

*Teachers' perceptions, beliefs and opinions about their competence for the integration of
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Abstract

This research project aims to look into the perceptions, beliefs, opinions and attitudes of in-service and pre-service teachers about their experience integrating technology into educational settings. Qualitative research was implemented for this objective. This review takes a look into different studies that have been carried out in recent years that are centered in the same topic discussed. The findings consist in the perceptions, beliefs, opinions and attitudes pre-service and in-service teachers have built around technology use in the classroom as reported in previous research studies and personal narratives. That way, it is easier to define the contrast intended in the general objective and to draw conclusions based on the type of information that was collected, analyzed, and contrasted. Teachers should have opportunities in their training process to be prepared in order to face technology not only as a tool but going beyond as a pedagogical way. At the end, the findings and conclusions led to a discussion about the relation between pre-service and in-service teachers' stances on technology integration.

Key words: beliefs, perceptions, attitudes, opinions, technology integrating, teachers competences, importance of technology.

Resumen

Este proyecto de investigación tiene como objetivo analizar las percepciones, creencias, opiniones y actitudes de los docentes en servicio y en servicio sobre su experiencia en la integración de la tecnología en entornos educativos. Se llevó a cabo una investigación cualitativa para este objetivo. Esta revisión analiza diferentes estudios que se han llevado a cabo en los últimos años y que se centran en el mismo tema que queremos revisar. Los hallazgos consistirán en las percepciones, creencias, opiniones y actitudes que los maestros en servicio y previos han construido alrededor del uso de la tecnología en el aula como se informó en estudios de investigación anteriores y narraciones personales. De esa manera, fue más fácil definir el contraste previsto en el objetivo general y sacar conclusiones basadas en el tipo de información que fue recopilada, analizada y contrastada. Los docentes deben tener oportunidades en su proceso de formación para prepararse y enfrentar la tecnología no solo como una herramienta sino de forma pedagógica. Al final, los hallazgos y conclusiones conducirán a una discusión sobre la relación entre las posturas de los docentes en servicio y en servicio sobre la integración de la tecnología.

Palabras clave: creencias, percepciones, actitudes, opiniones, integración de tecnología, competencias docentes, importancia de la tecnología

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Degree requirement

This qualitative research project is not only an opportunity to start a path on the technology research line but also a degree requirement from the Bachelor of Education in English Teaching Program at Universidad Católica Luis Amigo, in Medellín, Colombia.

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INTRODUCTION

Technology has become indispensable not only the human lifestyle but the quality of education. This research starts by defining the concepts of perceptions, beliefs, opinions, and attitudes that are adopted in this study in order to analyze in-service and pre-service teachers' thoughts about their experience integrating technology into education, then the concept and importance of integrating technology are also approached. Further, this study deals with the requirements that are related to the role of ICT. We provide information on our methodology, data collection, techniques, and instruments to gather the data, analyze it, discuss it, and finally get the outcomes and conclusions properly aligned.

Context

This project was developed as a requirement for graduation, initially it was thought to be carried out with students of the Bachelor's Degree in English of the last semesters but due to the global pandemic of Covid-19 a documentation review investigation was carried out instead. The information tracking made was from national and international sources through diverse databases, next to it the selection of the most suitable sources started to be indexed and categorized in different positions which allowed to visualize the information completely, have several findings, and interpretations from it.

Statement of the problem

From the researchers experience, the determination was to know the perceptions among pre-service and in-service teachers about the training received in their educational process in technology matters, there is maybe a fear to afront a class environment without knowing how to handle correctly technological tools, how to integrate it to the topic, how to accommodate the role of students and teachers to the circumstances. The concern exists about if the content given in the career for graduates is enough to face challenges around technology integration to the education.

Literature Review

Definition of perception, belief, opinion and attitude

To get into what concerns this whole research project in the first place, really important elements must be defined, this definition exercise will lead to getting a better understanding of what this investigation is looking for; to contrast and evidence the differences between the stances of pre-service and in-service teachers.

