Revista Científica Mundo de la Investigación y el Conocimiento

Jorge Jimmy Cevallos Saa[a], Jorge Fabricio Chávez Villavicencio[b]

Teachers´ attitudes towards using technology vs. analysis based on Ecuadorian curriculum standards

Revista Científica Mundo de la Investigación y el Conocimiento. Vol. 1 núm., 4, septiembre, 2017, pp. 564-576

DOI: 10.26820/recimundo/1.4.2017.564-576

Editorial Saberes del Conocimiento

a. Docente Universidad de Guayaquil; jfabriciochavezv@hotmail.com

b. Docente Universidad de Guayaquil; jimmyceva@hotmail.com

Introduction.

"Teachers will not be replaced by technology, but teachers who do not use technology will be replaced by those who do" – (Krishna Arya, 2015)

Technology has become a fundamental aspect in education; it has waved into the educational world and graciously improved several of its areas. technology has become a powerful tool that can make the learning process fascinating, provocative and most of the time enjoyable; it has helped teachers improved their practice in and outside the classroom, the many benefits technology can offer are countless; however, not everything in life is perfect, sometimes technology becomes an obstacle for teachers and it all comes down to their attitude towards using it.

If we take into consideration the quotation from above, teachers must learn to embrace technological changes and view technology as support instead of a threat. According to (Zimmerman, 2006), resistance is considered one of the main reasons for failure of processes that involve implementation of technology in educational settings. This tells us that before implementing any ambitious technology-related project, administrators first need to prepare teachers to be able to handle such technology.

Technological advancements in the Ecuadorian educational system have flourished constantly since the 80s. at first, teachers´ technological resources were limited; tape recorders, some CDs and eventually some programs focused on developing grammar skills were in hand; however, all of these were left in the past; technological resources are so vast nowadays that

possibilities to teach are endless. Thanks to the internet and a globalized connectivity, teachers are now able to design wonders, teachers can now address digital natives and their demands of a more technology-driven classroom; however, the real question here is what happens when teachers are reluctant to use technology in their favor.

The purpose of this paper is to give insight regarding the attitudes teachers have towards technology and to discuss how teachers might adapt to new policies related to innovative technological education.

Research question

What are some factors that interfere with teachers´ positive attitude towards technological implementation?

Theoretical framework

The education community appreciates what theorists have proposed in order to understand learning processes; these benefits have been primarily given to students, less attention have been paid to teachers; fortunately, new waves of theories about teacher learning and teacher education have risen, considering the purpose of this paper it is important to remark what re-defined concepts about cognition have shifted education.

Social cognition

Learning processes go beyond providing stimulation for individual construction of knowledge (Resnick, 1991), contributing collaboratively with others is more relevant and

significant instead. A socio-cognitive perspective will regard knowledge and learning as the products of the interactions of groups of people over time within discourse communities (Soltis, 1981); such communities provide cognitive tools and concepts which are results of reflection. This social view states that by participating in activities designed to question and extend their knowledge in different domains, teachers will become enculturated into ways of technological proficiency.

Social representations are defined as cognitive structures residing in the mind of each individual, making subjective meaning more important than the socially shared and symbolic nature of these contents. Far from breaking with traditional approaches in social psychology. (Augoustinos, Walker, & Donaghue, 1995)

Social cognition has different approaches. The first approach is provided by social identify theory (Turner & Tajfel, 1986), it gives an analysis of identity based on group belongingness. This approach reinstates the social within the individual. The second approach discusses, social representations theory (Moscovici, 1988) which also emphasizes the centrality of social group membership, but focuses more upon how this membership shapes and constitutes an individual's consciousness. Finally, the last approach deals with discourse analysis which emphasizes the centrality discourse and rhetoric in human interaction focusing on what people say rather than what people think.

Social cognition leads to reflect on what kind of discourse communities, teachers should strive in order to develop their technological proficiency.

