

Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 176 (2015) 819 – 823

Procedia
Social and Behavioral Sciences

IETC 2014

ITC integration process in basic education: The case of Veracruz city in Mexico

Carlos Arturo Torres Gastelú^{a*}, Gábor Kiss^b, Agustín Lagunes Domínguez^a^aVeracruzana University, Calle Puesta del Sol S/N Fracc. Vista Mar, Veracruz, Ver. C.P. 91750, México^bÓbuda University, H-1034 Budapest, Bécsi út. 96/b A/107., Budapest, Hungary

Abstract

The aim of this paper is to describe the attitudes of principals toward the integration of Information and Communication Technology (ICT) in public primary schools in the city of Veracruz, Mexico. This is a quantitative research through a survey. It was used a representative probability sample of 46 public primary schools in the municipality with a probability of occurrence of 90% and a standard error of 5%. The results indicate that the respondents believe that ICT apply to their work activities for both routine management tasks as for insertion into educational didactics in spite of the computer equipment insufficient.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the Sakarya University.

Keywords: Attitude; Use of ICT; Teachers; Public Primary Education, Mexico

1. Introduction

The incorporation of ICT has been modifying many ways in daily life and each day is affecting new people around the world. Fernandez-Tilve (2007) affirm that these technologies could help to the teaching process because there are so many different tools and pedagogical ways to work in teams and provide solutions to the users.

However, the inclusion of ICT in education is still a big challenge to the concepts of traditional learning and teaching (López de la Madrid & Chávez, 2013) without take in consideration the educational level. The application of these technologies into the classroom redefines the ways how the knowledge is being built, their value has been recognized by the literature but their full potential has not been consolidated.

* Corresponding author. Tel.: +52-229-937-6544; fax: +52-229-937-6544.

E-mail address: ctorres@uv.mx

Previous studies performed by Ana-Moreira, Cepeda-Romero, González-Salamanca & Sanabria-Mesa (2010) pointed that in spite of the increase of technological resources availability in the schools, the pedagogical practice in teachers do not reveal a significant modification in the traditional teaching model. In the case of Mexico, we have lived this situation with the technological provisioning executed by the national program of Enciclomedia with few positive results.

Meanwhile others authors [Fernández, Rodríguez & Vidal (2007); Fernández, Hinojo & Aznar (2002); Tejedor & García-Valcárcel (2006)] consider that attitudes of teachers towards ICT is one of the element that can explain the problems that affects their incorporation. They believe that having this knowledge it can be built specific programs to promote the effective use of ICT by the teachers in their initial and continuous training.

As usual, the teachers play a relevant roll in the results of any educational reform, so the reform that involves in the incorporation of ICT it is not the exception. The teachers must have a series of competencies and attitudes that allow that specific reforms help them to modify their practices. Thus, is about the understanding about what is happening in the classroom about the incorporation of ICT how we can glimpse the way for a right implementation of these technological tools, and is precisely the study of the attitudes of teachers one of the key elements to take in consideration in these integration process.

2. Methodology

In order to know about the attitudes of principals towards ICT in public basic schools of Veracruz City was chosen the quantitative method. The population was of 214 principals of public basic schools. It was used a representative statistical sample of 41 principals.

The survey used has a Likert scale to measure attitudes developed by Sigalés, Mominó, Meneses and Badia (2009). This instrument was composed by 31 questions or items with one possibility of answer between 1 and 5 (1: Totally agree; 2: Agree; 3: Neutral; 4: Disagree; 5: Strongly Disagree).

The reliability of the instrument was corroborated by Cronbach alpha coefficient getting an acceptable value of 0.891. The application of the instrument was face to face in a printed format sheet. In order to analyze the results of this survey SPSS software was used.

3. Conditions of the schools and their principals

It was possible to get information from 46 principals of the 55 public primary schools visited. The sample was composed by 36 women (78.3%) and 10 men (21.7%). The average age of the sample was 48 years old, with a minimum of 38 and a maximum of 63. Regarding to the formal education, at least 50% of the principals have a bachelor's degree and 10.9% have a master degree. Meanwhile 15.2% studied basic specific training for primary teacher and 19.6% expressed have finished the full formal specific training for primary teacher. Finally, 4.3% have a special education studies after the full formal specific training for primary teacher.

Referring to the years of experience as principal in the same school or in any other school, 8.7% has less than a year. The most prolific group was found between 1 and 5 years working in the same position (32.6%), follow with the gays with 6 and 10 years old working as principals (23.9%). While most of the lowest percentages are distributed among those with more time in that position (8.7% between 11 and 15 years; 4.3% between 16 and 20 years; and 4.3 between 21 and 25 years). A final group is represented by the principals who have more than 26 years working in that position (17.4%).

In terms of the technological infrastructure of the principals, 97.8% said to have at least one computer in their house and 95.7% of the principals noted that have Internet in their home. On the other hand, most of the principals expressed that they have computers in their schools (80.4%), but unfortunately 71.7% said that their schools do not have media classroom.

