

## TEACHERS FACE OF INCORPORATION OF ICT ON STAGE SCHOOL<sup>1</sup>

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### ABSTRACT

The research focuses on the social representations understanding that on Information and Communication Technology (ICT) underlie on the basic primary education teachers level in an urban- fringe educational institution of the city of Popayan (Cauca). The research is a qualitative cut and is based on the methodology of grounded theory, It starts of the lives and experiences of teachers, and in their personal and professional development related to the processes of appropriation and incorporation of ICT in school contexts and processes It reaches analysis of process and the final systematization of the stories, which reveal feelings and beliefs that teachers have built which set specific ways to interact with ICT in their school context.

**Keywords:** *Journal History of American Education, technology of the information, teacher, school, education.*

### LOS DOCENTES FRENTE A LA INCORPORACIÓN DE LAS TIC EN EL ESCENARIO ESCOLAR

#### RESUMEN

La investigación se centra en la comprensión de las representaciones sociales que sobre las Tecnologías de la Información y la Comunicación (TIC) subyacen en los docentes del nivel de educación básica primaria en una institución educativa urbano-marginal de la ciudad de Popayán (Cauca). La investigación es de corte cualitativo y se basa en la metodología de la teoría fundamentada, se parte de las vivencias y experiencias de los docentes en su formación personal y profesional, relacionadas con los procesos de apropiación e incorporación de las TIC en los contextos escolares y se llega a procesos de análisis y sistematización final de

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los relatos, donde se develan sentimientos y creencias que han construido los docentes los cuales configuran maneras determinadas de interactuar con las TIC en su contexto escolar.

**Palabras clave:** *Revista Historia de la Educación Latinoamericana, tecnologías de la información, profesor, escuela, educación.*

## OS DOCENTES DIANTE DA INCORPORAÇÃO DAS TIC NO CENÁRIO ESCOLAR

### RESUMO

A pesquisa está centrada na compreensão das representações sociais sobre as Tecnologias da Informação e da Comunicação (TIC) subjacente aos docentes do nível da educação básica primária em uma instituição educativa urbano-marginal da cidade de Popayán (Cauca). A pesquisa é de tipo qualitativo e se baseia na metodologia da teoria fundamentada, partindo das vivências e experiências dos docentes em sua formação pessoal e profissional, relacionadas com os processos de apropriação e incorporação das TIC nos contextos escolares e se chega a processos de análise e sistematização final dos relatos, donde se desvelam sentimentos e crenças que foram construídas pelos docentes e que configuram maneiras determinadas de interatuar com as TIC em seu contexto escolar.

**Palavras-chave:** *Revista História da Educação Latino-americana, tecnologias da informação, professor, escola, educação.*

### INTRODUCTION

In this society of the information age and technological revolution, the school is no longer the privileged possessor of knowledge. We live today in a globalized world where advances in Information and Communication Technologies (ICT) transform everyday interaction modes and ways to access and build knowledge<sup>4</sup>, which is reshaping the new subjectivities of social actors.

The current education system has been permeated by ICT, both in its external and in its very essence; those are expanding the devices of the present crisis in the socio-school organization. In each school has undergone a different process in terms of ownership and incorporation of ICT, generating their respective implications, marked by political, economic and cultural, as well as local and global. The school administrators and teachers have been obligated for demands and social and cultural needs, to acquire technological devices and attempt a curricular integration between pedagogy, didactics and technology, often without reflection and little preparation<sup>5</sup>.

For several years in Colombia, government efforts have been made to equip educational institutions of technological resources and disclose regulatory guidelines and curriculum to incorporate themselves, but the reality that exists within institutions is not a reflection of the efforts mentioned; in this sense, this research focuses on the voice of teachers who are

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<sup>4</sup>Manuel Castells, *Globalización Identidad y Estado en América Latina* (Santiago de Chile: Desarrollo humano en Chile, 1999). <http://www.desarrollohumano.cl/otraspub/Pub01/Idyest.pdf>, May 12, 2011).

<sup>5</sup> David Buckingham. *Más allá de la tecnología. Aprendizaje infantil en la era de la cultura digital*. (Buenos Aires: Manantial, 2008).

ultimately responsible for the processes incorporating promotion subjects of ICT in institutions and that those have not been taken into account when drawing routes to appropriate use of ICT in teaching and learning processes.

