El trabajo docente mediado con tecnologías de la información y la comunicación en la telesecundaria. Representaciones sociales de profesores

Teaching work mediated with Information and Communication Technologies in Telesecundaria. Social representations of teachers

Trabalho docente mediado com tecnologias de informação e comunicação na telesecundaria. Representações sociais de professores

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Resumen

El propósito de este artículo es exponer las representaciones sociales del trabajo docente mediado por las tecnologías de la información y la comunicación (TIC) de profesores de una telesecundaria mexicana. La premisa que orienta la argumentación sostiene que la incorporación de las TIC en la telesecundaria es un proceso azaroso y gradual que emprenden y construyen los docentes espontáneamente en su trabajo como educadores. Se trata de un estudio de corte interpretativo, cuya aproximación teórica metodológica recupera los planteamientos de la teoría de las representaciones sociales para profundizar en el sentido y en el significado que atribuyen los docentes al uso de las TIC como artefacto de mediación en la enseñanza. Para lograr el acercamiento al conocimiento de las representaciones sociales se utilizó la entrevista en profundidad, un cuestionario de habilidades digitales y el análisis documental. Los hallazgos dan cuenta de que los profesores representan la enseñanza mediada por las TIC como un proceso individual, voluntario y no planeado que depende del nivel de capacitación logrado por cada uno de ellos. Asimismo, no muestran resistencias importantes para el uso de las TIC, más bien están interesados en incorporarlas. Sin embargo, hay factores asociados a la formación, capacitación y

a las condiciones de trabajo que limitan el uso de *software* educativo especializado para la enseñanza.

Palabras clave: condiciones de trabajo, enseñanza, telesecundaria, TIC, trabajo docente.

Abstract

The purpose of this article is to expose the social representations (RS) of the teaching work mediated by Information and Communication Technologies (ICT) of professors of a Mexican telesecundaria. The premise guiding the argument argues that the incorporation of ICT in telesecundaria is a random and gradual process that teachers spontaneously undertake and construct in their daily teaching work. It is an interpretative study, whose theoretical methodological approach recovers the approaches of the theory of social representations to deepen in the meaning, in the meaning attributed by teachers to the use of ICT as an artifact of mediation in teaching; In order to get closer to the knowledge of the RS, the in-depth interview, a digital skills questionnaire and the documentary analysis were used. The findings show that teachers represent ICT-mediated teaching as an individual, voluntary and unplanned process that depends on the level of training achieved by each of them. Educators do not show significant resistance to the use of ICT, rather, they are interested in incorporating them; However, there are factors associated with training, training and working conditions, which limit the use of specialized educational software for teaching.

Keywords: working conditions, teaching, telesecundaria, ICT, teaching work.

Resumo

O objetivo deste artigo é expor as representações sociais de trabalho dos professores mediada por tecnologia de informação e comunicações (TIC) professores de uma telesecundaria mexicana. A premissa que norteia o argumento sustenta que a incorporação das TIC na telesecundaria é uma tarefa perigosa e processo gradual e construir professores espontaneamente em seu trabalho como educadores. É um estudo do tipo interpretativo cujo teórico metodológico abordagem recupera aproxima representações sociais teoria para aprofundar o sentido eo significado atribuído professores para usar as TIC como docente mediação artefato. Para alcançar a abordagem ao conhecimento das representações sociais em profundidade entrevista foi usado competências digitais a questionários e análise de documentos. Os resultados perceber que os professores representam as TIC ao ensino mediado como um processo individual, voluntário e não planejada, dependendo do nível de formação alcançado por cada um deles. Eles também não mostram resistência significativa para a utilização das TIC, em vez eles estão interessados em incorporá-los. No entanto, existem fatores associados ao treinamento, treinamento e condições de trabalho que limitam o uso de softwares educacionais especializados para o ensino.

Palavras-chave: condições de trabalho, ensino, telesecundaria, TIC, trabalho docente.

Introduction

The creation of the Mexican telesecundaria dates from 1968; It was part of a policy focused on educational attention in communities with high economic marginalization. These schools started operations in many cases without infrastructure, and focused on serving children in poverty. Schools multiplied throughout the country, without complete organization, some with one teacher per grade and sometimes for two or three. The directors were initially group teachers, commissioned in charge. The educational contents that they worked did not adhere strictly to the plans and study programs that existed for the level.

In September 2006, with the start of the new school year, the reform of study plans and programs was promoted in Mexican high school: thousands of teachers faced a series of changes that came out of this - officially known as the Integral Reform of Secondary Education -, for which they were not consulted. In a vertical way, the educational policy began to operate in the form of a waterfall; the professors were hastily trained, they were enabled and informed through courses in which the educators became multipliers of content that did not end up being clear to themselves.

