness of educational scenarios supported by ICT | | | | | | | | | | | | | |
| Can evaluate students through ICT to optimize the grading process and grade sharing to students | | | | | | | | | | | | 0 | 1 | 1 |
| Can create educational contexts using ICT in communication and information sharing | | | | | | | | | | | | 0 | 1 | 0 |
| Can install printers, computers and technological devices | | | | | | | | | | | | 1 | 1 | 0 |

Table 3. Technology and Content knowledge TCK

The table also revealed that teachers have a good level in the use of the software and internet resources that they usually have learned by themselves, the findings show they are able to use software and applications, word processors, presentation software and spreadsheets but they have little knowledge in installation of devices such as printers , projectors, scanners and computers. The use of communication tools, for example, blogs, websites in language teaching evidenced very low levels.

In regards to the educational value educators assign to ICT, some of the teachers mentioned that "technology is an interesting element in language learning or teaching, ICT if used with pedagogical purposes can lead to better understanding, enhancing teaching strategies and complementing teachers' role". Female teacher from university 2.

Another educator indicated that "technology would help her make lessons more student-centered and efficient". Female teacher from university 1

Another educator mentioned that "ICT serve as a teaching tool to be used complementary to the other teaching materials while helping to enhance language teaching methodology that promote active learning". Male teacher from university 3

The data from this survey show that educators have great awareness about the benefits in using technology, seeking information and communication as well, but ICT use in the classroom is very low. However, the educators mainly mentioned using technology as administrative tools, to check students' lists, to keep records, to communicate, share and exchange information in non-educational contexts.

**7.1 Teachers' Educators findings and results**

The findings indicated that educators used technology at their institutions with limited frequency due to either lack of equipment or appropriate training or shortage of time. Although they are very familiar with the use of technologies for personal purpose, they argued that sometimes they use it to improve their language skills on their own, not in an integrated and guided way. Tight pacing and shortage of class time needed for ICT were reported as two other discouraging factors for teachers to integrate ICT into the curriculum

The largest differences were found in the ratings of technological content knowledge (TCK), technological pedagogical content knowledge (TPCK), and pedagogical content knowledge (PCK).

Table 4. Availability and usage of ICT at institutions studied

| Institutions | University 1 | University 2 | University 3 |
|---|---|---|---|
| Availability of ICT resources in classrooms (computer, projector, internet, etc). | Insufficient resources | Insufficient resources | Abundant resources |
| Educators ICT knowledge (CK) | knowledgeable | knowledgeable | Knowledgeable |
| Access to ICT resources (TK) | Lack of access | Lack of access | Full access |
| Use of ICT during lessons (PK) | No | No | Yes |
| Value assigned to ICT | Important but not necessary | Important but not necessary | Important and necessary |
| Opportunities to practice (PK) | few | few | All |
| ICT training | Low | Limited | Full |
| Virtual Platform | Yes | Yes | Yes |

## 8. Conclusions

According to statistics provided, it was concluded that two of the universities lacked computer infrastructure to the point that the teachers had difficulty even to use computers for their personal purposes. All educators see the importance of technology mostly as a valuable tool for administrative purposes more than a teaching tool, educators showed some reluctance and discouragement to use computers in language teaching. As for the educational value assigned to computer usage in ELT they all considered it very important but usage and ICT training at university were not preparing the teachers for effective technology integration due to lack of proper activities, equipment and training.

## 7.2 Pre-service teachers Findings and Results

**Gender Pre- service teachers Figure 3**

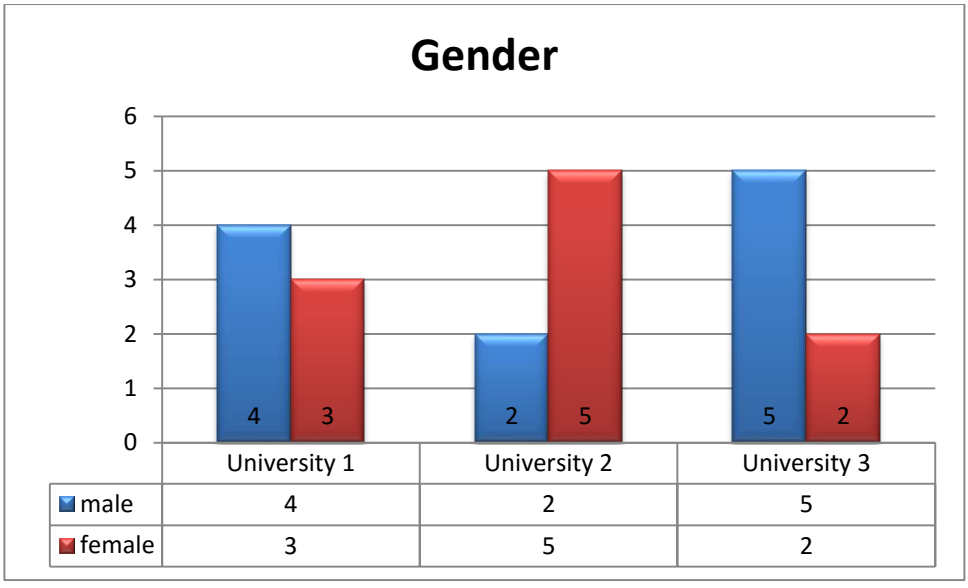
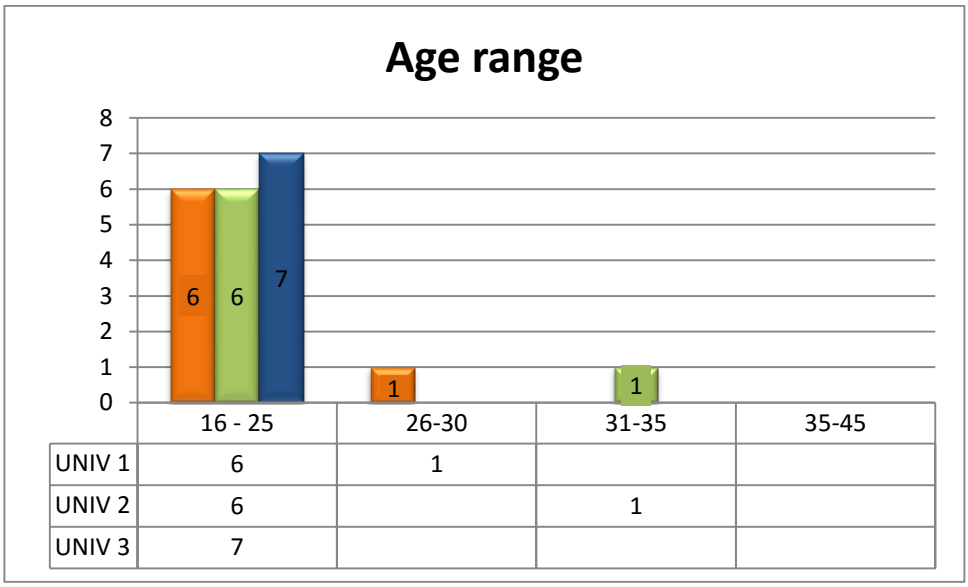



*Figure 3 Pre-service teachers' gender*

Participants were analyzed by gender, from the university 1; a population of 3 female and 4 males were studied, from university 2; two males and five females and from the university 3; two females and 5 males were analyzed(Figure 3).