As defined by Macdonald, "Perception is a uniquely individualized experience. One can only draw from what is known to oneself." (2011). Helpful enough, this concept draws a very important distinction between the concepts at hand. Perception goes to show what somebody might perceive about a situation uniquely by living an experience that was so remarkable that it affected the way they see the world around them. Equally, Schommer (1994) suggests that "beliefs affect learning both directly and indirectly. Their effects are often mediated by other aspects of cognition. The development of these beliefs may be due to cultural, familial, and educational influences" (p. 25–40). Even though a belief is also rooted in one's individualized experiences, the nature of these go beyond this factor. In this type of views, an experience goes along with an appropriate support of idea that eventually lead to a process of reflection. On the contrary, an opinion is "a vague idea in which some confidence is placed" as defined in the Webster's 1913 Dictionary. This supports that opinions are views or judgments formed about something, not necessarily based on fact, proven knowledge or experience.

In her article, Altmann (2008) cites Dawson's (1992) definition of attitude where he states that in social psychology, "it [attitude] refers to a disposition towards or against a specified phenomenon, person or thing" (p. 473). Attitudes can be very decisive in a process of technology integration since they [attitudes] come from a set of emotions towards a specific situation or action. Also, she cites Jerdan, 1993 et al. who provide an essential characteristic of an attitude saying that, "an attitude is bipolar; it can be positive or negative, favorable or unfavorable."

Technology competence

Some of the research projects found mentioned some perceptions, opinions, attitudes or expressions that students, pre-service teachers and in-service teachers have shared about their experiences regarding the role of the ICT in their teaching practices and daily work. Therefore, our interest lies in knowing which are those teachers' perceptions of their courses that connect pedagogy with technology, how practical they are, how useful are the given tools in daily classroom situations, which kind of transformations are those courses evoking, how are the pedagogical-technological courses being taught in order to properly prepare pre-service teachers for the labor. "Technology use does not ensure the transformation of pedagogical practices because the practice is a reflection of the teachers' beliefs" (Area Moreira, 2006; Coll Salvador, C.; Rochera Villach, M. J.; Mayordomo Saiz, R. M.; Naranjo Llanos, 2008; Pablos Pons, Colás Bravo, & Villaciervos Moreno, 2010; Tondeur, Hermans, van Braak, & Valcke, 2008 as cited by Romero, Riquelme and Halal, 2019). Teachers must shape their beliefs in regards to the use of technology, because, as mentioned before, if it is not them who start being more aware of their own practices and the use they make with the intention of integrating the ICT into their classes on a regular basis, it will become very hectic for their pedagogical practices to move along with what stakeholders are requesting of teachers to be competent at. Nevertheless, with the results of an investigation carried out by Zhao and Bryant 2005 at Georgia State University, we could analyze in general that some teachers developed positive attitudes towards technology use but lots of others did not feel they were ready to begin using the ICT in their classes due to their feeling of frustration about what to do with the knowledge taught on a training program they received to get prepared on technology use.

The references we mentioned here and the elements taken from other investigations helped us look behind and see which are the lacks in the field, which plans have not been implemented in what we need to have appropriate and integral pedagogical-technological courses that fulfill the state's standards and education requirements regarding the use of technology. Also, we had a really good look at the perceptions some teachers have when it comes to technology whether they were

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negative or positive, but we can conclude that the impact the ICTs have had in education has been important and that a growth of pedagogical practices integrating technology into classrooms will be increasing more than ever with the technology mediated era that we live in at the moment.

According to Kinshuk, Nian-Shing Chen, I-Ling Cheng & Sie Wai Chew, “due to rapid advances of information and communication technology (ICT) in recent years, learning technologies have already impacted and changed the educational landscape significantly.” Therefore, it can be said that the advance of the technological field has made possible an evolution in the educational field. Teachers have been assigned a role in the integration of technology for a pedagogical transformation happening in the classrooms, using various resources and implementing different strategies to design, manage, utilize and evaluate the processes involved in learning (Luppicini, 2005). As technology and education evolve, they get more connected to each other. These factors allow teachers to build a more integral perspective towards their pedagogical practices and will allow them to strengthen any profound connection they may have with education. Also, having all these factors in mind, it will help nurture teachers' conceptions regarding the integration of technology into their daily teaching-learning processes.