Before taking the course of the investigation was necessary to trace some background research on both SR and ICT in education. About researching on SR applied to the education in the Colombian context<sup>6</sup>, we find that anyone deals with the phenomenon of ICT from the SR of teachers in basic education primary, issue that leads to increase interest in the proposal subject. About researching on ICT in education, these are achieved grouped into two perspectives: First, it proposes the incorporation of ICT in education as a necessity to promote an improvement in the skills and abilities required of the students<sup>7</sup>, the second, the warning that the single presence and empowerment of educational actors to be able to use ICT is not sufficient to cause effective innovation processes for teaching or learning<sup>8</sup>, because there are other elements that must be considered, as the redefinition that make people of the new knowledge and the applications that can be given to ICT in their lives; the historical and cultural differences that are experienced in the different educational

<sup>6</sup> Alfonso Cruz, José Duarte, Eda Gonzáles, & Isaac Vásquez, et. al., *Representaciones Sociales sobre desarrollo humano. Estudio de caso en estudiantes y docentes de la Facultad de Psicología de la Universidad Cooperativa de Colombia* (M.Ed. Thesis, Pontificia Universidad Javeriana, 2006), 116. Oscar Hernández, *El sentido de la escuela. Análisis de las Representaciones Sociales de la Escuela para un grupo de jóvenes escolarizados de Bogotá* (psychology undergraduate thesis, Universidad Nacional de Colombia, 2007), 55. Yolanda Delgado, Flor Hernández, Olga Terreros, Luis Vargas, et al., *Representaciones sobre autonomía institucional. Caso: escuelas de formación de la Fuerza Aérea Colombiana* (M.Ed. Thesis. Pontificia Universidad Javeriana, 2005), 97. Luz Arango, *Representaciones y prácticas sobre ciudadanía en estudiantes de octavo grado de educación básica secundaria de tres planteles educativos pertenecientes a estratos sociales diferentes en Medellín* (M.Ed. Thesis. Universidad de Antioquia, 2008), 283. Carlos Martínez, y Guido Hurtado, “Nuevas Tecnologías y Representaciones Sociales de un grupo de estudiantes de la Universidad Autónoma de Occidente”. *Revista del Instituto de Estudios Superiores en Educación*, Universidad del Norte, Vol.: No. 6 (2005):10.

<sup>7</sup> César Coll, Teresa Mauri, y Javier Goñi, *Análisis de los usos reales de las TIC en contextos educativos formales: una aproximación socio-cultural*. *Revista electrónica de investigación educativa*. Vol. 10: NO. 1(2008): 18. Higuera Álvarez, *Caracterización de la escritura de textos narrativos mediada por un programa de reconocimiento de voz y un procesador de textos en niños con trastorno por déficit de atención con hiperactividad en Medellín* (Tesis maestría en educación, Universidad de Antioquia, 2009), 266. Patricia Jaramillo, “Uso de tecnologías de información en el aula. ¿qué saben hacer los niños con los computadores y la información?” *Revista de estudios sociales* NO. 20, junio (2005): 27-44.19. Andrea Ruíz, “Estrategias didácticas para el manejo eficiente de la información a través de Internet en el Segundo Ciclo de la Educación General Básica”. *Revista de Informática Educativa*. Vol. 3: NO.8 (2005):10-43. 34. Virginia Pompeya, *Blended Learning. La importancia de la utilización de diferentes medios en el proceso educativo*. (Doctoral Thesis, Universidad de la Plata, 2008), 160. Marly Casanova, *Aprendizaje Cooperativo en un contexto virtual Universitario de Comunicación Asincrónica: un estudio sobre el proceso de interacción entre iguales a través del análisis del discurso*. (Doctoral thesis in education. Universidad Autónoma de Barcelona, 2008), 150. Marcela Devia, *Lenguaje y Nuevas tecnologías para aprender co-construyendo en educación*. (M.Ed. Thesis, Universidad Nacional de Colombia, 2009), 329. María Muñoz, y Juan Sanhueza, “Características de la integración curricular de la informática educativa en el currículo del aula multigrado”. *Revista Iberoamericana de Educación*. (2007). 14.