Distributed cognition

The concept of distributed cognition was first conceived by Hutchins (1995) as a means of examining the world flow of representations of cooperative work settings. This means that there is a combination of individual understanding of processes and the tools that are used to facilitate them. Learning environments typically do not emphasize such sharing of learning and cognitive performance, focusing instead on the importance of individual competencies. But, as (Resnick, Currículum y congnición, 1989) wrote, "as long as school focuses mainly on individual forms of competence, on tool-free performance, and on decontextualized skills, educating people to be good learners in school settings alone may not be sufficient to help them become strong out-of-school learners". The goal of distributed cognition is to describe how distributed units are coordinated by analyzing the interactions between individuals; similarly, It is useful to analyze situations that involve problem-solving thus schools must achieve a better balance between activities that incorporate ideas of distributed cognition and those that stress only individual competence.

In a distributed framework, the cognitive process of thinking is circulated through individuals´ interactions with each other and with a variety of tools; this process is meant to highlight the ways in which complex cognitive actions and resources are inextricably paired. Following this reasoning, interpreting meaning become more active across multiple resources.

In this view of learning, the interactive social practices at work in the classroom – how the teacher finds materials, how the teacher and students engage in meaning construction, serve as additional types of resources that students use to support their conceptual thinking. As

(Lickona, Schaps, & Lewis, 2007) points out, ‘‘new technologies afford new practices, but it is the practices themselves, and the local and global contexts within which they are situated, that are central to new literacies’’. This is more related to social practices of tool use, and the mechanisms that teachers can use to maximize the connections of a student's mind with interpretation and meaning making.

Case base learning

Case-based learning provides meaningful settings for teacher learning(Doyle,1990). This experience of the setting may afford reflection and critical analysis that is not possible when acting in the setting. Some proponents suggest that cases have several advantages over other activities used in preservice and in service teacher education. As with actual classroom experiences, they allow teachers to explore the richness and complexity of genuine pedagogical problems. As with actual classroom experiences, they allow teachers to explore the richness and complexity of genuine pedagogical problems. Cases, however, provide shared experiences for teachers to examine together, using multiple perspectives and frameworks (Feltovich, Spiro, & Coulson, 1997)

Although all cases limit the information provided, they vary in the richness or complexity of classroom life portrayed. The ability to visit and revisit various sources of information quickly and easily, and the ability to build and store flexible and multiple links among various pieces of information, allow users to consider multiple perspectives on an event simultaneously (Feltovich, Spiro, & Coulson, 1997) These processes provide a shared context for the exploration of

pedagogical problems. They can come much closer to simulate what teachers go through in their daily practice.

Despite the growing popularity of cases as a means of learning there is still much to learn about its effectiveness. Researchers still want to know the differences between experiences provided by media cases and structured written cases, as well as case-based learning with other methods. In order to answer these questions it is important to consider the purposes and pedagogy used in case-based learning.

Literature revision

The Teacher and Technology

There is no doubt that finding the time to integrate technology is an overwhelming task for anyone; however, teachers need to find a balance; using technology is not about adapting every LMS (Learning management system) out there or using every app designed for teachers; it has more to do with using these tools whenever is convenient. Integrating technology doesn't have to consume our lives this means that technology must be used to facilitate the learning process, according to (Marcinek, 2014), teachers need to focus on their leaning objectives and use digital tools to enhance or complement skills, unexperienced teachers overwhelm their students with so much information and digital resources that instead of contributing they are interfering with their learning process, teachers need to provide students with the best access and opportunities to contemporary learning resources.

According to (Jackson, 2013), teachers want to integrate technology; however, they need better training in order to make use of it. His study found out that teachers relegate technology because of a number of reasons related to their willingness to use it, their inexperience and the lack of access to it.