The knowledge pre-service and in-service teachers have about technology has led the researchers to question themselves and their professional development in regards to which are the implications, requirements and perceptions teachers have about the pedagogical or technical education they have received along their careers in regards to technology-related matters. It might be necessary to take a look at what has been researched in these fields and analyze what is the role teachers have to comply with in order to successfully fulfill the requirements and overcome the gap between technology and education. Universia 2007 as cited by Parra (2012) says, “para poder ir cerrando la brecha digital, el docente cuenta con un entrenamiento que dura 48 horas de trabajo, “desarrollado en 12 sesiones”, con posibilidades de profundización” (Universia, 2007). For this purpose, the literature will show that there are several researchers who have

investigated and produced insights about this matter that this research project will be referencing to and describing throughout.

Review of the benefits of technology integration

There has been a discussion about the benefits technology brings for both teachers and specially students in the teaching and learning processes and Savvidis (2019) is one of the researchers who have talked about this topic. For instance, in his article about the benefits of using technology in the classroom, he states that “by using technology in the classroom, both teachers and students can develop skills essential for the 21st century. Students can gain the skills they will need to be successful in the future.” These benefits among others are the reason why teachers must be conscious about the role of technology in education and the responsibility they must take on when it comes down to giving students the education every human being deserves. But this is not just a matter of teachers complying with these implicit responsibilities, it is also a matter of the State providing them with the necessary regulations and support to do a better job at educating present and future generations.

Review of the conception the UNESCO has for teacher education

On further matters regarding the regulations of technology integration in the educational field, the literature shows that some official entities have stipulated standards for teachers' education regarding their use of the Information and Communication Technologies (ICT from now on), turning these standards into requirements. These requirements serve as guides for teachers to start becoming more aware of the important role technology plays in today's educational system. Furthermore, getting into more detail about certain aspects that are linked to teachers' profile regarding the pedagogical and technical education about technology they should be armed with, The United Nations Educational, Scientific and Cultural Organization (UNESCO) took it upon themselves to contribute to building a teachers' profile based on what their competencies should be when talking about ICT implementation.

It is important to take into consideration the legal framework and start from there, having it as a guide for what teachers are being asked to be. Therefore, according to UNESCO (2008), one specific requirement they state for ICT implementation in the classrooms is that teachers must utilize technology effectively, having the necessary skills and competencies to support learning and improve students' academic results, device skills through the use of ICT, and application of educational resources. According to the above mentioned, the technical use of technology is evident, leaving aside the pedagogical purpose. UNESCO only focuses on helping students improve their results rather than giving them tools for the future, tools that can give them competitiveness for what lies ahead regarding professional development in any work field.

Review of the conception the Colombian Ministry of National Education (MEN) has for ICT teacher education

On the other hand, the Colombian Ministry of National Education (MEN, 2013) has a deeper vision of the use of technology as a powerful didactic and pedagogical tool with a multisensory capacity that allows a more natural knowledge, crucial for learning, enriching and transforming the student. Unlike the UNESCO, the Colombian Ministry of National Education provides a more pedagogical implementation of technology, bringing the tool to significant use beyond just knowing how to handle it, giving students' the possibility to gain efficacy into the best of their abilities.

Having all these aspects of a teachers' profile regarding the use of technology stipulated by several sources for the educational field does not mean that immediately they will have an effect on teachers' pedagogical practices. As Loucks-Horsley (2000) concludes, "professional development is needed for the technological literacy standards to move outside the very documents that contain them and eventually into the practice of every teacher and the learning of every student." Teachers need to acknowledge that these standards are to be implemented into their practices in the classroom, because it is necessary to contribute to the revolution of pedagogical practices and along with it the integration of technological knowledge to make of education an integral process by giving students the possibility to hone their skills through ICT use.

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Research question

How do pre-service teachers' opinions about education for technology integration relate to the ones referenced in the literature from in-service teachers?

Objectives

General Objective

- Analyze the relation between pre-service and in-service teachers' opinions, beliefs and perceptions regarding their competences to integrate technology as referred in personal narratives and the literature.