<sup>8</sup> Rocío Rueda & Álvaro Quintana, *Ellos vienen con el chip incorporado. Aproximación a la cultura informática escolar*. Instituto para la Investigación Educativa y Pedagógica (Santafé de Bogotá D.C.: Universidad Distrital, 2007). Galindo Núñez, Alma Celia, *Representaciones Sociales de las prácticas Tecnopedagógicas en profesores de Nivel básico (Secundaria) en distintos contextos educativos en Colima, México*. <http://www.educacionmediatica.es/comunicaciones/Eje%201/Alma%20Celia%20Galindo.pdf> (December 12, 2011).

contexts, which produce unpredictable forms of interaction between people and ICT, and the role of teaching positions expressed by teachers when deciding what and how to use ICT in their professional performance. In the country there have been few Colombian researchers that have been interested in this second perspective, therefore our interest in the question of how teachers have experienced the incorporation of ICT in school from their SR.

Thus, the issue of incorporation and appropriation of ICT goes beyond the acquisition of technological devices and sporadic of digital literacy<sup>9</sup> workshops this research focuses on understanding the social representations (SR)<sup>10</sup> which teachers face to ICT from their embodied subjectivities, raising questions as what arises within when deciding teachers incorporate ICT in school?, what meanings they give to these decisions?, what and why are their reactions in front of ICT, and what have beliefs and thoughts about, and what drives or stops them to use and appropriation of ICT?

The subjects of this investigation were nine teachers of basic primary education, in order that they are responsible for guiding them in the same group (among 35 and 45 students), all required areas, including Technology and Informatics. The research setting was mixed public school Tomás Cipriano de Mosquera, considered marginal-urban location that is within the city of Popayan (commune seven), and has a population belonging to lower socioeconomic strata.

## 1. The inquiries traveled

The research was qualitative in nature<sup>11</sup>, the route followed walked into that world of school, where teachers in their interiority, influenced by a culture and a particular social relations, make that the reality in their environment, depends on its definition, understanding and analysis, from the SR approach that allows us to understand the dynamics of their interactions<sup>12</sup>, it was so how he had direct contact with the teachers from the school because of this interaction between the subjectivity and intersubjectivity was reached social knowledge, asking about their conditions of production, circulation and social functions<sup>13</sup>.

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<sup>9</sup> Understanding for the acquisition of digital literacy lessons for the use and management of ICT and skills to navigate successfully in the network, find, use and evaluate information sources which enable people with a professional and human development. Claudia Silvera. *La alfabetización digital: una herramienta para alcanzar el desarrollo y la equidad en los países de América Latina y el Caribe*. (La Habana: Acimed, 2005).

<sup>10</sup> The SR are “systems of values, ideas and practices that have a dual function: first, to establish an order that allows individuals to orient themselves in their social world and master materials and, secondly, to allow communication between the community members, providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual and group history”. José Castorina. *Representaciones Sociales. Problemas teóricos y conocimientos infantiles*. (Barcelona: Gedisa, 2003), 30.

<sup>11</sup> Carlos Sandoval. *Investigación cualitativa. Programa de especialización en teoría, métodos y técnicas de investigación social*. (Medellín: Universidad de Antioquia, 2002).

<sup>12</sup> Sandra Araya. *Las representaciones sociales: ejes teóricos para su discusión*. (San José: Facultad Latinoamericana de Ciencias Sociales, 2000), 11.

<sup>13</sup> Di Giacomo. *Teoría y método de las representaciones sociales*, in: Páez, D. *Pensamiento, Individuo y Sociedad: cognición y representación social*. (Madrid: Fundamentos, 1987), 25.

The method followed for the research was grounded theory, which allows to develop theory from the stories of teachers systematically captured and analyzed, it is a way of thinking about the stories and to be able to conceptualize them, the used method was “constant comparative analysis”, based on an inductive analysis perspective, where you get to the saturation of empirical categories and then ends with the discovery of substantive theory<sup>14</sup>.

The techniques used for data collection were conducted in three stages: first, the exploration, approach to teachers’ sociocultural scenario where two group interviews were conducted with the participation of nine elementary school teachers (8 women and 1 male) with selection criteria were: active teachers of the school in elementary school, participants of some ICT literacy processes, teachers of the institution, these teachers are all graduates, some with specialization, aged between 50 and 60 years old, some of them have computer at home and most do not make use of ICT in the classroom with them begins the approach to the research problem; and second, targeting, five interviews were developed in-depth with some of the teachers participating in the group interviews, who with their contributions reflected highlights of the topic of interest to them is collected information in order to begin to saturate empirical categories found in the group interviews; third, deepening, with analyzed and systematized information, were planned and conducted six training workshops with the nine teachers who began the investigation, the information provided from the workshop was used to saturate the categories found in previous times.