The characterization of participants also included age range, Figure 4




| | 16 - 25 | 26-30 | 31-35 | 35-45 |
|---|---|---|---|---|
| UNIV 1 | 6 | 1 | | |
| UNIV 2 | 6 | | 1 | |
| UNIV 3 | 7 | | | |

Figure 4. Age range

In this graph it is observed that in University 1 the age range is between 16 and 25 and there is only one student in the 26-to 30 range; in university 2 most students are in the age range 16 to 25 and only one student falls in the age range of 31-35; In University 3 all students are in the age range 16-25.

Another variable identified was semester of study corresponding to Figure 5

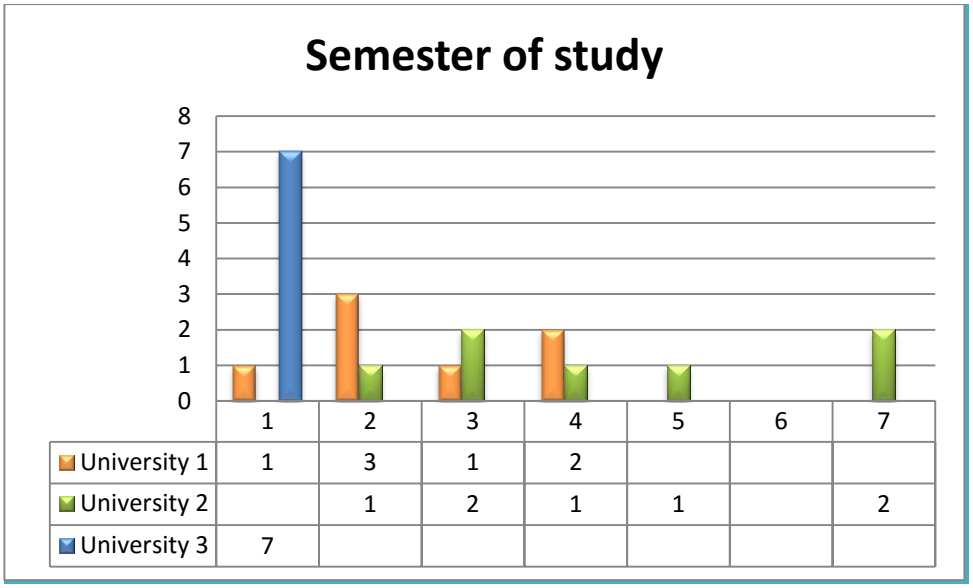



Figure 5 shows the semester of study evidencing in university one, *1* student in first semester, *3* students in second semester; *1* student in third semester; and *2* students in fourth semester; in university 2, *1* student in second semester, *2* in third, *1* in fourth, *1* in fifth; and 2 in seventh; additionally in university 3, there are 7 students in first semester.

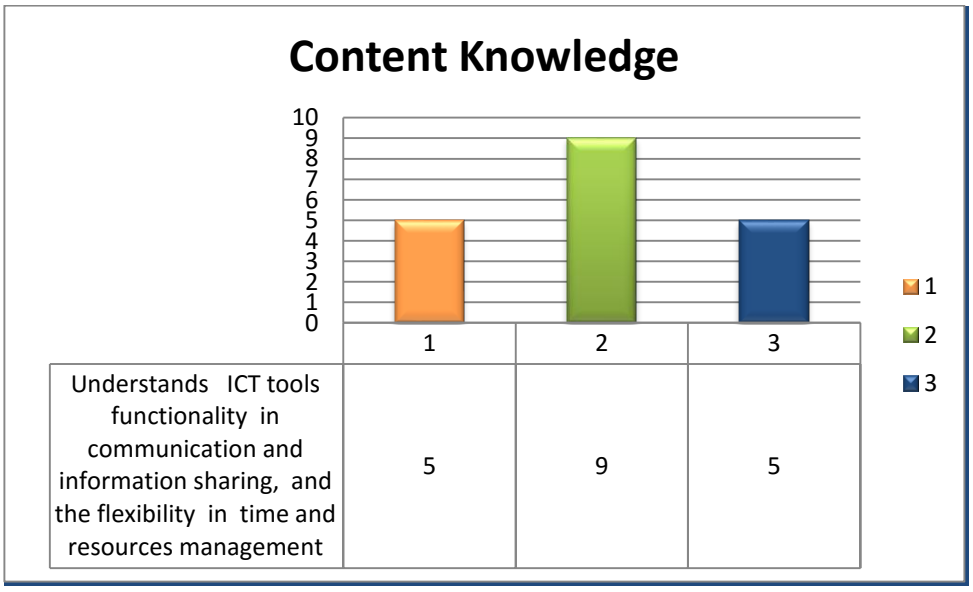


Figure 6 Content knowledge (CK) "knowledge about the actual subject matter that is to be learned or taught" (Shulman, 1986 p. 13).

In this Figure 6 it is described what students know about ICT resources. In university 1, 5 students know about ICT resources: in university 2, 9 students reported knowing about ICT tools functionality; in university 3, 5 students understand ICT tools functionality.

Figure 7 Pedagogical knowledge (PK) describes deep knowledge about the processes of teaching and learning. Graph 5 shows in university 1, that there are 5 students out of 21 who use ICT to communicate and share information; University 2, shows 16 students out of 21 who use ICT; and university 3, evidence 13 students out of 21 share information using ICT.