The Integral Reform of Secondary Education generated diverse reactions in the teaching profession, in particular it refers to those of the telesecundaria teachers. The attitudes they showed went from surprise to discomfort, pressure, frustration, acceptance or resistance. The way in which this range of attitudes manifested itself corresponded to the set of didactic, pedagogical, methodological and epistemological changes that the Integral Secondary Education Reform implied, and especially regarding the incorporation of information and communication technologies (ICT).) for work in the classroom. With the implementation of the new curriculum, the Strengthened Program for Telesecundaria and the formal incorporation of the plans and study programs, digital resources were added as reference materials in this modality of secondary, which put the teacher in a dynamic of work and learning of new competences to advance towards the training of the digitized teacher. The proposal of the Strengthened Program for Telesecundaria aimed to de facto redefine the teaching competences of the professors; new knowledge, skills and competencies would have to be incorporated.

The internal organization of the teaching work was modified: different roles, activities and tasks came into play. New textbooks were designed for the students and the teacher in each of the subjects; They changed colors, structure and design. The books of the learning guide and basic

concepts were canceled, and ICTs were incorporated as a central element of teaching. Computers, the projector and the Internet took on a fundamental role in the reforming intention, as well as in the physical structure of telesecundaria.

The Integral Reform of Secondary Education and the Strengthened Program for Telesecundaria proposed reorienting the role of the teacher, leaving behind the traditional role of teachers and moving towards one of tutor and counselor of learning; the educator from the vision of the reformers should become a liaison, moderator, coordinator and facilitator. In addition to this, knowledge was articulated transversally, so that now, the contents of all subjects have a relationship. Classes were no longer televised sessions, the logical sequence and schedules were no longer mandatory; the use of digital resources was made and the television transmissions could be consulted at any time. However, all these described purposes faced the inertia and the dynamics of the precariousness of the subsystem; the training was not enough, as already suggested, teachers initially resisted its use, and many schools, particularly rural and marginal schools, did not have sufficient resources. For example, there were not the necessary computers for the number of children that attended, and in still others the didactic materials did not arrive. In addition, there was not enough time available during the working day for the efficient training of the teaching staff, so that in most cases, the teachers had extra time outside the working hours for the training, which he was not economically remunerated.

The National Institute for Educational Evaluation (INEE) registered in 2013 1 318 288 students in telesecundaria, that is, 21% of the national level enrollment; it also registered 18 326 schools of this modality, which represents 49% of the total secondary schools in the country, and of these 7.5% were unitary; almost half of the telesecundaria teachers are women, 48%, and the average age of the teachers was 40.6 years. Their level of studies is bachelor's or master's degree, and only 3% do not have a higher education degree. It is considered that in this modality of secondary the work load is greater than in others. There is a shortage of material, insufficient Internet access, computer programs for teaching, computer equipment, materials for the library and didactic resources (Backoff, Pérez and Contreras, 2015).

The presence of the technologies in the telesecundaria, from its foundation, is the mark that distinguishes them and, paradoxically, it is also one of the great avatars given the distribution and location of the schools.

In that sense, there are few studies on this subsystem that describe the use that ICT have in the learning and teaching processes, as well as the way in which it has impacted on the understanding of the content and the work of the teachers. Although this shortage has been remedied in recent years, studies that focus on telesecundaria are not representative considering the size of the subsystem.

It is noteworthy that the process of introducing ICT to education in the nineties had great resistances in the school environment. The reluctance of teachers at that time was mainly due to the lack of knowledge and skills for the use and management of these technologies, since the teacher usually avoids them even today when they do not feel able to handle them properly. By extension, these resistances were associated with the failure to incorporate ICT into teaching-learning processes (Sánchez, 2006). In this sense, several outstanding studies gave an account of the gradual differences in the process of the incorporation of ICT and its use as a technological dimension in the work of the teaching staff, as well as the absence of literature that gave an account of the form in which ICTs favor learning or not, the ultimate goal that motivated their incorporation (Ramírez, 2006). For Santillán (2006), ICT is an improvisation in most of the occasions, and a great limitation for its use is the economic one; Technology and maintenance is expensive for the average income of teachers and students.

An important limitation in the use of ICT is the initial training of teachers, which was not seriously addressed during the qualification of new teachers in terms of digital resources. In spite of all the mentioned, many kindnesses are attributed to the incorporation of the TIC in the schools, without that there is still conclusive evidences that demonstrate this type of affirmations. Guerrero and Kalman (2010) consider that ICT does not cause variations in learning processes, only in the procedures with which they are incorporated. Sánchez (2006), meanwhile, argues that teachers believe that with more timely planning and knowledge of resources can obtain better learning, as well as offer more information, interactive and simulations with which both, instructor and apprentice, could develop new habilities.