The research findings<sup>15</sup> bring us closer to understanding raised inside of the teachers when it is deciding to incorporate ICT into the school, The senses that are built to these decisions, the reactions and thoughts that permeate beliefs to all of this, which drive or stop the appropriation of ICT in school settings, these results are revealed through the following two categories:

## **1. Little presence of technology in the lives of teachers**

Teachers report that at the time of his childhood and youth the presence of technological tools were scarce, a situation that is recreated in a particular way every day spaces, “*there was no technological devices (...) we had to content with listening to the stories grandparents lived by them*”<sup>16</sup>. Then the radio appears as a cultural mediator, which began fastest ways of communication, new possibilities for entertainment, was the first window to the world and other ways of knowing<sup>17</sup>, “*the radio in my house, (...) it is arming many fights in my house because everyone was looking for the radio*”<sup>18</sup> At that time “*the radio*

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<sup>14</sup> Anselm Strauss & Juliet Corbin. *Bases de la investigación cualitativa. Técnicas y Procedimientos para desarrollar la teoría fundamentada*. (Medellín: Universidad de Antioquia, 2002), 30.

<sup>15</sup> The names of the subjects of the research that appear in this section have been changed to protect the confidentiality of the participants.

<sup>16</sup> Interview with Lopez, Laura, Popayan, May 12, 2011.

<sup>17</sup> Higueta Álvarez. *Caracterización de la escritura de textos narrativos mediada por un programa de reconocimiento de voz y un procesador de textos en niños con trastorno por déficit de atención con hiperactividad*. (Medellín: Universidad de Antioquia, 2009).

<sup>18</sup> Interview with Rodriguez, Milena, Popayan, June 3, 2011.

*meant new ways of learning, new ways of being alone, other constructions of the intimate and private*"<sup>19</sup>. It began to permeate the culture, social practices in everyday life.

In 1954, The television appeared in Colombia, creating new transformations and starting to make social dynamics in a more radical way, while new requirements are emerging within the community, because possessing some technological tools are created social distinctions marked by those of social resources owners and who can access them, "*as a child in my village there was not TVs (...) had to pay to go watch TV*"<sup>20</sup>.

The first approaches to television are given in a community way, there was an adult in charge of handling, people were not trained to control the information that is transmitted through the media; the TV introduces a cultural disorder that poses challenges of family background and school and challenges the filters of parental authority transforming the modes of flow of the information at home, besides allowed to the youngest to be present in the adult interactions, it begins the generational opening that every time looks wider by the existence of technologies among younger generations and their ancestors<sup>21</sup>.

The above technologies were not implemented in the school setting, and starts the challenge of introduce them although they were not conceived within the established paradigms in education, television breaks institutionalized in school activities as the intellectual, cultural value, the effort, discipline, not only with its content, but also with its languages and its technological foundation<sup>22</sup>. In This way, it begins to transform the daily dynamics in social groups, with particular characteristics in the younger generation; the same way it begins a consumerism linked to the creation of new needs, "*everyone wanted to have the TV fashion was like that need.*"<sup>23</sup> Then the Educational television came to the houses but not the schools "*at that time in school barely transmitting radio, but never used in school*"<sup>24</sup>. Then the school becomes into a space to discuss what television broadcasts in other outer spaces.

The difference in those first communication technologies that were present in the lives of teachers with ICT is that the latter allows not only applications but also develop and produce processes. Then it follows with a close relationship between the social processes of creation and manipulation of symbols (the culture of the society) and the ability to produce and distribute goods and services (the productive forces). For the first time in history, the human mind is a direct productive force, not just a decisive element of the production system<sup>25</sup>.

Given that the SR are thought constituted as It becomes in products that are involved in social life as preformed structures that enable to interpret the reality while they are thinking constituent that is involved in its preparation<sup>26</sup>, the experiences of teachers are marked by

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<sup>19</sup> Marta Corrales. *Procesos de comunicación*. (Popayán: Universidad del Cauca, 2003), 64.

<sup>20</sup> Interview with Alvarez, Paola, Popayan, August 15, 2012.