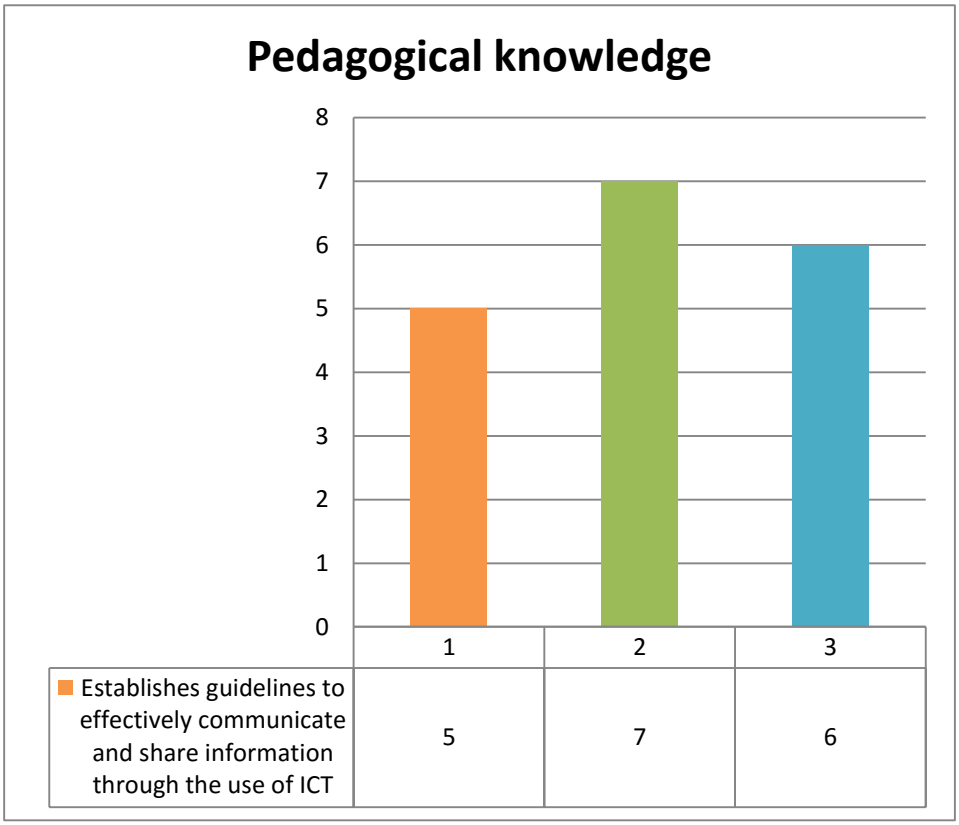


Figure 7 Pedagogical knowledge (PK)

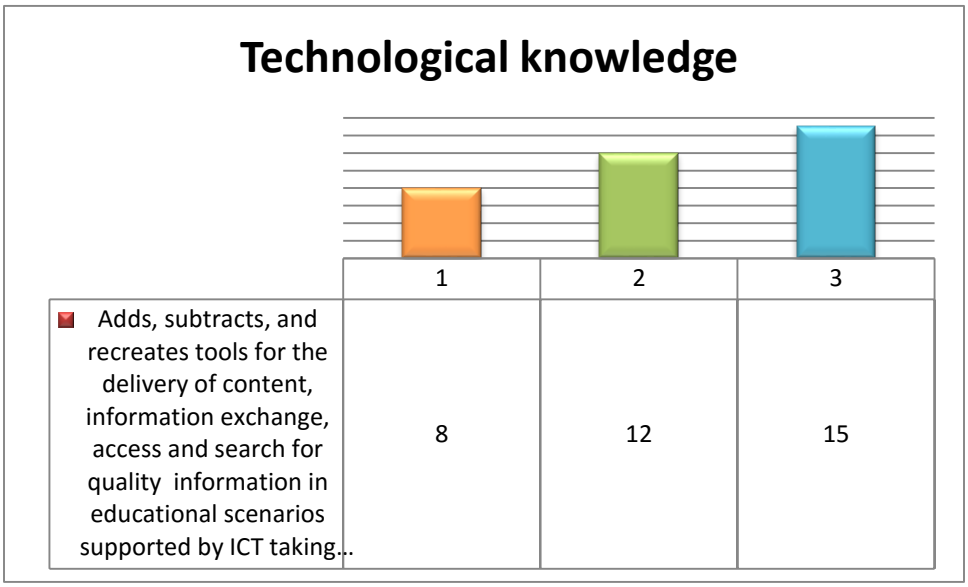


Figure 8 technological knowledge

Figure 8 technological knowledge transforms and modifies information and complements pedagogy. In university 1, 8 students out of 21 use technology to modify, complement, and transmit information. In university 2, 18 students out of 21, have the technological knowledge that allows them to modify information, in university 3, 15 students possess the technological knowledge to access information and transform it.

Figure 9 It was noticeable, that university 3 had access every day to technological resources, while the other two universities reported limited usage.

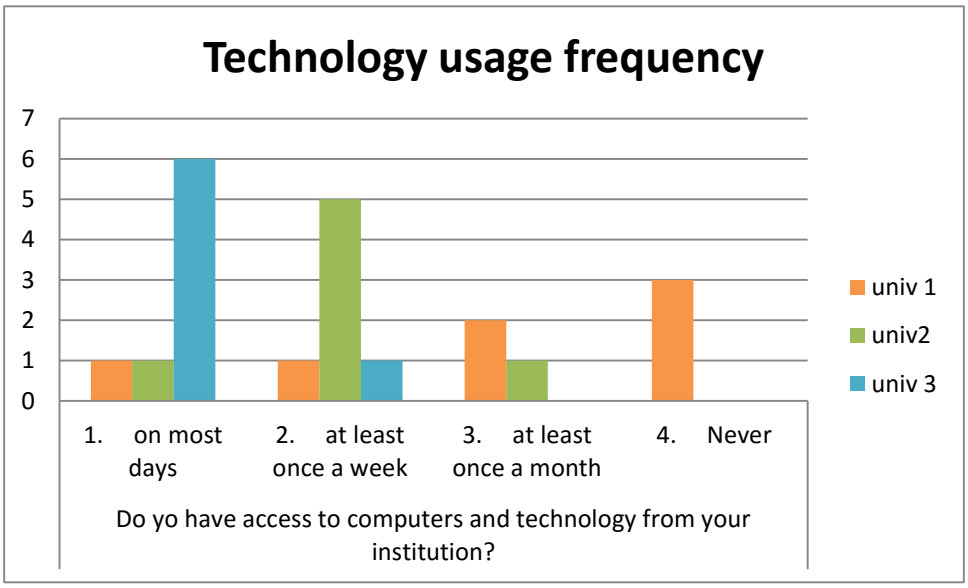
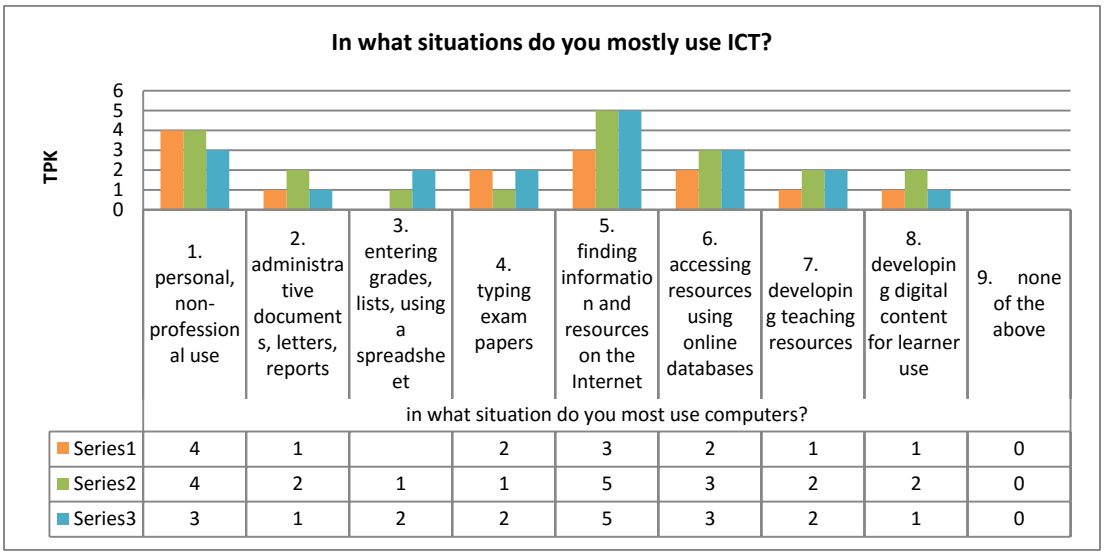