For its part, telesecundaria has gained in social legitimacy as an educational modality; it has been nourished by important technological advances, such as the Red Edusat, a television system with compressed digital signal that is transmitted via satellite. However, since then, there were factors that limited their development, namely lack of training and updating, inadequate school facilities,

delays in the delivery of study materials and the overvaluation of some technical resources (Barroso, 2014; Calixto, 2008), as well as the lack of support in the technical part (González, 2010).

Hence the interest to know how teachers of telesecundaria represent teaching work mediated by ICT. For all the above, the objective of this research is to identify and analyze the social representations that teachers build about their teaching work intervened by ICT in a telesecundaria of the economic region seven of Cholula, Puebla.

Social representations and the method

The social representations of the teachers that are signified in this text are constructed from stories of the teaching work mediated with ICT in a telesecundaria context and from the analysis of their experiences when incorporating these technologies into their practice as instructors. And from this we try to describe the meanings constructed by teachers and the social regularities of representation.

The study is interpretive and recovers the theoretical and methodological approach of the theory of social representations (Moscovici, 1979, 1993, Herzlich, 1993). The social representations in this study are the lens and the framework for the analysis of the meanings that educators construct; It is important to identify and recognize the logical arguments that the teacher makes about the technological artifacts with which he supports his work in the classroom and with respect to which he has taken a position, has information and attributes a meaning to it.

The social representations of the teachers are cultural expressions about what they do and what they are in their work; they share the orientation, acceptance, opposition and reconfiguration that they attribute to their task. Teachers construct representations that are configured and reconfigured in response to new information and events that they can experience, observe or be transmitted to them. It is considered that these social representations are built in the school spaces, in specific historical and political moments; in the interrelation with colleagues, school and educational authorities, as well as with educational policy guidelines that regulate the implementation of study plans and programs and specific programs to boost ICT. Finally, social representations lead teachers to take a position on their working conditions, the ICT resources with which they perform it, the way they perform and the results they achieve when using them

in their work as student trainers .

The research was conducted in a rural community; The telesecundaria school under study is located in a precarious socioeconomic context, in the economic region seven of Cholula, in the state of Puebla.

To configure the field of social representations, a documentary consultation and a diagnostic questionnaire were carried out that was applied to the nine teachers of the school and the director, with the purpose of knowing the level of ICT use that these subjects recognize, as well as identify those teachers with greater interest in the use and application of these technologies and with a greater positive attitude towards the use of digital resources. To choose the teachers to interview, the results of the diagnosis were considered first; second, the school principal's opinion about which teachers he considered to have the greatest skills in the use of these tools, and finally, the willingness they showed to accept the interview and share through several sessions their experiences and meanings on the use of the ICT in their teaching work. Three teachers, two men and one woman were interviewed; two with completed graduate studies in information technology and one with partial studies of masters in mathematics education; one for each degree of the telesecundaria.

To identify the meaning of the social representations of the selected teachers, an in-depth interview was used. This technique has shown its usefulness to explore the knowledge of the meanings that teachers attribute to their teaching practices and activities; it allows to deepen in the argumentation of meaning and symbols that on the education mediated by technologies, the orientation of the use and application of the digital tools in the classroom build the professors.

Next, the social representations that the teachers build about their work under the circumstances and the context already discussed are presented. It is exposed, as a preamble, how the field of social representation is built, as well as the determinations that impact on the process of configuration of this.

Results

The field of social representations of education mediated by ICT

The community in which the telesecundaria in study is located corresponds to the so-called high marginalization, with high migration from its population to the United States. In addition, its inhabitants are engaged in primary economic activities and has basic educational and health services.

The results of educational achievement reported by the 2016 National Plan for Apprenticeship Evaluation [Plan] show that the students of this school in the area of Language and Communication were classified in level I with 15.9%, in level II with 52.2%, in level III with 11.6% and in level IV with 5.8%; On the other hand, in the area of Mathematics the evaluators classified these young people in level I with 37.7%, in level II with 39.1%, in level III with 11.6% and in level IV also with 11.6%.

On the other hand, the Census of Schools, Teachers and Students of Basic and Special Education (CEMABE) of 2013 registers 1400 telesecundarias in Puebla. In these the equipment is insufficient, because only 1340 have computer equipment that serves, 32 does not work and only 741 have Internet connectivity (CEMABE, 2014), despite the textbooks of the Telesecundaria Strengthened Model (MFT)) refer to the query in specific websites and e-mail addresses. It should be noted that the growth of the telesecundaria in Puebla was considered in 1983 the most important educational effort in the history of the state (Muñoz, 2015).

