Propuesta para la incorporación de las TIC en el plan de estudios 2018 de la Normal Rural Gral. Emiliano Zapata

Proposal for the incorporation of tic in the 2018 study plan of the normal rural "Gral. Emiliano Zapata"

Proposta de incorporação das TIC no currículo 2018 do Normal Rural Gral. Emiliano Zapata

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Resumen

El objetivo de esta investigación fue conocer cuáles eran las habilidades de las futuras docentes en formación de la Escuela Normal Rural Gral. Emiliano Zapata en relación con el uso de las TIC durante su práctica docente. Para ello, se diseñó y aplicó un cuestionario con el fin de conocer el grado de exigencia y rigor didáctico con que 73 docentes en formación (inscritas en el quinto semestre del ciclo escolar 2018-2019) usan las tecnologías en sus aulas. Los resultados demuestran que hace falta que se haga énfasis en el dominio y uso de las TIC, para lo cual se pueden impartir cursos para desarrollar competencias en plataformas como Classonlive, Canva, Goconqr, etc. Además, las alumnas comentan que si bien en el plan de la licenciatura en Educación Primaria 2018 se sugiere la práctica con las TIC, en realidad no existe una materia donde puedan adquirir esas competencias tecnológicas.

Palabras clave: didáctica con tecnología, formación docente, nuevas tecnologías, tecnología aplicada, uso de las TIC.

Abstract

The objective of this research was to find out what were the skills of future teachers in training at the Escuela Normal Rural Gral. Emiliano Zapata in relation to the use of ICT during their teaching practice. To do this, a questionnaire was designed and applied in order to know the degree of demand and didactic rigor with which 73 teachers in training (enrolled in the fifth semester of the 2018-2019 school year) use technologies in their classrooms. The results show that it is necessary to emphasize the domain and use of ICT, for which courses can be taught to develop skills on platforms such as Classonlive, Canva, Goconqr, etc. In addition, the students comment that although in the plan of the degree in Primary Education 2018 practice with ICT is suggested, in reality there is no subject where they can acquire these technological skills.

Keywords: Teaching with Technology, Teacher Training, New Technologies, Applied Technology, Use of TIC.

Resumo

O objetivo desta pesquisa foi conhecer quais as competências dos futuros professores em formação na Escola Normal Rural Gral. Emiliano Zapata em relação ao uso das TIC durante a sua prática docente. Para tanto, foi elaborado e aplicado um questionário com o objetivo de conhecer o grau de exigência e rigor didático com que 73 professores em formação (matriculados no quinto semestre do ano letivo 2018-2019) utilizam as tecnologias em suas salas de aula. Os resultados mostram que é necessário enfatizar o domínio e uso das TIC, para os quais os cursos podem ser ministrados para desenvolver competências em plataformas como Classonlive, Canva, Goconqr, etc. Além disso, os alunos comentam que embora no plano da licenciatura em Ensino Básico 2018 seja sugerida a prática com as TIC, na realidade não existe nenhuma disciplina onde possam adquirir essas competências tecnológicas.

Palavras-chave: didática com tecnologia, formação de professores, novas tecnologias, tecnologia aplicada, uso das TIC.

Introdution

The introduction of information and communication technologies (ICT) in the educational process has revolutionized the way of teaching and learning. In previous centuries, for example, a traditional education in which authoritarianism and memorization prevailed; At present, however, these principles have changed in favor of respect for the autonomy of the student, who now occupies the main role in the teaching process, since it is sought that he can develop his critical and reflective capacities. The teacher, in other words, is no longer the only source of knowledge (Espinoza Freire, Tinoco Izquierdo and Sánchez Barreto, 2017), since it is enough to have an internet connection for anyone to access all the free information found on the Web. The role of the teacher, therefore, has changed from being an exhibitor in the classroom to becoming a facilitator and accompanied by the student's learning process, which needs to develop their reflective skills to assess for themselves the abundant amount of audiovisual information available .