Figure 9 Usage frequency

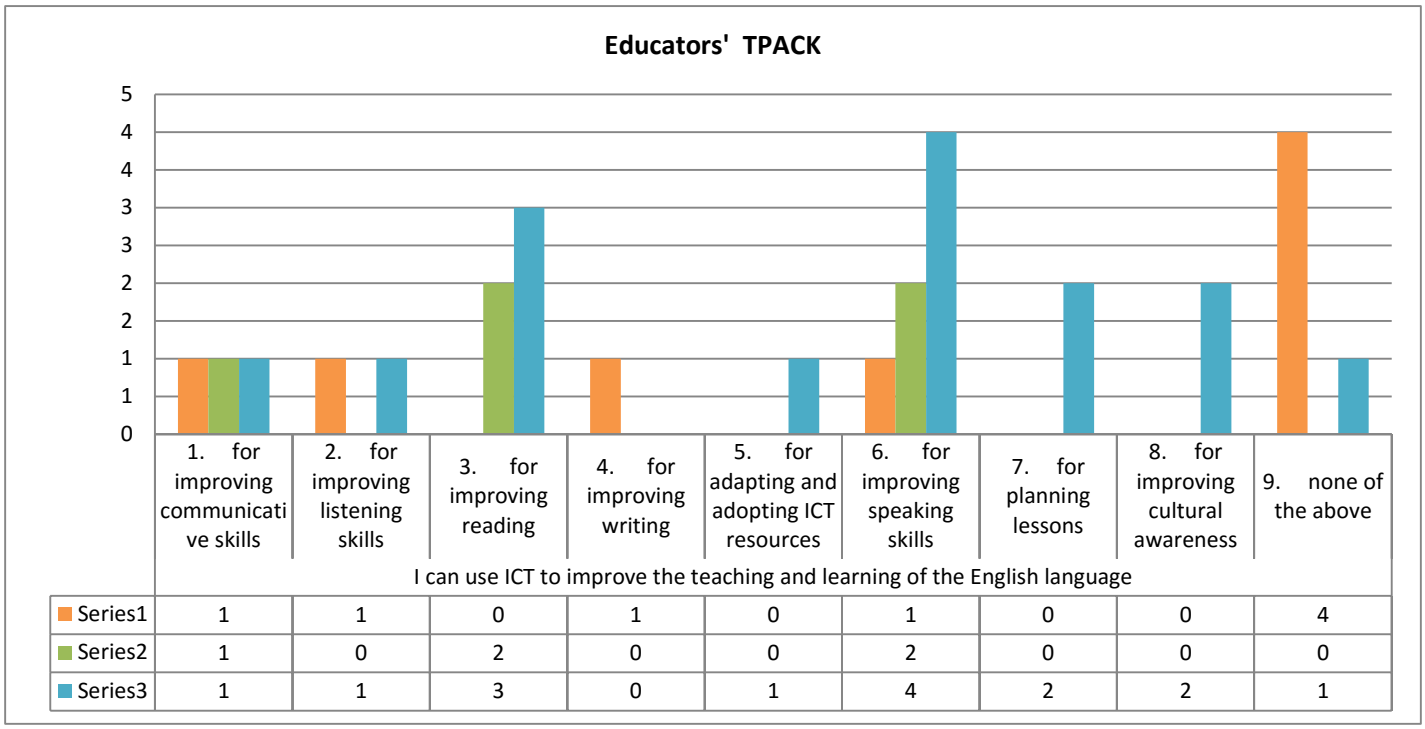
Figure 10 Technological Pedagogical Knowledge in educators.

The largest differences were found in the ratings of technological content knowledge (TPK),

The low perceptions of competence in using technology for pedagogical purposes,




suggests that for many of these students they will not be taking advantage of the internet resources available. The applications which the students perceived that they were most competent in using were word processing, presentation software, email, web browsers, and web searching for information. Consequently, the implications for TPACK are implicit in these findings, as insufficient TK is likely to mean limited TPK, TCK, and TPACK. This findings make reference to other authors findings, “however, the degree to which the perceived TPACK contributes to the demonstrated ability of a pre-service teacher to effectively plan for instructional uses of technology is largely unclear” Abbit (2011).




| | 1. for improving communicative skills | 2. for improving listening skills | 3. for improving reading | 4. for improving writing | 5. for adapting and adopting ICT resources | 6. for improving speaking skills | 7. for planning lessons | 8. for improving cultural awareness | 9. none of the above |
|---|---|---|---|---|---|---|---|---|---|
| Series1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 4 |
| Series2 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 |
| Series3 | 1 | 1 | 3 | 0 | 1 | 4 | 2 | 2 | 1 |

Figure 11 TPCK it involves the proper combination of all three, including the skill of teaching with technology. TPCK is the interconnection and intersection of content, pedagogy, from the findings, it was evidenced that pre-service teachers were unaware of TPACK