<sup>21</sup> Juan Martín Barbero. *La educación desde la comunicación*. (Santafé de Bogotá: Norma, 2002).

<sup>22</sup> Corrales. *Procesos de comunicación*, 68.

<sup>23</sup> Interview with Osorio, Sofia, Popayan, April 13, 2011.

<sup>24</sup> Interview with Martinez, Andrea, Popayan, May 30, 2011.

<sup>25</sup> Castells. *La Revolución de las Tecnologías y la Información*, 20.

<sup>26</sup> Araya. *Las representaciones sociales*. 30.

customs and social traditions of the time “*I my letters, my duties I still do by hand, (...) is how I would not like to lose this way of working*”<sup>27</sup>.

In this regard the teachers as it reflected in the stories are marked by a configuration that seals them the way they operate today in their daily lives and in their teaching. The education received by teachers, was developed under a basic method of academic formalism learning, verbalism discipline regime to some students who are recipient<sup>28</sup>, this training becomes a direct reference when they make decisions whether personal or professional.

In high school teachers had contact with technologies such as the typewriter, “*the informatics was based on the typewriter*”<sup>29</sup>, and this experience has influenced much in the way how some teachers already in their professional stage they incorporate the use of computers with students, another technology that was never used in class was the calculator because for a long time it was related to cheating and incompetent for not memorizing, “*with calculators, in my time it was bad, it was pure mental calculation*”<sup>30</sup>.

At the University teachers found difficulties of lack of equipment to develop practice within and outside the classroom, the space of the class was focused on the theoretical development, there was not evidence of a time when the technology was considered a support for construction of knowledge, and some personal and family dynamics affected the learning process, “*I did not have access to practice, (...) then I began as a stay away*”<sup>31</sup>.

Due to the little contact that teachers had with the limited technology at the time of childhood and youth, it reflects some reactions such the detachment, insecurity, fear, rejection manifesting towards tech gadgets if the latest tech, also shown in their life professional a replica of the beginning how they learned to interact with technology, as some authors statements: use the Internet to maintain traditional teaching patterns rather than to innovate<sup>32</sup>.

## **2. Implications of technological presence**

This category reflects that reality that teachers have built against these learning of ICT, as the culture in which people live, the place they occupied in the social structure, and concrete experiences that they face daily influence their way of being, their social identity and how they perceive social reality<sup>33</sup> Therefore it is important to show those early clashes that they had in the approaching familiarize and learn on ICT for their use, management and ownership. Understanding the personal appropriation moment when developing basic

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<sup>27</sup> Interview with Mariela Pérez, Popayan, June 5, 2011.

<sup>28</sup> Rafael Flórez. *Hacia una pedagogía del conocimiento*. (Bogotá: McGraw-Hill, 2008), 23.

<sup>29</sup> Interview Bolaños, Gabriel, Popayan, August 20, 2011

<sup>30</sup> Interview Bolaños, Gabriel, Popayán, August 20, 2011.

<sup>31</sup> Milena Rodríguez Interview, Popayán, June 3, 2011.

<sup>32</sup> Coll, Cesar, Teresa Mauri, Javier Goñi. *Análisis de los usos reales de las TIC en contextos educativos formales: una aproximación socio-cultural*. (Barcelona: Universidad de Barcelona, 2008), 14.

<sup>33</sup> Araya. *Las representaciones sociales*, 14.

skills to increase personal productivity of “*citizen master*” - by making use of ICT synchronous and asynchronously<sup>34</sup>.

As a first index of that reality is that teachers were trained with the fear of damaging the objects in their environment and with the idea that was wrong was something terrible, this affects dramatically at the adulthood stage to face complete new machines and that those seem to be damaged only by touch, “*one was said, do not touch, lest damage, one who grew up with that fear and that fear of damaging something*”<sup>35</sup>.

Teachers express a physical fear to manipulate artifacts but they express that with a digital literacy, to initiate this process are the motor and spatial requirements to which they are not accustomed, for teachers imply a great effort when they have the first contact with the computer, that relationship management with the mouse cursor movement on the screen is another perspective of the movement, it generates a new great demand of the hand muscles, of the view on the screen, since in increasingly smaller spaces, there are large number of information with multiple languages and the difference between giving a click in a certain place and a half centimeter in different directions is radical when access to a resource or link. These body requirements lead that some teachers may reconsider their digital literacy and choose to find another person who will do their work.