The telesecundaria school under study is one of the oldest in its area and in the state. It was part of the group of founding schools of the subsystem in Mexico in 1968. It is a mature school community that has achieved through the management of its teachers and the director ICT resources for the operation of the MFT. As a result of the diligences carried out by the school collective before the State Government, in 2016 this telesecundaria was remodeled and equipped, thus they built a computer lab for 30 teams and rehabilitated different areas and bathrooms. In addition to this, through different efforts, they have also equipped their classrooms, which have a personal computer, projector, speakers, internet, textbooks, videos, among others. They also have a library that they adapt as an audiovisual room. In general, the school is friendly with the technologies, they have wifi signal and wiring in the laboratory. Of nine teachers who teach and the director, only one teacher does not use ICT on a daily basis. The applied diagnosis allowed to

know features about the use of ICT by teachers. The instrument was divided into two dimensions: 1) the level of use of ICT in general and 2) the use of digital materials of the Strengthened Telesecundaria Program. The scale of use is as follows: nothing, something, enough and a lot. The results presented in table 1 are concentrated by category, some of the items, for reasons of space, are not presented in this document.

In the first dimension, Level of use of ICT, in all aspects explored, teachers expressed to use a lot and very much ten of the eleven traits explored: electronic programs and devices, school management resources, resources in pedagogical aspects, electronic devices for ICT, specialized software for educational use, websites, social networks and applications (see table 1). One of the ICT resources that most refer to use is the software for school management (7 teachers); social networks (6 teachers), and also appears with numerous mentions the use of software for educational use (5 teachers use it a lot and 3 a lot). On the other hand, those who refer to using ICTs alone are between one and four teachers in nine aspects; the electronic programs and devices stand out (1 teacher); electronic devices for ICT (1 teacher); specialized software for educational use (2 teachers); the websites (3), the social networks (4) and the applications (3 teachers).

In the second dimension, Level of use of educational materials of the telesecundaria, the data show that 50% of the teachers refer to use only some of the audiovisual materials required by the telesecundaria educational model, while none of the teachers mentions much use of the printed materials required by the telesecundaria.

Tabla 1. Nivel de utilización de las TIC por los profesores de la escuela telesecundaria

	Nada		Algo		Bastante		Mucho	
I. Nivel de utilización de las TIC	f	%	f	%	f	%	f	%
1. **Nivel de utilización de programas y dispositivos electrónicos**	0		1	(10)	4	(40)	5	(50)
2. **Nivel de utilización de aspectos de gestión escolar**	0		0		3	(30)	7	(70)
3. **Nivel de utilización de aspectos pedagógicos**	0		0		6	(60)	4	(40)
4. **Utilización de dispositivos electrónicos para** las **TIC**	0		1	(10)	4	(40)	5	(50)
5. **Utilización de software especializado de uso educativo**	0		2	(20)	5	(50)	3	(30)
6. **Utilización de** sitios web	0		3	(30)	4	(40)	3	(30)
7. **Utilización de** redes sociales	0		4	(40)	0	(0)	6	(60)
8. **Utilización de** aplicaciones	0		3	(30)	2	(20)	4	(40)
II. Nivel de utilización de los materiales educativos de la telesecundaria								
1. **Utilización de los dispositivos electrónicos (equipo de cómputo) que requiere el modelo educativo de telesecundaria**	0		2	(20)	6	(60)	2	(20)
2. **Utilización de los materiales impresos que requiere el modelo educativo de telesecundaria**	0		2	(20)	8	(80)	0	(0)
3. **Utilización de los materiales audiovisuales que requiere el modelo educativo de telesecundaria**	0		5	(20)	3	(30)	2	(20)

Fuente: Elaboración propia

In general, the field of social representation described shows that ICTs are part of the daily routine of telesecundaria teachers, as well as they refer to the daily use of ICT resources. However, the audiovisual materials of the MFT are little used by half of the mentors, 80% use the educational software enough or a lot and only two teachers use them little. Under this frame of reference of use of the TIC is that it acquires significance its representation on the teaching mediated by the technologies of the information and the communication.

Social representations of teaching work mediated by ICT in telesecundaria

The introduction of ICT in telesecundaria was motivated by SEP programs

The Strengthened Model of Telesecundaria was elaborated on the occasion of the educational reform to the Mexican secondary school in 2006; With the arrival of this model, ICTs were incorporated into the telesecundaria subsystem as resources for teaching work. However, the first approaches with these artifacts already had an antecedent. The professors realize that the first computers arrived as part of the programs of the Federal Ministry of Public Education (SEP), which gave impetus to digital tools.