Specific objectives

- Develop narratives reflecting on our personal experiences managing, integrating and conceptualizing technology.
- Trace the information from different investigation projects executed in the educational field in regards to teachers' stances about their competences integrating technology.
- Contrast pre-service and in-service teachers' opinions, beliefs and perceptions regarding their competences to integrate technology.

METHODOLOGY

In the process of choosing the most suitable type of research method, documentation revision was selected to gather and analyze the opinions, beliefs and perceptions of pre-service and in-service teachers found in personal narratives and the literature. On that note, this research project employs a documentary research design because as Bailey explains, it “refers to the analysis of documents that contain information about the phenomenon we wish to study” (1994). This analysis of data collected from documents will ground the in-service teachers’ perspectives and will give us the next step for contrasting the information found with the information from pre-service teachers’ experiences gathered from the narrative papers.

Furthermore, “doing documentary research is much more than “recording facts”. It is a reflexive process in which we confront what researcher calls the “moral underpinnings of social inquiry” (Coles, 1997: 6). Therefore, according to the reflective nature of this paper, one of the collection techniques used was the pre-service teachers’ narratives where the task was conducted by gathering the written experiences they had throughout the years, focusing mainly on the formative process from the undergraduate program. That being said, the main experiences come from meaningful practicum scenarios where students face some insights of a teacher’s role.

Paper sample

Afterwards, a stage of documentary revision was driven in which the process of choosing the correct literature started with a bibliographic trace table in which national and international investigation sources were taken into account to organize the information in order to get varied perspectives from in-service teachers around the world about the competence on technology integration. The following process to the bibliographic tracing also included a step of discarding the investigations with different approaches and only keeping the most relevant and accurate research projects that will take part in this research project.

Data collection

After that rigorous process of selecting the most appropriate documents, index cards were used to deposit precise citations from the adopted literature which will lead to the next step in this process, the information analysis.

Data analysis

For this analysis process, there were several actions that needed to happen to get to drawing any sort of conclusions. The first step to analyzing the information that was documented into index cards had to be coming up with a categorical system accurate with the nature of the information that would serve as an organized and smooth way of classifying the data within described categories and subcategories. Each of the categories and subcategories were uniquely identified with a code that would differentiate each of the meanings desired to be conveyed. The categories that were chosen go directly in line with the purpose of the objectives and research question, for instance, it was meticulously and unanimously decided between the researchers that categories such as perceptions, beliefs, opinions, and attitudes had to be the biggest options leading the way. However, taking into consideration the essence of these categories, there was a certain amount of individuality in the information that was part of the literature, that is why it was necessary to establish a subcategory where the favorable or unfavorable sense had to be clear within the individuality of every piece of information according to every in-service teacher's mindset. After having the main categories stipulated, there was a considerable amount of information that could be fit into subcategories coming directly from these categories mentioned before, therefore, the data where competence, importance, and training matters regarding technology played a crucial part on the information nurtured the next subcategories and helped to branch out into more general subcategories coming from the last subcategories. These last subcategories had to do with whether the information was giving a technical or pedagogical approach to technology. When every category and subcategory was thought through, approved and materialized, it was time to describe and conceptualize each and every one of them so that everything from the categorical system would be as understandable and cohesive with the objectives as possible.

Though the categorical system was already coming together, it had to be put into practice to begin an analysis process correctly. The next step in this project was a rigorous analysis of all the information found within the existing literature. The way it all went about the analysis was to first take all the citations documented in the index cards, place each one of them into its fitting position in the categorical system, and then distinguish it with the code that was assigned to that specific category or subcategory. Through this categorization and codification exercise it was possible to organize the information and make pertinent analysis that will be helpful when the time comes to draw accurate and valid conclusion and henceforth start a discussion to give accountability to the research question and objectives.

Techniques and instruments

- Documentation tracking

What is pretended with this technique is to gather information from recent investigations where teachers talk about their opinions and beliefs in regard to the competence on integrating technology. The information gathered from this technique will give the researchers the enough data to be analyzed for two purposes. The first purpose being the contrast that needs to be made for the sake of complying with the research objectives. The latter purpose being the conclusions that can be drawn from the information gathered after the analysis desired has been made.