Another new aspect is the use of certain terminology, unaware to the non-verbal languages with which they were trained teachers in most of his life, as they have transformed the ways of reading and writing, these are leaving without base the stubborn identification of reading regarding just the book and not only to the plurality and heterogeneity of texts, stories and writings (oral, visual, musical, audiovisual, computer) now in circulation<sup>36</sup>, usually generate situations that are part of estrangement and fear of the ICT learning for teachers as it is something completely new from the nominate form; these aspects are important in the challenge of the teachers when deciding confront these ICT learning.

When teachers use the computer, your body undergoes a series of adverse health complaints, the most common are: eye strain leading to headaches, blurred vision or eye irritation, back pain and cervical pain also lead to continuous headaches due to bad postures adopted, tightening of the muscles and joints in the arms, wrists and fingers as a result of misuse of the keyboard and mouse. Discomfort that teachers feel they are not used to these new demands body, preventing them from working long pass and sometimes limiting and slowing the personal appropriation of this tool, “*I had a serious problem with vision; (...) headache is common*”<sup>37</sup>.

Despite the hassles mentioned above, teachers express have received their digital literacy basically in two ways: first, from the “*tinkering*” is, by its own means and interest, and the second, taking computer courses for individual initiative or institutions which were focused

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<sup>34</sup> Ministerio de Educación Nacional. *Apropiación de TIC en el desarrollo profesional docente*. (Santafé de Bogotá: MEN, 2008) <http://www.iered.org/cmapserver/servlet/SBReadResourceServlet?rid=1H1GMHSFS-1RHS5MF-1LQ> (June 20, 2012).

<sup>35</sup> Interview with Mamuscay, Adriana, Popayan, April 30, 2011.

<sup>36</sup> Juan Martín Barbero. *La educación desde la comunicación*. (Santafé de Bogotá: Norma, 2002).

<sup>37</sup> Interview with Molina, Milena, Popayan, June 30, 2011.



on handling the computer and generally lacking heavily on learning from pedagogical and technological reflection should be done in terms of the implications of the incorporation of computers in school settings, *“I learned the computer without lessons, I’ve sat and I’ve started tinkering”*<sup>38</sup>.

Teachers expressed that with good guidance in training can get acquainted and learn to use ICT, *“we went by the steps and we took note of every little step we took and we were learning.”*<sup>39</sup> However, this learning stays in the manipulation of the tool, then incorporate ICT teacher training includes the ability to find, use and create information in a consistent manner with current demands on educational processes. There is no chance to talk about ICT incorporating if teachers do not understand its influence, the changes made in their students, the new ways of learning that have to be considered for its work and, of course, if teachers themselves do not use them and those are part of their routine<sup>40</sup>.

Therefore questions arise:

*How we are training teachers to use information technology in school; what is the emphasis of the courses or teaching, and instrumental, how much is done to support school communities in the processes of formation and innovation in the use of these technologies, how much is being promoted the networks generation their use experiences and the resource sharing, they are questions that must be done both faculties of education and other public and private institutions that offer continuing education programs in this field?*<sup>41</sup>

Another aspect that has limited the learning and use of ICT at school by teachers is their idea that exist the possibility that it will replace them, in the future, *“imagine how many teachers are going to be replaced like that, it is already done”*<sup>42</sup>. Also they show a concern for the dehumanization that technology has brought to society as the labor replacement, affecting aspects the lives of people such as theft, threats, violation of privacy, changing tastes and youth priorities, social networking dangers, among others. It means, there are feelings of distrust and threat contributing to the use of technology *“It is known for the extensive damage caused by the technology”*<sup>43</sup>.

Despite this, the teachers recognize the importance of learning about technology and they are willing to take the challenge of this new process for them, it is to highlight the positive attitude that they show, *“It is a matter of will, a matter of decision, and is a matter of understanding the service and the benefit that this is providing”*<sup>44</sup>. Teachers in today’s society require two types of basic assumptions: A strong learning ability on which to base innovation and ability to adapt quickly to the changes, and continuous updating of

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<sup>38</sup> Interview with Sofia Osorio, Popayan, April 13, 2011.

<sup>39</sup> Interview with Andres Martinez, Popayan, May 30, 2011.