> In the first place, when they told us that there were going to be [computers] at that time, like in 92, more or less, 90, 92, the famous COEBA, when they gave the first computers, that it was handled with a disk of 3 and average, it was a revolution because the boy did not know how to handle it. It was even a single computer, the ones we had. When we started to associate the curriculum with the machines, it was also something new for us. And we began to see that it was definitely novel, it was interesting, yes? The interaction with the machine, in a matter of discipline, discipline as such within the group, did not relax, even the boys were very attentive, they were very interested because, I repeat, it was something new (E1, 404:404) (cursivas añadidas).

The teachers represent the technology as "a revolution" that mobilizes the activity in the classroom, both for the student and the teacher, who, the latter, should try to associate the use of the machine with the curriculum, although it was not clear how, nor with what of the programs and curricula. It was an interesting artifact in the classroom that marked the first approach with ICT even for themselves, who, between surprise and fear, faced the use of the computer in telesecundaria.

The same thing happened with the execution of the MFT, ICTs were included in the Government program and in the books that were part of the didactic resources package. The teachers emphasize that their approach was "in 2006, more or less, it was in Izúcar de Matamoros" (E2, 345: 345), "that's where I started working with the boards, [in] 2006, more or

less "(E2, 353: 353). In any of the cases mentioned, its approach with ICT was, in summary, as part of the implementation of the educational policy promoted by the Government to articulate these in the classroom.

Between learning and understanding with ICT: the dynamics of the classroom

Questions about the impact of ICT on the processes of building student learning and school results do not yet have univocal answers. Teachers value its use and even highlight some benefits of its use in the teaching process, such as attracting students' attention and interest in the topics they work on; Give a playful atmosphere to work in the classroom and even highlight its use as a stimulus system for participation and collaboration. However, they do not yet have a structured representation of their impact on learning; Although the attitude is positive regarding the use of ICT in education, the information is insufficient to account if it is that young people have greater and better learning. Social representation, therefore, is initial, barely recognized and in it some distinctions between learning and understanding are appreciated.

> That the students achieve better comprehension, that they better understand the topics and about it they will get data and information through the video, of the video about everything, that they see in History and in Mathematics, because they realize how the curve changes to change a term, that is what is intended (E3, 625:625)**.**

While another interviewee says:

> I think learning. We learn the multiplication tables "five by four, twenty; six times four, twenty-four. " But did you understand what it is to multiply? You can learn, I tell my students, "understand" and I can say that hydrochloric acid is HCl, ah, but what is an acid. You are not understanding, you are understanding, but you are not understanding, that is, it is not the same as having the formula and you already learned it and you will see it and you will understand it (E2, 383:383) (cursivas añadidas).

ICTs appear as a reinforcement to facilitate comprehension and even learning understood as memorization of information; In this case, the teacher believes that understanding and learning allows students to understand, which is a central act in the learning process; but, in general terms, the differences between the terms with which they refer to the process are not yet clearly understood. Social representation, it is reiterated, is still under construction, there is a good attitude, although the information is not yet clear.

The use of ICT in the classroom is a personal decision

The policy of incorporating ICT in the telesecundaria was not forced, nor coercive, rather it was treated as a voluntary and gradual activity, subject to the particular conditions of each school and the teaching staff. Although textbooks included the use of ICT, it was not in the beginning, nor is it currently, a mandatory task; it is rather an incremental, individual, self-taught and personal exercise, associated with the most personal decisions about the organization and planning of teachers' teaching work: "What happens is that the teacher decides how the technologies will work in the laboratory of computation, and each teacher is very independent "(E2, 440: 440). The teacher's skills, training and interests, as well as the competence to deal with self-learning at work, come into play for its use. Using ICT or not depends exclusively on skills and the way in which teachers value their use, "but that is already the initiative of each teacher" (E1, 309: 309). The degree of use is directly associated with the level of knowledge they have of the team and the programs, independently of the processes they went through for their training and preparation in the use of ICT.

> There are teachers who handle it very well, there are teachers who manage it halfway and there are teachers who still refuse to handle it (...), some handle ICT, others manage it and there are some who are already refusing to everything and already (E2, 468:468).

However, in this school, eight of the nine teachers use ICT for different tasks of teaching, school management and personal use: "We all work with technologies at different levels, that is, we do not promote them, they are used in a very minimal, very simple "(E3, 239: 239). Even when textbooks send them to incorporate ICT, they are subject to the will and capacity of each teacher. "It comes as a recommendation and even they handle it as support, not as something, this,

mandatory, let's call it, but it comes as support" (E1, 631: 631).