- Narratives

The main purpose of this reflective papers is to collect information about the experience pre-service teachers have had along their educational process relating to technology integration. This will serve the researchers as the counterpart for the contrast that needs to be made.

- Index cards

For the analysis process, the instrument of index cards were very useful to document the most relevant citations from every article we chose to use in our research project and, from there, start categorizing the information, codifying each piece of data, and finally

through a rigorous process of placing each quote into one category with an specific code, the analysis process was achieved.

FINDINGS

After analyzing the information and organizing it into every category and code, this section presents the finding gathered from the information. Some findings are more general, related to the lacks and needs regarding technology education, others show the contrast between the information found in the literature and narratives

Finding N°1: Teachers are aware that even though they lack technology training, they are open to becoming more technology literate.

The data analyzed showed that a majority of the perceptions and beliefs teachers have about technology and its integration whether they are favorable or unfavorable, give a hopeful scenario for more room to improvement in this area. "I am quite a newcomer to this. It had been difficult for me to learn how to use the computer let alone use technology in the class. But I know I have to do it." (Chamorro, 2013) This willingness to improve perceived from teachers is what makes the difference to leading into a more technology-friendly education. However, even from the most recent documents found in the literature, it is evident the long way technology training has to go through in order to become what it is really expected to be.

Finding N°2: The lack of use and integration of technology in education is highly affected by negative attitudes such as rejection and fear of teachers.

"Some headmasters are reported to have 'negative attitudes' to using ICT in their schools (11 teachers report this), which pushes teachers to discard using it." Hammou, B., (2013). This negative attitude from teachers towards technology related matters have led them to take drastic decisions out of this induced fear they have to make themselves uncomfortable for the sake of learning and going beyond their traditional beliefs about the way teaching works and students learn.

"It appears that, even though they recognize the importance of introducing ICT in education, teachers tend to be less positive about its extensive use in the classroom and far less convinced about its potential to improve teaching." Jimoyiannisa, A., & Komisb, V. (2016) This goes to show that it is not only a matter of recognizing that technology is important to educational purposes, it is matter of understanding that to really learn how to integrate technology there has to be a moment of using technology, experimenting with the different tools it brings to the table.

Finding N°3: Teachers form perceptions and beliefs founded in the experiences they have had throughout their professional development.

The fact that there was an absence in the recognition of big amount of opinions in the process of analyzing the data, acknowledges that the views teachers have in terms of technology education does not stay only in the rudimentary state of an opinion but goes beyond from it. (Friedman, A. & Kajde, S. (2006); Lee, K., Courtney, M., McGlashan, A. et al. (2019).) Rather from opinions, it is noticeable in the data collected that teachers form perceptions and beliefs founded in the experiences they have had throughout their professional development and the academic knowledge that has been given to them in any formative process they have been a part of.

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Finding N°4: Though there is a general view of technology as a tool, there are also a few teachers that are conscious of the need to think on integration of technology from a pedagogical perspective to be effective for learning.

This is a common ground between pre-service and in-service teachers' perceptions and beliefs, because in both cases there is a visible lack of education for technology integration and this is the reason why teachers in general might not feel prepared enough when they face challenging situations. "The technology for learning must contain a necessary methodological component to generate meaningful learning, explore and investigate these strategies" (Pre-service teacher narrative 1, 2019). This is just one of the comments found while analyzing all the information that leads to the thinking that teachers are better aware of what is the lack of fundamentation of the integration of

technology and this awareness will be helpful in recognizing strengths and weaknesses to train, inform, and turn themselves into the technology users the world need in these dark moments.