<sup>40</sup> UNESCO, *Formación docente y tecnologías de información y comunicación. Logros, tensiones y desafíos* (Santiago de Chile: UNESCO, 2005),14. Available at: [www.unesco.cl](http://www.unesco.cl).

<sup>41</sup> Rocío Rueda, y Álvaro Quintana. *Ellos vienen con el chip incorporado. Aproximación a la cultura informática escolar. Instituto para la Investigación Educativa y Pedagógica*. (Santafé de Bogotá: Universidad Distrital, 2008).

<sup>42</sup> Interview with Martinez, Andrea, Popayan, May 30, 2011.

<sup>43</sup> Interview with Rodriguez, Milena, Popayan, June 3, 2011.

<sup>44</sup> Interview with Bolaños, Gabriel, Popayan, August 20, 2011.

knowledge<sup>45</sup>. Teachers have learned basically even handle word processing to edit various types of information, “you make life easier, more dynamic and faster”<sup>46</sup>, still lack the skills to adapt to new technologies and social changes typical of the time.

Teachers also recognize that technology is a tool in which children naturally unfold, and they learn quickly how to handle different technological devices, “children, give us class of that topic, they give us a lesson as a piece of cake”<sup>47</sup>, this situation creates a widening gap between teachers and new generations, as young minds are the most exposed and sensitive to the impact of technology, the current generation, also called digital natives grew up with computers. The neural networks of the brain of digital immigrants are very different compared to those of the natives, the young brain is connected digitally since childhood, adult brain must adapt to high technology if they do not fall behind<sup>48</sup>.

In this sense, teachers are aware that digital natives<sup>49</sup> are forward against the management and use of ICT, for this reason they feel fear and sometimes they are disarmed against pedagogical works that involving the use of these devices. According to Martin Barbero technology today refers not to the novelty of some devices but new modes of perception and language, new sensitivities and writings. Radicalizing the experience of disinclined produced by modernity, technology knowledge relocates changing both cognitive and institutional status of the conditions of knowledge, and leading to a strong blurring of the boundaries between reason and imagination, knowledge and information, nature and artifice, art and science, expert knowledge and worldly experience<sup>50</sup>.

This is evidence of how teachers reflect personal and professional discomfort in deciding approach to use and manage ICT, they feel they are being displaced by these technologies and that they in the near future will replace them, also do not know how to address the generational difference that starts to be visible in the classroom regarding the use of ICT, they do not see clearly a path for ICT can be a helpful in their duties.

## CONCLUSION

Teachers face many external and internal factors which limits them the process of incorporation of ICT, the first may be mentioned some as: their life stories are permeated by experiences where there is little interaction with ICT; the digital literacy processes received have been weak and focused on instrumental formations aside their personal and educational needs; educational institutions lack of the technological resources and sustainability plans for them to ensure a technological access of students and teachers without fear of individual responsibilities that may generate costs of such damage of the devices; the governmental requirements do not know the limitations and expectations of the

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<sup>45</sup> Carlos Carrasco. *Las tecnologías de la información y las comunicaciones (TIC) y la brecha digital*, 13.

<sup>46</sup> Interview Mamuscay, Adriana, Popayan, April 30, 2011.

<sup>47</sup> Interview with Perez, Mariela, Popayan, June 5, 2011.

<sup>48</sup> Gary Vorgan. *El cerebro digital. Cómo las nuevas tecnologías están cambiando nuestra mente*. (Madrid: Urano, 2009), 62.

<sup>49</sup> Alejandro Piscitelli. *Nativos digitales*. (Buenos Aires: Santillana, 2009).

<sup>50</sup> Juan Martín Barbero. *La educación desde la comunicación*.

school actors themselves who bear finally school demands and pressures of the incorporation of the ICT.

Second, the internal factors evidenced by teachers are characterized by a fear of harm exists technological devices that the distance from its use and management, is unknown pedagogical potentialities offered after the use of ICT; they feel they can be replaced by ICT and therefore react defensively to them, they think they perform individual and collective attempts to incorporate institutional ICT in the classroom; the little teacher earnings are intended for personal use technological investments, some for economic reasons, others because it is not their interests.

According to the above, it is necessary to generate national and institutional context policies according with the lived realities of school subjects, in order to build collective dynamics and effective to ensure the incorporation of ICT in educational marginal sectors.

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