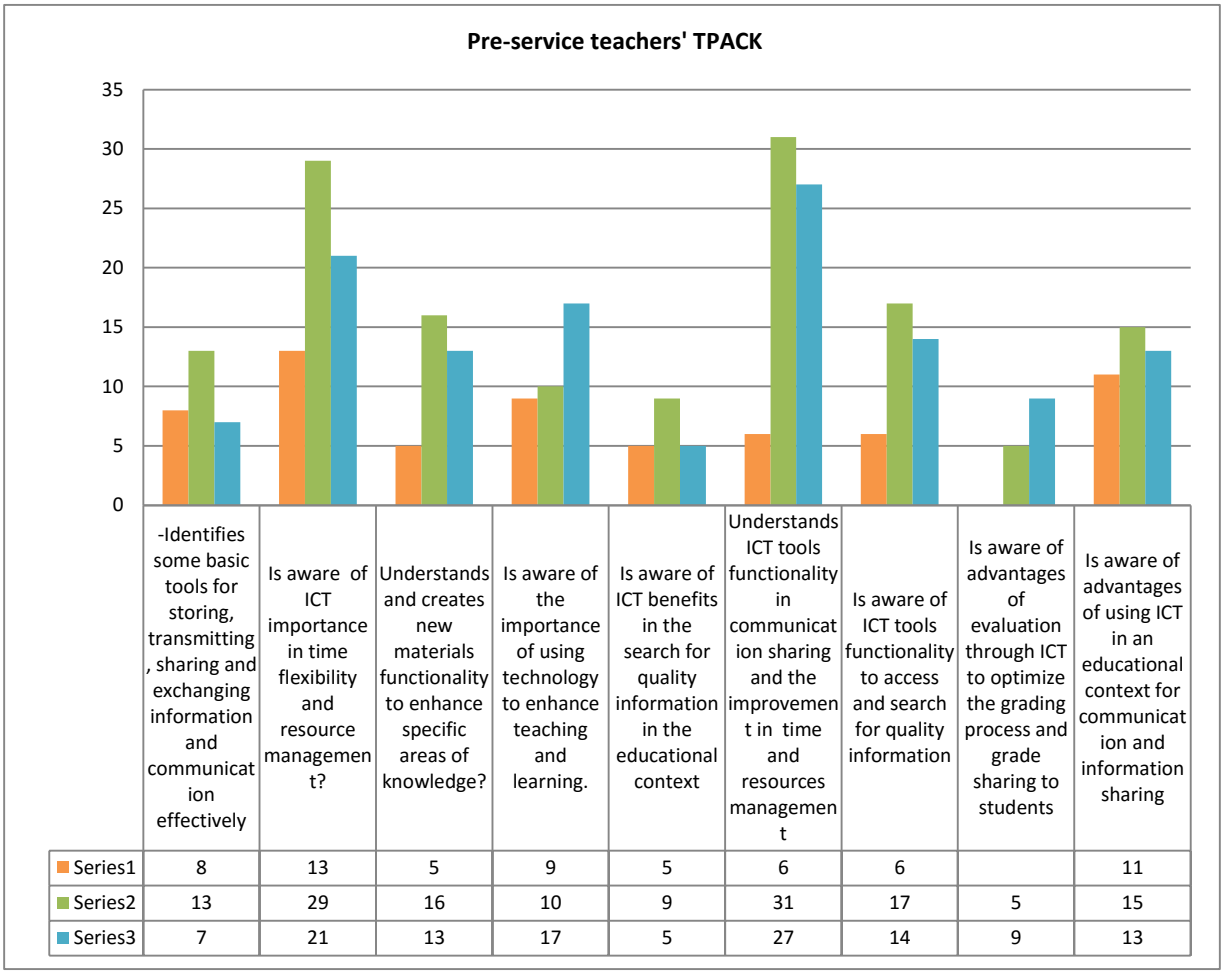



Figure 12 The three universities have very different opportunities to access and use ICT tools and resources; two of studied universities mention having limited access to internet, technological devices and ICT training, but still demonstrated technological competence, usually acquired on their own. Moreover, some teachers are faced with some barriers that prevent them to employ ICT in their classroom due to the lack of equipment, and proper training consequently it is important to say that effective usage requires quality teacher training.

## 8. Conclusions

This study concluded that pre-service teachers are familiarized with benefits, applicability and advantages of ICT. They also possess knowledge about potential usage of ICT in the language teaching; however, this does not necessarily mean that they will integrate ICT into their future teaching.

The three universities have virtual platforms but only one of the universities has full access to technology such as smart boards, language laboratories, technology classes and access to virtual environments. In addition, it was evidenced that insufficient access to internet and little training at university, prevent teachers to use ICT in their classroom but not in personal and administrative purposes. The three universities have very different opportunities to access and use ICT tools and resources; two of studied universities mention having limited access to internet, technological devices and ICT training, but still demonstrated technological competence, usually acquired on their own. Moreover, some teachers are faced with some barriers that prevent them to employ ICT in their classroom due to the lack of equipment, and proper training. Additionally, through the measuring of knowledge levels of pre-service teachers using the TPACK framework was possible to observe some teaching experiences with the support of technology. Gender evidenced impact on results, in this study data analysis male pre-service teacher showed higher competence in technological knowledge corresponding studies done by Koh et al. (2010) who concluded that male pre-service teachers in Singapore perceived higher levels of TK, CK, Knowledge of Teaching with Technology.

Even though TPACK framework gives a high measurement of pre-service teachers' knowledge, ICT will never be integrated into normal classroom practice until the technology is

available and accessible where teachers teach. I have to agree with Angeli &Valanides, who mentioned other factors not included under this measuring framework and that could impact final results of TPACK "the framework in its present form does not take into consideration other factors beyond content, pedagogy, and technology, such as, for example, teachers' epistemic beliefs and values about teaching and learning that may be also important to take into account" (Angeli &Valanides, 2009, p.157).

It is important to recall that according to the pentagon of competencies and its three stages process; educators are still in the stage known as ***Explorer,*** which describes a teacher who gets familiarized with benefits and opportunities provided by ICT and starts to use them in his teaching practice, been able to reflect about his context needs and ICT options.

Due to the lack of technological training, opportunities for use and access and appropriate preparation, TPACK at Cali's universities, remains unclear.

## References:


AACTE Committee on Innovation and Technology (Eds.). (2008). The Handbook of Technological Pedagogical Content Knowledge for Educators. Hillsdale, NJ: Lawrence Erlbaum Associates

Abbitt, J. (2011). Measuring technological pedagogical content knowledge in preservice teacher education: A review of current methods and instruments. Journal of Research on Technology in Education, 43(4), 281-300.

Albion, P. R. (2001). Some factors in the development of self-efficacy beliefs for computer use among teacher education students. Journal of Technology and Teacher Education,

9(3), 321-347. Retrieved from http://www.editlib.org/p/8368

Albion, P. R., Jamieson-Proctor, R., & Finger, G. (2010). Auditing the TPACK Confidence of Australian Pre-Service Teachers: The TPACK Confidence Survey (TCS). In C.