DISCUSSION

The intention of the investigation was directed to contrast all the different information found to assess what the level of differentiation was between perceptions or beliefs based on experience and those based on mere knowledge. To make visible the need to educate teachers in technology integration, as expected, it was noticeable between the collected information some concerns in regards to the little pedagogical and technical training teachers have. The light this recognition throws on the research question is no more than the long road ahead to investigate around educational technology and motivate population to enrich the teaching-learning process articulating technology to it. The relation found among opinions, perceptions, beliefs and attitudes from pre-service and in-service teachers highlighted another several important aspects such as teacher role, preparation, students' needs, environment conditions, classroom management, planning, willingness and autonomy from teachers and students, administrative support, methodology implementation, and teachers reflection. These are all key parts to take into consideration at the moment of making decision when it comes to reflecting on whether teachers are prepared for the battle they will be encountering in the work field whenever the time comes to face the most unexpected situations. This calls for official entities and institutions to reflect on the quality of education they are providing for the future teachers, because this is not only a responsibility for teachers to acknowledge their lack of training and knowledge but, in fact, it is more of a responsibility for educational entities to acknowledge the lack of preparation they are offering teachers in regards to a more pedagogical approach on the use of technology for the teaching-learning process.

It is not a surprise nor is it a shock finding out that pre-service and in-service teachers are kind of in the same page when it comes to their perceptions, beliefs, opinions and attitudes towards technology. This goes to show that it is not an individualized feeling when the majority of the information found says that the rather unfavorable part of this

investigation comes from the same nature, this induced fear of integrating or even using technology due to the lack of preparation for most and the lack of knowledge for some. It is important to say that this has been an underlying scenario where people already know why something is not going the right way, but they feel the need for someone else to say it for them to acknowledge it.

CONCLUSIONS

This research highlights the fear and negative attitudes that teachers feel to face technology in the classroom, however, future investigations should point out to how teachers are preparing to overcome those fears. Also to make research on this field, opens a significant path in times of remote and virtual education, due to a pandemic, the entire world has had to implement measures to keep the educational system going. The situation has made clear the importance for future generations of integrating technology to the whole process. How these attitudes, perceptions and beliefs affect the integration can be a question for further research. Also, there is a giant gap in the field about researching about technology but from the learning process perspective. The investigation in the technology field has been so teacher-centered that the process of students' learning has been left behind and forgotten about. There is this need to investigate more about how students manage technology, what are they lacking in regards to technology use, what is the knowledge they do have, what is the role technology plays in their lives as natives of a century where technology has been said and confirmed to play a significantly important part in education. Research in the technology field needs to go beyond the known, it calls for a need to diversify the topics, investigate more about things that have not been researched about at all.

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APPENDIX A

Universidad Católica Luis Amigó Licenciatura en lenguas extranjeras con énfasis en inglés Rastreo de fuentes Trabajo de grado II

Source	Title	Authors	Type			Context	Topic	Usability for the project	Aprobado/Descartado
			Research	Reflect	Narrati				
Academia.edu	In their own words: Pre-service teachers' perceptions of ICT integrations	Petrea Redmond and Peter Albion	x			Australia, Pre-service teachers	integration of ICT	Usability, ICTs for pre-service teacher educators	Descartado
Academia.edu	Technology Integration to Enhance Quality: A Study of Pre-service Teachers' Perception	Harjeet Kaur Bhatia ¹ & Amanpreet Kaur Chugh	x			India, Pre-service teachers	Teacher Education	Perception of teachers to adopt and integrate ICT	aprobado
Academia.edu	Students and Teachers Perceptions of ICT Use in Classroom: Pakistani Classrooms	Farhan Islam, Farhan Islam, Forman Christian College, Pakistan	x			Pakistan, in-service teacher	teachers technology education	can be used to know how in-service teachers see the technology	aprobado/validar con grupo
Academia.edu	Perceptions of Teachers and Students on Integration of Information and Communication Technology (ICT) in Secondary Education	Tao Nary, Sot Visal	x			Kampong Cham Province, 2018, teachers and students	Perceptions, education ans ICT	talk about the integration of ICT	Descartado
Journal of Educa	Principals, Teachers, and Student's Perception of the Information	Mohammed Al Sharija, Ahmad Qablan, James J Watters	x			Kuwait, Principals and Teachers	Perceptions, education ans ICT	The transformation of education through ICT integration	verificar con gloria
Academia.edu	Investigating Moroccan EFL Teachers' Perceptions of Barriers to ICT Integration	Brahim Ait Hammou	x			Morocco, teachers	Technology in education	Teachers perceptions	aprobado/ validar con grupo
Academia.edu	History Teachers' Perception of ICT In Promoting Teaching and Learning	Jonathan Amengor	x			Ghana, 2011 teachers	learning education ICT	The perceptions of ICT	Descartado
How	Teachers Beliefs' and the integration of technology in the EFL class	Martha García Chamorro, Lourdes Rev	x			Colombia 2013, In-service teachers	Perceptions, education in ICT	Differentiate Beliefs from perceptions	Aprobado: filtrar citas
How	The impact on ICT training Through Wikis on In-service teachers : Changes in beliefs, attitudes and	Yamith Jose Fandiño Parra	x			Colombia 2012, In-service teachers	Technology education, perceptions	Usability of the ICT integration	Aprobado.
How	Living the teaching practicum within dichotomies: the story from within when implementing ICTs in the english language classroom.	Sandra Viviana Pinzón Capador, Carmen Helena Guerrero Nieto	x			Colombia 2018, Pre-service teachers	ICT integration	Usability of the ICT integration	Aprobado