Recognition of students for their work in the classroom

ICTs are instruments that favor certain work dynamics in the classroom, allow solving joint work, stimulate and reward the completion of a task or exercise. In addition, it fosters a dynamic and participatory interaction by enabling students to choose the audio or video resources of their choice, as well as facilitating the establishment of a relationship of commitment, exchange and collaboration for their learning.

> Yes. And, above all, how to recognize the work because "let's see who's done?", "No, well, me," "come out, tomorrow" or I'll see you silently. I see the team that is working and they share "look, I did it like that, I did it like that", "go out, tomorrow your team what music do you want?", "No, so that's it", "but we'll keep working " Already the next day they bring the movie, they bring the music. "Teacher, can we do this? Master, can we do the other?" So, they are being recognized for the task they did yesterday, so that has helped me. "Do you see as if you can?", "No, well, we want to work like that team", "they see how it can be done", "well, tomorrow who does it", "me, me, me", "No, please, we are going to work and already in the course we see to see who corresponds". So what I do, I urge them, well, for me and for them, it's a prize that the music that I brought is the one that is being listened to (E1, 509:509).

ICT mediates understanding in teaching, but also stimulates it and generates a playful environment in the process of learning-understanding-understanding; it is a resource for the exchange of actions, attitudes and recognition for the work dynamics generated in the classroom, in which teachers represent them as elements that favor the dynamics of working with students.

Exposing yourself to not knowing is a risk when using ICT

Teachers who assume the risk of incorporating ICT in telesecundaria classrooms on a regular basis have not received training for the use of educational software, that is, specialized for learning the content of the plans and programs of study. In fact, they do it by professional and personal initiative, however they are aware that they do not have an expert use of the programs

and that they are exposed to errors. Their social representation is of risk, of errors, of exposing themselves before the group. And, nevertheless, they assume it.

> They begin to say "what happened, teacher?" Maybe they do not tell you, but after a while between them and between the whole school "oh, the teacher wanted to put this on us and it turns out that it did not work out, that it was one thing and that he was wrong". That is the detail, that is, you are going to graph and suddenly you have graphed, you were wrong in the sign and now we are going to see it in the package and at the time you open the package another thing comes out and you say "and now what do I do? " I told my students: "to start, I'm wrong as any of you, eh, I can make a mistake" (E2, 827:827).

The use of free software for educational use: CMapTools1**, FreeMind**2**, Geogebra**3**, VLabQ**4**, Purpose games**5

The programs of educational use that the professors incorporate to support the teaching in some courses are software of free and gratuitous access. Because of the high cost of purchasing licensed software, they would not be able to buy it, nor the school, nor the parents, nor the teachers. The programs are selected according to the personal disciplinary interests of the teacher, motivated by those courses in which they feel safer and by the knowledge they have. In this line, the teacher interviewed prefers the videos: "Well here at school most do use technologies, especially for this, for a lot of video, but as well as interactive, interactive, no, there is almost no" (E1, 821: 823).

The teacher interviewed three has a specialty in Spanish and is interested in the resources that facilitate the organization of the texts and their understanding, so she uses the Cmaps Tools and the Free Mind.

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[1] *Software* de uso educativo para elaborar mapas conceptuales.
[2] *Software* de uso educativo para elaborar mapas conceptuales.
[3] *Software* de uso educativo para resolver ecuaciones.
[4] *Software* de uso educativo para hacer ejercicios virtuales de química.
[5] *Software* multipropósito de uso educativo, incluye juegos interactivos de inglés.

Last year, yes, knowing the MapsTools and FreeMind, I said "ah, the MapsTools, mental maps, the FreeMind, we are going to work with images of the parts of the house and then the guys who put them in the bathroom '*bathroom*', '*bedroom*', '*livingroom*'" (E3, 393:393).

The teaching of English is a subject in which teachers express particular difficulties, so the use of programs is an important support.

I liked it, but I do not have 100% dominated the Purpose games. That I have it on the platform, it is a house where it has the parts of the house, it is visualized and it is a game, it is interactive. Then you click, start and appear for seconds bathroom and fast I have to locate bathroom (E3, 459:460).

The interviewee two is an engineer in chemistry, so he is more familiar with working with Geogebra, a program to solve equations, as well as with the virtual chemistry laboratory (VLabQ).

With Geogebra it is very fast to make graphs, very different than with Excel, because in Excel you have to give data and then make the graph. In Geogebra no, because in Geogebra you just put one in the equation and it automatically gives the graph; that's the difference, then, this, so let's say: "third parties are going to do graphics this week" (E2, 440:440).