Anderson, S., Groulx, J. & Maninger, R. (2012). Modeling the Relationship between Preservice Teachers' Beliefs and Intentions Regarding Technology Integration. In P. Resta (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2012* (pp. 1634-1639). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved April 30, 2016 from https://www.learntechlib.org/p/39821.

Anderson, S. E., Groulx, J. G., & Maninger, R. M. (2010). The impact of educational technology coursework on preservice teachers' technology-related abilities, beliefs, and intentions. Texas Association of Teacher Educator's Forum, 35, 16-27.

Anderson, S. E., & Maninger, R. M. (2007). Preservice teachers' abilities, beliefs, and intentions regarding technology integration. Journal of Educational Computing Research, 37(2), 151-172. doi: 10.2190/H1M8-562W-18J1-634P

Angeli, C. & Valanides, N. (2005). Preservice elementary teachers as information and communication technology designers: an instructional systems design model based on an expanded view of pedagogical content knowledge. Journal of Computer Assisted Learning, 21 (4), 292–302

Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). Computers & Education, 52(1), 154-168.

Arias, L.D., (2012). Impact of a Web 2.0 Mediated Course in the Professional Development of a Group of Future English Teachers. *Folios*, 36, 51-76

Arias, L.D. ,Buitrago, Z.R., Pineda, C.(2011). ICT in the professional development of EFL teachers: perceptions and challenges. *Folios*, 23, 21-38

Baylor, A. & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Journal of Computers & Education*, 39(1), p.398.

Baylor, A. & Ritchie, D. (2002). An Investigation of Preservice Teachers' Technological Pedagogical Content Knowledge Based on a Variety of Characteristics. Available from: https://www.researchgate.net/publication/283845835_An_Investigation_of_Preservice_Teachers%27_Technological_Pedagogical_Content_Knowledge_Based_on_a_Variety_of_Characteristics [accessed Apr 28, 2016].

Blurton, C. 1999. New Directions of ICT-Use in Education [Online].Available online http://www.unesco.org/education/educprog/lwf/dl/edict.pdf

Brazilian Internet Steering Committee (2013). "ICT Education 2013 Survey on the use of ICT in Brazilian schools". Retrived from http://www.cetic.br/media/docs/publicacoes/2/tic-educacao-2013.pdf.

Davis, N. E. (2010). Technology in Preservice Teacher Education. In P. Peterson, E. Baker & B. McGaw, (Editors),International Encyclopedia of Education, volume 8, pp. 217-221. Oxford: Elsevier.

Diaz-Maggioli, G. (2003). Professional Development for Language Teachers. *ERIC Digest*. EDO-FL 03-03.

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? Educational Technology Research and Development, 53(4), 1042-1629. Retrieved from http://www.springerlink.com/content/26736pvw54484187/

Finger, G. & Jamieson-Proctor, R. Teacher Readiness: TPACK capabilities and redesigningworking conditions. In M. Lee & G. Finger (Eds) (2010). Developing a Networked School Community: A Guide to Realising the Vision. Camberwell, Victoria: ACER Press (2010)

Harris, J., Grandgenett, N., & Hofer, M. (2010). Testing a TPACK-based technology integration assessment rubric. In C. Crawford, D. A. Willis, R. Carlsen, I. Gibson, K. McFerrin, J. Price & R. Weber (Eds.), *Proceedings of the Society for Information Technology & Teacher Education International Conference 2010* (pp. 3833–3840). Chesapeake, VA: AACE.

Hennessy, S., Ruthven, K., & Brindley, S. (2004). Teacher perspectives on integrating ICT into subject teaching: Commitment, constraints, caution, and change. Journal of Curriculum Studies (in press).

Hughes, J. (2004). Technology learning principles for preservice and in-service teacher education. Contemporary Issues in Technology and Teacher Education, 4(3), 345-362.

Isisag, L. U. (2012). *The positive effects of Integrating ICT in Foreign Language Teaching.* Turkey: ICT conference ICT for language learning 5th edition.

ISTE International Society for Technology in Education. (2008). *National educational technology standards for teachers* (2nd ed.)

ISTE. (2008). Estándares Nacionales (EEUU) de Tecnologías de Información y Comunicación (TIC) para Docentes. (Eduteka, Trad.). http://www.eduteka.org/estandaresmaes.php3

ISTE (2012 ) https://www.iste.org/docs/pdfs/20-14_ISTE_Standards-T_PDF.pdf

Jarvis, (1998) "Word-processing and writing skills: practical applications to language teaching text books," British Journal of Education Technology. 28/3, 1997a, pp.165-175.

Jarvis, H. (2001). Internet usage of English for Academic Purposes courses. Cambridge, Cambridge, University Press.

Jung, S. (2006). Information and Communication Technology Use and Skills (ICTUS) for learning English.

Koh, J. H. L., Chai1, C. S., & Tsai, C. C. (2014). Demographic Factors, TPACK Constructs, and Teachers' Perceptions of Constructivist-Oriented TPACK. Educational Technology & Society, 17 (1), 185–196.

Koehler, M. J., & Mishra, P. (2005). What happens when teachers design educational technology? The development of technological pedagogical content knowledge. Journal of Educational Computing Research, 32, 131-152. -4156-

Koehler, M. J., & Mishra, P. (2005). Teachers learning technology by design. Journal of Computing in Teacher Education, 21(3), 94-102.

Koehler, M. J., & Mishra, P. (2008). Introducing TPCK. AACTE Committee on Innovation and Technology (Ed.),The handbook of technological pedagogical content knowledge (tpck) for educators (pp. 3-29). American Association of Colleges of Teacher Education and Rougledge, NY, New York.

Koehler, M. J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. Computers & Education, 49, 740-762.

Lee, M.. & Gaffney, M. Leading a Digital School. Camberwell, Victoria.

McDougald, J. S. (2009). The state of language and content instruction in Colombia. *Latin American Journal of Content & Language Integrated Learning*, 2(2), 44-48. doi:10.5294/laclil.2009.2.2.15.

McDougald, J. S. (2009). The Use of ICT (Information, Communication and Technology) in the EFL Classroom as a teaching tool to promote L2 (English) among non-native Pre-service English Teachers. (M.A. Thesis) Retrieved from The English EFL Journal http://asian-efl-journal.com/thesis/2012/07/16/

Mejía, N. y Puche, L. (2008). Generación de Conocimientos en TIC: Caso UNIGUAJIRA. Retrieved from: http://www.virtualeduca.info/ponencias2013/113/GeneracindeConocimientosenTICCasoUN

MEN, (2005). Programa "A que te cojo ratón": Las TIC al alcance de los docentes. Colombia Aprende. Retrieved from: http://www.colombiaaprende.edu.co/html/home/1592/article-99329.html

MEN (2007). *Indicadores TIC para educación en Colombia.* Santo Domingo, República Dominicana.