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APPENDIX B.

Categories	Description	Subcategories 1	Description	Subcategories 2	Description	Subcategories 3	Description
Perception (P)	Perception is a uniquely individualized experience. One can only draw from what is known to oneself.	Favorable (FF)	Favorable perceptions come from one's specific set of positive experiences.	Competence of use related (FFCR)	Derives from one's positive experience integrating technology.	Technical (FFCRT)	Derives from device usage
						Pedagogical (FFCRP)	Derives from development of criteria and understanding of ICT
				Impairance of technology (FFIT)	Derives from one's positive experience after integrating technology.	Technical (FFITT)	Derives from device usage
						Pedagogical (FFITP)	Derives from development of criteria and understanding of ICT
				Training related (FFTR)	Derives from one's positive experience concerning one's formative process.	Technical (FFTRT)	Derives from device usage
						Pedagogical (FFTRP)	Derives from development of criteria and understanding of ICT
		Unfavorable (FU)	Unfavorable perceptions come from one's specific set of negative experiences.	Competence of use related (FUCR)	Derives from one's negative experience integrating technology.	Technical (FUCRT)	Derives from device usage
						Pedagogical (FUCRP)	Derives from development of criteria and understanding of ICT
				Impairance of technology (FUIT)	Derives from one's negative experience after integrating technology.	Technical (FUITT)	Derives from device usage
		Pedagogical (FUITP)	Derives from development of criteria and understanding of ICT				
Training related (FUTR)	Derives from one's negative experience concerning one's formative process.	Technical (FUTRT)	Derives from device usage				
		Pedagogical (FUTRP)	Derives from development of criteria and understanding of ICT				

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APPENDIX C

UNIVERSIDAD CATÓLICA LUIS AMIGÓ LICENCIATURA EN LENGUAS EXTRANJERAS CON ENFASIS EN INGLÉS		
Text: <i>Students and Teachers Perceptions of ICT Use in Classroom: Pakistani Classrooms</i>		
Researchers: Ana <u>María Ramírez</u>	Reference: <u>Ashar Johnson Khokhar</u> , Forman Christian College, Pakistan. <u>Sharoon Javaid</u> , Forman Christian College, Pakistan The Asian Conference on Technology in the Classroom 2016 <u>Official Conference Proceedings</u>	Location: Academia.edu
Summary / quotes: Not only teachers are resistant to adopt technology but other factors such as lack of hardware and software, attitudes of teachers towards technology, lack of confidence, lack of competence play a very pivotal role to undermine the effective integration (<u>Bingimlas, 2009</u>). ANR4 The many recent studies (<u>Peralta & Costa, 2007</u> ; <u>Compeau & Higgins, 1995</u> ; <u>Liaw, Huang and Chen, 2007</u> ; <u>Yuen & Ma, 2008</u> ; <u>Christensen and Knezek, 2006</u>) have found a link between teachers' use of ICT and their perception of computer self-efficacy. The higher the self-efficacy of teachers the more open teachers are to experiment with technology in their classroom teaching practices. BFCRP1		Key Words: - ICT - Self-efficacy - Software - Hardware - Obstacles - Lack -