However, concerning the status of the computer equipment available to the school 47.8% of the principals expressed that they do not have any broken computer or out of service computer. Meanwhile, 41.2% said that they have between 1 and 5 computers broken or out of service. On the other hand, 10.9% said as out of service between 7 and 20 personal computers. It is relevant to mention that in most schools with computer equipment which feature is in use, it means

those schools do not have backup equipment.

In relation to the total personal computers in the school, at least 15.2% of the principals said that they didn't have any personal computer. Meanwhile, 41.3% expressed to have between 1 to 5 personal computers. While 17.4% of the principals stated to have between 6 to 10 personal computers. Also 15.3% said that have between 11 to 15 personal computers in their facilities. Only 6.6% of the schools have between 26 to 30 personal computers. Finally, one school reported 27 personal computers (2.2%), other school stated 28 personal computers, one school with 36 and other schools said 45 personal computers.

Reviewing the existence personal computers in operation in these public primary schools that are been used with educational purposes, we found that 43.5% of the principals expressed that none of these personal computers is been used for this purpose. However, 37% of the schools dedicate between 1 to 5 personal computers for educational purposes. In the range from 6 to 10 personal computers we could found just 2 schools (4.4%). Meanwhile, 10.8% of the schools dedicate between 11 to 15 personal computers for educational matters. Only two principals said dedicate more computers to education (25 and 34 personal computers).

About the members of the community that use personal computers in the school is in this way: 73.9% for principals; 60.9% for teachers; 8.7% for staff personnel; and 37% of the students in the schools.

The digital presence of the school in Internet was expressed by the principals in this way: 78.3% schools have e-mail address. Just 2.2% of the schools have their own web page. And 6.5% of the schools have at least one Blog. These indicators show a minimum presence in Internet.

4. The roll of principals in the process incorporation of ICT

In the case of Mexico, there have been implemented several strategies to facilitate the incorporation of ICT in the education. We could say that at least there are five documents involved in the educational national policy: the third article of the constitution, the General Law of Education, the National Development Plan, the Regional Educational Program and the Alliance for Quality Education (Torres, Angulo, Valdés & García, 2013).

The Mexican Government recognize that there are relevant lags in the National Education System in order to get a quality education (Torres, Aviles & Romero, 2012), so the way to increase the quality for primary education, it was adopted to strengthen the teachers training and to modify the educational programs that allow to use ICT in learning. In this sense the roll of the principals is quite relevant because they know how effective are the teachers in their school, they can identify very easy the weaknesses and help to do something about it.

In the other hand, the Mexican Federal Government and the National Union of Education Workers (SNTE), in the Alliance for Quality Education agreed to modernize schools with the necessary infrastructure (computer equipment, Internet connectivity, availability of computer use in a classroom). Also, they promised to provide personal computers to teachers that get the certification of digital competencies (Arras, Torres & Fierro, 2012). All these matters must be take in consideration in each School Development Program, for that reason the roll of the principals is crucial to get succes in the achievements of the teachers and students.

5. Results

In Table 1 is presented in condensed form the results on the attitudes of principals towards the use of Information and Communication Technology (ICT) showing the dimensions of attitude towards ICT from the beliefs, appreciations and perceptions of respondents considering aspects of their technological skills, teaching skills, possible pedagogical application, ease of use, interference with learning support, emotional considerations, professional application, role in communication and interaction, state of the technological infrastructure and possibilities of access to computing and the Internet.

The questions associated to the dimension of beliefs about technological skills of the principals were related with the roll and necessity to receive technological training and also with the degree of confidence that the director has in terms of self-learning.

Meanwhile the questions associated to the dimension of beliefs about teaching skills were related with the roll of ICT in pedagogical matters about the design of activities, form of organization of the learning and evaluation mechanisms.

On the other hand, the questions associated to the dimension of appreciation about possible pedagogical application were related with how ICT can support the student in finding information and content management.

For the dimension of perception about ease of use of ICT, the questions were related with the degree of usability of technology tools in areas of cooperation and collaboration between teachers or between teachers and their students.

Referring to the dimension of beliefs about interference with learning support relates to the perspective of principals about the facilities that provide ICT in conducting learning activities and teamwork.

Finally, the questions associated to the dimension of affective appreciation address the sense of comfort that the principals have over the use of ICT for both administrative and educational work perspective and also considerer how they think students feel in this regard.