MEN (2009). *Plan decenal de Educacion 2010-2016.* Bogota.

MEN (2012). *Recursos Educativos Digitales Abiertos.* Bogota.

MEN (2013) Competencias TIC para el desarrollo profesional docente. Primera edición.Retrieved from: http://www.colombiaaprende.edu.co/html/micrositios/1752/articles

Ministerio de Educación Nacional (2006). Estándares Básicos de Competencias en Lenguas Extranjeras: Inglés. *Guías*, No. 22.

Ministerio de Educación Nacional de Colombia. (2012). Competencias TIC para el Desarrollo Profesional Docente. Documento Borrador.

Ministerio de Educación Nacional de Colombia. (2007). Plan Nacional Decenal de Educación 2006-2016. Bogotá.

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teachers' knowledge. Teachers College Record, 108(6), 1017-1054.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108, 1017-1054.

Montes, J. y Ochoa, S. (2006). Apropiación de las tecnologías de la información y la comunicación en cursos universitarios. *Acta Colombiana de Psicología*, 9 (2), 87-100.

Mouza, C., & Karchmer-Klein, R. (2013). Promoting and assessing pre-service teachers' technological pedagogical content knowledge (TPACK) in the context of case development. Journal of Educational Computing Research, 48(2), 127-152.

Newhouse, P., Clarkson, B. & Trinidad, S. A framework for leading school change in using ICT'. In S. Trinidad and J. Pearson (Eds), Using ICT in education: Leadership, change and models of best practice. Singapore: Pearson Education Asia, pp. 148–64, (2005)

OFSTED (2002) ICT in schools: Effect of government initiatives. Progress report April 2002. Office for Standards in Education, London. Online: http://www.ofsted.gov.uk/public/index.htm

*Plan TIC*. Ministerio de las Tecnologías de la Información y las Comunicaciones. (2008). Documento en línea. Retrieved from: www.colombiaplantic.org.co/index.php

Schmidt, D. A., Baran, E., Thompson, A. D., Koehler, M. J., Shin, T. S., & Mishra, P. (2009). Technology, pedagogy and content knowledge (tpack): The development and validation of an assessment instrument for pre-service teachers. Paper accepted for presentation at American Educational Research Association (AERA) Annual Meeting, San Diego, CA.

Segers E. & Verhoeven L. (2002) Multimedia support in early literacy learning. Computers and Education 39, 207–221.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15, 4-14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. Harvard Educational Review, 57, 1–22.

Thompson, A., & Mishra, P. (2007-2008). Breaking news: TPCK becomes TPACK! Journal of Computing in Teacher Education, 24(2), 38 64.

Topper, A. (2004). How are we doing? Using self-assessment to measure changing teacher technology literacy within a graduate education technology program, 12(3), pp. 303-317.

UNESCO. (2004). Las tecnologías de la información y la comunicación en la formación docente: guía de planificación. París: Autor.

UNESCO (2005). Experiencias de formación docente utilizando tecnologías de información y comunicación. Formación docente y las tecnologías de la información y la comunicación. OREAL/UNESCO Santiago de Chile. Retrieved from: http://unesdoc.unesco.org/images/0014/001410/141010s.pdf

UNESCO (2008) Estándares de competencias en Tic para docentes. En:http://portal.unesco.org/es/ev.phpURL_ID=41553&URL_DO=DO_TOPIC&URL_SECTION=201.html

UNESCO. (2011). ICT Competency Framework for Teachers. Paris: Autor.

Warschauer, M., & Meskill, C. (2000). Technology and Second Language Teaching and Learning. In J. Rosenthal (ed) Handbook of Undergraduate Second Language Education. (pp. 303-318). Mahwah, NJ: Lawrence Erlbaum.*163-178*. Available from: https://www.researchgate.net/publication/222650247_Obstacles_to_the_integration_of_ICT_in_education_Results_from_a_worldwide_educational_assessment_Computers_Education_373_163-178 [accessed Mar 23, 2016].

Young, S. S. C. (2003). Integrating ICT into second language education in a vocational high school. Journal of Computers Assisted Learning, 19, 447-461.

## Appendix A Educators' survey

| COMPETENCE LEVEL | COMPETENCE | Strongly disagree | disagree | uncertain | agree | Strongly agree | Subtotal for this sheet |
|---|---|---|---|---|---|---|---|
| | **TECHNOLOGICAL KNOWLEDGE** | | | | | | |
| ***EXPLORER: is aware of the importance of using technological tools and is capable of integrating some of them in their teaching practice.*** | I can identify several technological tools and some ways to integrate them to my teaching practice | | | | | | |
| | I can identify some characteristics, usage and opportunities offered by technological tools and audiovisual media in the educational process | | | | | | |
| | I can develop learning activities integrating content and technological tools and audiovisual media. | | | | | | |
| | I can evaluate the quality, importance and accuracy of information available in searching engines, educational sites, and audiovisual teaching resources. | | | | | | |
| **COMPETENCE LEVEL** | **COMPETENCE** | **Strongly disagree** | **disagree** | **uncertain** | **agree** | **Strongly agree** | **Subtotal for this sheet** |
| | PEDAGOGICAL KNOWLEDGE | | | | | | |
| *EXPLORER*<br>*Identifies new strategies and methods supported by ICT as tools for their teaching practice* | I use ICT by my own initiative to learn, to be up to date with knowledge related to my subject area of teaching | | | | | | |
| | I can identify problematic educational situations, opportunities, implications and potential risk of ICT usage in order to avoid it. | | | | | | |
| | I am aware of strategies | | | | | | |

| COMPETENCE LEVEL | COMPETENCE | Strongly disagree | disagree | uncertain | agree | Strongly agree | Subtotal for this sheet |
|---|---|---|---|---|---|---|---|
| | supported by ICT that improve lesson planning and follow up my teaching experiences | | | | | | |
| | | | | | | | |
| INTEGRATOR: demonstrates a developing competence and confidence in the use of a range of learning technologies in the classroom. | CONTENT KNOWLEDGE | | | | | | |
| | I am competent enough using basic computer applications, including word processing, data base and spread sheet packages<br>* using desktop publishing and presentation software<br>* using multi-media and interactive presentations<br>* using communication technologies including the world wide web and electronic mail<br>* using courseware specific to particular | | | | | | |
| | | | | | | | |
| | I am aware of a range of learning technology resources and how they can be integrated constructively and creatively with other resources to produce a challenging and rigorous curriculum | | | | | | |
| | I am aware of advantages of evaluation through ICT to optimize the grading process and grade sharing to students<br>Is aware of advantages of using ICT in an educational context for communication and information sharing<br><br>I am aware of advantages of using ICT for the search and access to quality information | | | | | | |

| COMPETENCE LEVEL | COMPETENCE | Strongly disagree | disagree | uncertain | agree | Strongly agree | Subtotal for this sheet |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | I can organize and inform through the use of ICT, the activities to be done in the educational context<br><br>I know how to evaluate based on ICT to optimize time and resources in the educational context<br><br>I can use ICT for access and search of quality information in an educational context. | | | | | | |
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| | | | | | | | |
| 1. | | | | | | | |
| | | | | | | | |