A similar study conducted by (Roach, Beddow, Kurz, Kettler, & Elliott, 2010) stated that teachers are looking for technology to help them support differentiated instruction, collaborate with other teachers, implement technology-supported authentic assessment among others. these are understandable requirements, but the real question here is what is the school community doing for this to become tangible?

The Administrators, the Teachers and Technology

One thing that many schools lack is education for the teachers, specifically about how to use new pieces of technology. Acoording to (Dynarski, Loeb, McFarland, & Morris, 2017) teachers are generally given only one hour per teaching subject in professional development in the US, certainly not enough time. (Jackson, 2013) finds that one of the major issues throughout the United States is that school boards are quick to buy into the newest technologies available. However, teachers are provided inadequate instruction on how to integrate it into their classrooms. Thus, these advanced pieces of technologies are often forgotten for more commonly used technologies.

Likewise, in our country, administrators, usually, train teachers before starting the scholastic periods; unfortunately, most of them are not necessarily related to technology; if

administrators want teachers to use technology, they should be investing time training them and not blaming them on being inefficient.

The ministry of education, in our country, started a campaign to make technology more accessible for teachers; one example of this was facilitating computers for the teachers in the public system. Shockingly enough, the ministry of education also, decided to provide teachers with two technology courses for free. These courses are aimed for the public teachers and they are designed for seventeen sessions, each session being three hours.

The first course is called "Introducción a las tecnologías aplicadas a la educación" which has as its main objective to help teachers acquire theoretical foundations and operational skills that can allow them integrate didactic media based on new technologies in their practice. The second course is called "Tecnologías de la información y la comunicación aplicadas a la educación, nivel II " and its main objectives is to prepare teachers to:

- Use technological resources that allow them to use blogs and wikis, etc.
- Use educational applications.
- Use search engines to help them and the students to conduct research.
- Evaluate didactic resources.
- Prepare content-based actvitites and task-based activities.
- Do projects that integrate the usage of technological resources.

This information leads us to a new question, will teachers change their attitudes towards technology if they are conscious that the government is trying to help?

Resistance to change

Recent studies indicate that the implementation of innovative technologies in schools demand a systemic change in the school–culture (Becker & Anderson, 2001) this means that administrators need to realize that every actor in the school community needs to adapt and embrace technological change, starting with teachers. According to (Hattie, 2013), the best predictors of students´ achievements are related to teachers´ activities and not to technology itself, this tells us that schools might be equipped with the latest technological resources but if teachers do not know how to use them such resources become meaningless.

One of the major factors that indicate success when implementing technological change in schools is the educator´s attitude (Fullan, 2000); a project will become successful if technology fits their pedagogical practices and beliefs (Collins & Halverson, 2009) otherwise failure will be ever present. It is worthy to mention that teachers who are reluctant to accept technological change might be affected by cognitive resistance and emotional resistance; the former refers to presenting weaknesses of the change and enlisting reasons for maintaining the existing situation. For example, a teacher might complain about the installment of smartboards in the classroom by stating that they are too difficult to use; while the latter refers to expressing negative feelings about the change; for example, a teacher might say that using learning management systems should not be imposed and that using those kinds of resources is a waste of time and money. Similarly, According to Del Val (2003) there are five main sources of resistance: a) distorted perception b) denial to accept new information c) perpetuation of ideas d)

implicit assumptions and e) communication barriers. These sources aggravate change in teachers, making it more difficult for administrators to implement innovative projects in their schools.

Other factors that affect teachers use of technology

It is important to state there are some other barriers that undermine technological implementation in the classrooms. According to Wachira (2010) not having access to appropriate technological resources is one of the most influential limitations; accordingly, private institutions might not suffer from this; however public institutions might. It has been recorded (specially in our country) that some institutions cannot afford having computers, not to mention other sorts of technological resources.

Another limitation is the number of students in each class; public institutions suffer from a overpopulation in the classroom, considering that some teachers have more than four hundred students to educate, demanding them to use technology without the correct guidance sounds just cruel.