In short, teachers in their process of incorporation to the teaching of free software mainly use only those programs that can be approached safely, by the level of knowledge they have of it. However, they also assume the risks of exploring and experimenting with resources and interactive with those who learn on a daily basis.

Information queries are made in free access sites

Telesecundaria currently does not have books and material and digital resources updated with the educational reform of secondary plans and programs of study of 2011. This situation causes teachers to incorporate materials that fit the contents that they should review on a daily basis. In that exercise, they use the Google search engine to the YouTube page to use videos. "It's practically where I work more, on YouTube, and to get information, well, there are several, several pages, I do not have the name of them" (E2, 674: 674). Students turn to the Wikipedia

encyclopedia for specific topics: "They enter Google and generally enter Wikipedia, they see some images or some videos" (E3, 247: 247). On the official materials of the telesecundaria, although they are represented as valuable, the image that is associated is obsolescence, some videos are more than twenty years old, and are no longer attractive in their design, so they turn to more recent materials which are contemporary for the students.

The use of ICT in the classroom is not visible teaching work

The incorporation of ICT in the teaching of telesecundaria is a random and spontaneous matter, the resources and didactic strategies incorporated are not made visible in the formal planning process of the teacher and the school. The didactic planning of the classes does not describe the use of ICT, they are not specified; neither the didactic sequences in which it is used nor the activities and resources used, so it is a part of the teaching work that is invisible, as if it were not done: "As well as in the planning, no, but we all know that we must use the technologies" (E2, 456:456).

> Then one is arranging the videos or the information that one finds on the Internet according to the needs, but we have not done that. "I already have my planning, I will see this video, this video, this video and here are the links" , that we have not done, no. Yes we use the videos, but we do not have the leagues (E2, 616:616).

The use of ICT is naturalized in the daily use of the cannon, the personal computer, the interactive whiteboard, the Internet connection and the YouTube digital videos. Social representation, therefore, is objectified in digital artifacts, whose use is expressed in intuitive and complementary actions that teachers use to facilitate understanding and their daily task. "Well, incorporated technologies, yes; no, planning like that, no. Between parallels we get to use certain videos, nothing more "(E2, 480: 480).

The lack of equipment limits work with ICT in the classroom

The economic condition of the students and the schools, as well as the cost of the computer equipment and its software, are still the main limitation for the work with the TIC in the telesecundaria. The lack of equipment can even discourage teaching work. The classrooms do not have enough computers for each student, only with the teacher's and, in some cases, with the minicomputers, which are also insufficient; It is also not possible for students to work from home in exercises, since they do not have a personal computer or internet signal, so they can only carry out the practice in the school space.

> There are interactive ones where you think or think that the boy has his computer so he can handle them and, therefore, we only have one in each group. I see that disadvantage, that they are made for a society, then, economically, eh, media, yes ?, where they can take their lap, where they can carry an intelligent cell phone, they call it, and all that kind of things, they can interact , can you feel, can you touch it? If maybe today we are going to see an interactive and I do not have the opportunity to enter computer or computer lab, it slips and already, by tomorrow and lost interest. And if maybe there is space after tomorrow for my group, because they do not even remember, right? So, I see that disadvantage (E1, 606:606).

Social representations about resources are of insufficiency and scarcity. But the videos, audios, films and documentaries are resources present permanently in the classroom of this telesecundaria.

More time in the classroom to work with educational software

The teaching work with ICT requires additional knowledge of teachers and students for the use of the programs, which in the social representation of the teaching staff implies more work and more time of work. In its conception, the one dedicated to each learning content is required, the subject programmed in the curriculum and later the learning of the software, which is not easy, since there is little time allocated to the computer lab, the only place in which there is enough equipment for all the students. Thus, the teacher chooses the topics that do not require much time in their consideration for the use of educational software, because "they already do it

by themselves and they can do the graph and they can already understand it, but you also have to teach them that program, work it and it's longer, that's why I do not really put it in volumes" (E2, 661:661).

ICTs are dispensable: you can go back to work as before

For teachers, ICT is a support, an additional resource that can be dispensed with and that should not affect the processes of learning construction. Although they have incorporated them successfully, they are not indispensable for the accomplishment of their work. "No, this, the video does not have to replace, if it can not be reproduced, we advance with our books, with the material that we have available" (E3, 554: 554). Working without ICT is not a problem for teaching work, teachers can develop their task with or without the team. In short, the absence of ICT in school is not represented as a restriction or, rather, the importance that digital materials and ICTs have taken in the telesecundaria classroom is ignored.

> Maybe it would take away what we are used to. To watch the videos, some movie, some short film, yes? But the learnings have to continue, they carry books, I carry my books, I carry my notes, I take the planning (E1, 485:485).