## Appendix B pre-service teachers' survey

| Question | Options | Strongly disagree | disagree | uncertain | agree | Strongly agree | Subtotal for this sheet |
|---|---|---|---|---|---|---|---|
| 1. How often do you use computers at university? *(indicate one option with an X)* | 1.on most days | | | | | | |
| | 2.at least once a week | | | | | | |
| | 3.at least once a month | | | | | | |
| | 4.Never | | | | | | |
| 2. Do you have access to a computer at home? | 1. Yes | | | | | | |
| | 2. No | | | | | | |
| 3. Do you know what ICT are? | 1. Yes | | | | | | |
| | 2. No | | | | | | |
| 4. How often do you use ICT applications Word, power point , excel, blogs, wikis, etc. *(indicate one option with an X)* | 1. on most days | | | | | | |
| | 2. at least once a week | | | | | | |
| | 3. at least once every two weeks | | | | | | |
| | 4. at least once a month | | | | | | |
| | 5. Never | | | | | | |
| 5. For which of the following purposes do you use ICT (information communication technologies) – either at school or using your personal computer at home? *(select all that apply with an X )* | 2. personal, non-professional use | | | | | | |
| | 3. school administration | | | | | | |
| | 4. recording marks using a spread sheet | | | | | | |
| | 5. typing exam papers | | | | | | |
| | 6. finding information and resources on the Internet | | | | | | |
| | 7. accessing resources using online databases | | | | | | |
| | 8. developing teaching resources | | | | | | |
| | 9. developing digital content for learner use | | | | | | |
| | 10. none of the above | | | | | | |
| 6. For academic purposes you feel more confident *(select all that apply with an X )* | 1. using the word processor | | | | | | |
| | 2. using the spread sheet | | | | | | |
| | 3. using presentation software | | | | | | |
| | 4. using subject specific software | | | | | | |
| | 5. Using technological devices | | | | | | |
| | 6. using the internet | | | | | | |
| | 7. using other applications not listed above | | | | | | |
| | 8. I do not use ICT | | | | | | |
| 7. In what situation do you use ICT during class? *(select all that apply with an X )* | 1. For research | | | | | | |
| | 2. For evaluations and examinations | | | | | | |
| | 3. To share information | | | | | | |

| Question | Options | Strongly disagree | disagree | uncertain | agree | Strongly agree | Subtotal for this sheet |
|---|---|---|---|---|---|---|---|
| | 4. To upload documents | | | | | | |
| | 5. To work on projects | | | | | | |
| | 6. To solve problems, makings decisions or forming opinions | | | | | | |
| | 7. I do not use ICTs in class | | | | | | |
| 8. Can you store, exchange, create and modify information through ICT applications? | 1. If someone is there to support me | | | | | | |
| | 2. On my own | | | | | | |
| | 3. to teach others | | | | | | |
| | 4. For personal usage | | | | | | |
| | 5. not at all | | | | | | |
| 9. Can you do the following? *(select all that apply with an X )* | 1. use a memory stick to transfer data | | | | | | |
| | 2. install new software on a computer | | | | | | |
| | 3. install a printer | | | | | | |
| | 4. solve technical problems (e.g. computer that does not start properly) | | | | | | |
| | 5. login to a network | | | | | | |
| | 6. add a shared folder on a network | | | | | | |
| | 7. make information on a network secure | | | | | | |
| | 8. none of the above | | | | | | |
| 10. Do you use any of the following technologies for teaching and learning purposes? *(select all that apply with an X )* | 1. Word processor | | | | | | |
| | 2.spreadsheet | | | | | | |
| | 3.Software for presentations | | | | | | |
| | 4.Technological devices | | | | | | |
| | 5.none of the above | | | | | | |
| 11. When do you mostly use ICT? *(select all that apply with an X )* | 1. schools administration | | | | | | |
| | 2. The learning of English | | | | | | |
| | 3. Using the internet for research | | | | | | |
| | 4. use of ICT resources for academic purpose | | | | | | |
| | 5. To communicate with others | | | | | | |
| | 6. finding and using resources from the Internet to | | | | | | |
| | 7. Working on projects that integrate ICT | | | | | | |
| | 8. Personal use | | | | | | |
| | 9. none of the above | | | | | | |
| 12. How many hours of ICT related training have you | 1. 0 - 4 hours | | | | | | |
| | 2. 5 - 15 hours | | | | | | |

| Question | Options | Strongly disagree | disagree | uncertain | agree | Strongly agree | Subtotal for this sheet |
|---|---|---|---|---|---|---|---|
| received in the last 12 months? | 3. 16 - 40 hours | | | | | | |
| | 4. more than 40 hours | | | | | | |
| 13. are you aware of *(select all that apply with an X )* | 1. ICT standards for teachers | | | | | | |
| | 2. ICT and the teaching of English | | | | | | |
| | 3. Benefits and advantages of ICT | | | | | | |
| | 4. National policies regarding ICT | | | | | | |
| | 5. none of the above | | | | | | |

**General questions**

1. Name any *ICT* or *ICT in Education* courses or workshops that you have attended in the last 12 months and rate its/their impact on your own development.

| | |
|---|---|
| | |

2. Do you believe staff at the University/Faculty are being properly prepared to exploit ICT for course administration, teaching & learning and communication?
   Justify your answer by providing examples of either success or frustrations.

| | |
|---|---|
| | |

3. Do you believe ICTs should play a role in the training of *pre service* teachers in Colombia?
   Justify your answer by providing examples of either potential positive or negative impacts.

| | |
|---|---|
| | |

4. Do you believe *pre service* teachers should receive extensive training in the use of ICTs as part of their teacher training at University?
   Justify your answer by providing examples of either potential positive or negative impacts.

| | |
|---|---|
| | |

5. Do you believe *in service* teachers should be encouraged to acquire or upgrade their ICT skills?
   Justify your answer by providing examples of either potential positive or negative impacts.

| | |
|---|---|
| | |

6. Do you believe ICTs should be used in primary and secondary schools?
   Justify your answer by providing examples of potential benefits or disadvantages.

| | |
|---|---|
| | |