Table 1. Dimensions of study on the attitudes toward ICT of the principals

Beliefs about technological skills	Mean	σ	Std. M
I consider relevant the training in ICT	1.43	.583	.086
I believe that ICT training courses should increase	1.24	.431	.064
I learn to use software easily following the instructions in the manual	1.07	.250	.037
Beliefs about teaching skills	Mean	σ	Std. M
ICT help you to make evaluations	1.09	.285	.042
ICT help you to set up lessons for teaching	1.13	.341	.050
ICT help you in the design of teaching activities	1.26	.491	.072
ICT help you for the feedback of evaluations	1.48	.691	.102
Appreciation about possible pedagogical application	Mean	σ	Std. M
ICT facilitate students to get information	1.28	.455	.067
I think that ICT helps to get scientific information	1.26	.444	.065
I consider appropriate to use ICT to present content	1.61	.856	.126
ICT promote student motivation for learning	1.48	.691	.102
Perception about ease of use	Mean	σ	Std. M
It is easy to access educational virtual platforms	1.35	.526	.078
ICT facilitate the creation of workspaces with students	1.48	.658	.097
ICT facilitate the creation of workspaces with other teachers	1.80	.910	.134
Beliefs about interference with learning support	Mean	σ	Std. M
ICT facilitate students to perform learning activities	2.3	.986	.145
ICT facilitate students the cooperative learning	1.43	.655	.097
Affective appreciation	Mean	σ	Std. M
I like to use the computer	1.78	.841	.124
I feel that students learn best when they use ICT	1.61	.747	.110
ICT make more comfortable the administrative tasks	1.54	.585	0.86

6. Conclusions

The integration process of ICT in the public primary schools in Veracruz City is a pending task to be resolved. The data show a positive attitude by the most of the principals and we could say that they can manage these technologies with certain ease, buy mainly to perform their management job. They recognized the current weakness in terms of technological infrastructure, training and in the design of educational programs supported by ICT.

So is imperative to take actions against these weakness as soon as possible in order to propitiate the full incorporation of all schools in Veracruz city, but also in Veracruz State and of course in all Mexico.

The Mexican Government have made efforts in national program that tried to provide technological resources in several occasions. However, previous failed experiences show that each national program should be integrated with a national technological change plan that take in consideration that Mexico is a huge, different and complex country. So, differential and specific strategies should be used according to the region and their characteristics.

It is relevant that these national efforts include: (1) Provisioning of telecommunications infrastructure in order to provide free, fast and stable Internet to all the schools in the country; (2) Provide a continuous schema for induction, training and monitoring about the use of ICT with educational purposes; (3) Design national policies in the educational system in order to provide equitable and fair reforms focus in promote the development and evaluation of teaching career.

So, in these educational reforms it is imperative to ensure a higher presence of ICT in educational activities, a higher level of informational competencies in principals, teachers and students, and a mayor contribution of these technologies to improve the quality of learning.

References

- Area-Moreira, M., Cepeda-Romero, O., González-Salamanca, D. & Sanabria-Mesa, A. (2010). Un análisis de las actividades didácticas con TIC en aulas de educación secundaria. *Pixel Bit. Revista de Medios y Educación*, 38, 187-199. Recuperado de: <http://www.sav.us.es/pixelbit/actual/15.html>
- Arras, M., Torres, C. & Fierro, L. (2012). *Competencias en TIC y rendimiento académico en las universidades autónoma de Chihuahua y Veracruzana. Diferencias por género*. México: Pearson.
- Fernández, F., Hinojo, F. & Aznar, I. (2002). Las actitudes de los docentes hacia la formación en Tecnologías de la Información y Comunicación (TIC) aplicadas a la educación. *Contextos Educativos*, 5, 253-270. Recuperado de: <http://dialnet.unirioja.es/servlet/articulo?codigo=498346>
- Fernández-Tilve, D. (2007). ¿Contribuyen las TIC a hacer de los profesorados mejores profesionales?: ¿Qué dicen los directivos escolares gallegos? *Píxel-Bit. Revista de Medios y Educación*, 30, 5-15. Recuperado de: <http://redalyc.uaemex.mx/pdf/368/36803001.pdf>
- Fernández, M. D., Rodríguez, J. y Vidal, M. P. (2007). TIC y desarrollo profesional del profesorado. El caso de un centro de primaria, *Revista Interuniversitaria de Formación del Profesorado*, 58, 21(1), 85-110.
- López de la Madrid, M. C., Chávez, J. A. (julio-diciembre, 2013). La formación de profesores universitarios en la aplicación de las TIC. *Sinéctica*, 41. Recuperado de : http://www.sinectica.iteso.mx/?seccion=articulo&lang=es&id=609_la_formacion_de_profesores_universitarios_en_la_aplicacion_de_las_tic
- Sigalés, C., Mominó, J.M., Meneses, J. & Badia, A. (2009). *La integración de Internet en la educación escolar española: Situación actual y perspectivas de futuro*. España: Ariel.
- Tejedor, F.J. y García-Valcárcel, A. (2006) Competencias de los profesores para el uso de las TIC en la enseñanza. Análisis de sus conocimientos y actitudes, *Revista Española de Pedagogía*, 233, 21-44.
- Torres, C.A. y Angulo, J. (2013). *Adopción de las TIC en docentes de nivel primaria*. México: Pearson.
- Torres, C.A., Aviles, E. & Romero, T. (septiembre, 2012). Actitudes hacia las TIC de profesores en la educación primaria de los municipios de Veracruz, Boca del Río y Medellín. Trabajo presentado en 6CIE Congreso Internacional de Educación, Ciudad Obregón, Sonora. México.