Another of the teachers interviewed contributes the following in this regard:

> Another thing, if you already got used to it and how right now you do not have it: "and now what do I do? How do I do it? "And again you go back to the stage when you did not have the material, but that does not mean that you're not going to work, you have to see the topics (E2, 309:309).

In this way, the social representations about the absence of ICT in the teaching process are considered as dispensable, since they do not consider them indispensable to develop their teaching task. In other words, the representation is constructed and the attitude is one of indifference.

Conclusions

The incorporation of ICT in the processes of teaching work and the construction of learning changed the dynamics of telesecundaria. In the social representation on the logic of teaching work with ICTs, teachers mean that since the incorporation of these digital tools, and particularly from the incorporation of the Strengthened Model of Telesecundaria, they moved from a rigid model of teaching, focused on the repetitions of television, to a more participatory and democratic, which takes into account students, with more confidence and security, with an interest in fun and playful learning, based on the use of audiovisual resources and some Interactive and creative, that give more security to both teachers and students. On the other hand, in the social representation of teachers, students also had changes in relation to their own learning, from passive and rigid attitudes to flexible and collaborative processes; In the representation of teachers, digital resources facilitate the understanding of contents.

The process of implementing the Strengthened Telesecundaria Model had important weaknesses: the infrastructure and equipment was not timely and sufficient. However, the field of social representation configures that the group of management of teachers and management, as well as the individual efforts of each teacher invested in their professional training, promoted the weak implementation of the ICT policy by the federal government to benefit of the school community.

In the particular case of this study, in the social representations the professors mean the dynamics of the use of the TIC with clarity: the representation is structured and the attitude in general is positive, describe that the introduction of the TIC to the scholastic scope was impelled from the SEP, its use is voluntary and a personal decision even when it involves exposure risks to its students. Regarding this, the use of ICT focuses on audiovisual materials and queries on Internet sites, only consider the use of educational software possible in the case that it is free access and the programs that begin to incorporate are linked to your professional training Likewise, the lack of equipment limits the teaching work and the use of special educational programs requires additional time that they do not have at times.

Resistances for the use of ICT are practically nil. The uniqueness of the determinations in which professors appropriate their training process to implement ICT, such as the postgraduate studies they studied, the experience accumulated by their working time at the level, as well as the management capacity of the school collective , favored the incorporation of technologies in

teaching. In spite of all the above, the systematic use of specialized software for educational use is still pending in the Mexican telesecundaria.

References

Backoff, E. E., Pérez, M. J. y Contreras, R. S. (2015). Las telesecundarias en México: resultados de TALIS 2013. México: Congreso Latinoamericano de Medición y Evaluación Educacional (Colmee).

Barroso Martínez, A. (2014). La construcción social de la tecnología a propósito de la educación:el caso de la telesecundaria en México. Revista Latinoamericana de Estudios Educativos , XLIV (4), 107-129.

Calixto, R. y Rebollar, A. M. (2008). La telesecundaria ante la sociedad del conocimiento. Revista Iberoamericana de Educación 44(7), 1-11.

Censo de Maestros, Alumnos y Escuelas de Educación Básica [Cemabe] . (2014). Censo de escuelas, maestros, alumnos de educación básica y especial. México: Cemabe. Recuperado de http://www.censo.sep.gob.mx/.

González, J. R. (2010). Acercamiento de profesores de telesecundaria al uso de herramientas digitales en la clase de matemáticas. (tesis de maestría). Cinvestav/IPN.

Guerrero, I. y Kalman, J. (2010). La inserción de la tecnología en el aula: estabilidad y procesos instituyentes en la práctica docente. Revista Brasileira de Educação, 15(44), 213-405.

Herzlich, C. (1993). La representación social. En S. Moscovici, Psicología social II (pp. 391-418). Barcelona, España: Paidos.

Moscovici, S. (1979). El sicoanálisis su imagen y su público. Argentina: Huemul.

Moscovici, S. (1993). Psicología social II. Barcelona, España: Paidos .

Muñoz, J. R. (2015). La educación básica en Puebla durante el periodo de Guillermo Jiménez Morales (1981-1987), Revista latinoamericana de estudios educativos 45(1), 75-108.

Ramírez, R. (2006). Las tecnologías de la información y la comunicación en cuatro países latinoamericanos. Revista mexicana de Investigación Educativa, 11(22), 61-90.

Sánchez, L. (2006). El programa enciclomedia visto por los maestros. Revista mexicana de investigación educativa, 11(28), 187-207.

Santillan, M. (2006). Tecnologías de la información y de la comunicación. Revista Mexicana de Investigación Educativa, 11(28), 7-10.