Discussion and conclusion

We have reviewed what various researchers have found regarding teachers´ attitudes about technological innovation in the classroom. Cognition, both situated and distributed, tells us that in order for teachers to acquire new knowledge relative to technology, they need to start acting in a different way by starting communities of practice, teachers must utilize technology as a means to satisfy their necessities.

According to various studies, teachers do have predisposition to implement technology in their classes; unfortunately there are many constraints and limitations which demotivate teachers to carrying on with such implementations. These limitations might be related to training or even emotional stances towards change.

Our educational system has been evolving gradually, with ups and downs but with a firm idea of change; problems arise when government demands teachers to implement technology in their classes but they are not properly trained to do so or even worse, the government does not provide the necessary resources for teachers to put in practice such processes.

All in all, one thing is certain; technology is no novelty in the educational setting, new currents of knowledge are yet to come and that is why teachers should forget about traditional practice and start reflecting on the fact that new learners demand a different approach with different necessities and whoever is not ready to accept this must consider that eventually will be replaced.

Bibliography.

Augoustinos, M., Walker, I., & Donaghue, N. (1995). *Social Cognition: An Integrated Introduction.* Washinton DC: SAGE.

Becker, H., & Anderson, R. (2001). *School Investments in Instructional Technology: Report no. 8 of the Teaching, Learning, and Computing Project. Irvine: Center for Research on Information Technology and Organizations.* Irvine: University of California.

Collins, A., & Halverson, R. (2009). *Rethinking education in the age of technology: The digital revolution and schooling in America.* New York: Teachers College Press.

Dynarski, S., Loeb, S., McFarland, D., & Morris, P. (2017). *Descriptive analysis in education: A guide for researchers.* Washington: National Center for Education Evaluation and Regional Assistance.

Feltovich, P., Spiro, R., & Coulson, R. (1997). Issues of expert flexibility in contexts characterized by complexity and change. En P. Feltovich, & K. Ford, *Expertise in context: Human and machine* (págs. 125-146). Menlo Park: CA: AAAI/MIT Press.

Fullan, M. (2000). The meaning of educational change: A quarter of a century of learning. En A. Hargreaves, A. Liberman, & M. Fullan, *International handbook of educational change*. Queensland: Kluwer Academic Publishers.

Hattie, J. (2013). *Understanding Learning: Lessons for learning, teaching and researc.* Melbourne: University of Melbourne.

Jackson, B. (2013). *Teachers' Preparation Needs for Integrating Technology in the Classroom.* Washington D. C.: UMI Dissertation.

Krishna Arya, H. (2015). *"Teachers will not be replaced by technology, but teachers who do not use technology will be replaced by those who do.".* Innovative Educators – News Radar.

Lickona, T., Schaps, E., & Lewis, C. (2007). *CEP's eleven principles for effective character education.* Washington: Character Education Partnership.

Marcinek, A. (2014). *Badanie "Spoleczna adpoeiwdzialnose organizacji pozarzadowych"*. Esrprofit.

Moscovici, S. (1988). *Psicología Social II.* Barcelona: Editorial Paidós.

Resnick, L. (1989). *Currículum y congnición.* Buenos Aires: Aique Grupo Editor.

Resnick, L. (1991). *Perspectives on Socially Shared Cognition.* Washington: American Psychological Association.

Roach, A., Beddow, P., Kurz, A., Kettler, R., & Elliott, S. (2010). Incorporating student input in developing alternate assessments based on modified achievement standards. *Exceptional Children*, *77*(1), 61-80.

Soltis, J. (1981). Afterthoughts. *Educational Thfory*, *31*(1), 91-101.

Turner, J., & Tajfel, H. (1986). The social identity theory of intergroup behavior. *Psychology of intergroup relations*, 7-24.

Zimmerman, J. (2006). Factors that relate to educators' use of the Baldrige Framework. *Continuous Improvement Monitor*, *2*(3).