In this context, the importance of studying the training of teachers in ICT becomes necessary in the knowledge society, but for this, four transcendental changes must be taken into account: first, the importance of knowledge as a significant factor in quality people's lives; second, the global nature of our society; third, the ease with which technology promotes the exchange of information, and finally, the degree to which virtual collaboration (especially in networks) between individuals and institutions is displacing social structures. In short, the study of teacher training programs and their relationship with ICTs becomes necessary (Gamboa Robles, Save Laureano and Velazco Bórquez, 2016).

Indeed, at present it is vital that the future teacher is very well related to the use and implementation of ICT in education, since it is a tool that cannot be excluded from the student's learning process. Among the many skills that future teachers must acquire in their training, digital competence occupies a primary place. This refers to knowing how to use and incorporate ICT in the daily activities of students; In other words, it is not enough to know these tools, since the essential thing is to apply them. Therefore, it is essential that the future teacher in their professional preparation takes into account developing the following competencies: 1) have a positive attitude towards ICT, 2) know the uses of ICT in education, 3) use ICT in the field of their area of knowledge, 4) propose training activities and 5) evaluate using ICT (Saucedo Fernández, Jiménez Izquierdo, Salinas Padilla y Muñoz García, 2016).

All this new educational transformation, of course, requires institutional support and the creation of educational policies that consolidate the role of the teacher in this technological world. In this sense, the General Directorate of Higher Education for Education Professionals (DGESPE), through the Support Plan for Educational Quality and the Transformation of Normal Schools (PACTEN) at the state level has set some objectives that are described then; for example, 1) develop and implement actions for the training and consolidation of academic bodies, mobility activities, academic exchanges and agreements between higher education institutions at national or international level, as well as ICT certification (which is why it is It is important to identify ICT skills, as well as their use in the classroom) and command of a second language; 2) carry out formal and permanent tutoring, advisory and follow-up programs for graduates; 3) recognize the culture of evaluation of study plans and programs, as well as management processes as a useful tool in the continuous improvement of the school; 4) support the empowerment of teachers and management personnel, and 5) improve the physical infrastructure, giving priority to language, mathematics and science laboratories, libraries and multimedia classrooms, among others, as well as the acquisition of technological equipment and furniture, all this related to an academic project (DGESPE, 2017).

For this reason, table 1 shows how since 2012 the DGESPE - through the development of the Program for the Strengthening of the Normal School (ProFEN) - has carried out the allocation of resources for the modernization of infrastructure, technology, computer equipment and furniture at the Gral. Emiliano Zapata Rural Normal School (Institute of Basic Education in the State of Morelos, May 11, 2016) (table 1).

Tabla 1. Construcción, remodelación y adquisición con el recurso del ProFEN 2012 en la
Escuela Normal Rural Gral. Emiliano Zapata

Construcción	Descripción
Aula de tecnologías	Construcción laboratorio de TIC de 5 E. E. en estructura U1-C más obra exterior y andador que comunica el laboratorio con plaza existente.
Remodelación	**Descripción**
Aula de matemáticas	Rehabilitaciones generales, muros divisorios del edificio, rehabilitación eléctrica, alumbrado y tableros, rehabilitación de cancelería, rehabilitación de losa del edificio E de 11 E.E.
Aula de inglés	Rehabilitaciones generales, muros divisorios del edificio, rehabilitación eléctrica, alumbrado y tableros, rehabilitación de cancelería, rehabilitación de losa del edificio E de 11 E.E.
Equipamiento	**Descripción**
Equipo de cómputo	78 computadoras de escritorio
Pizarrones interactivos	3 pizarrones interactivos Smart SB680

Fuente: Elaboración propia con información de la carpeta de comprobación (ProFEN, 2012) del
área contable que se encuentra archivada en la Escuela Normal Rural Gral. Emiliano Zapata.

With this allocation of resources, in the Gral. Emiliano Zapata Rural Normal School, as of 2012, a language laboratory, a mathematics laboratory and an ICT laboratory was created to strengthen the 2012 study plan of the degree in Primary Education, the which marked the following training paths:

- *Psychopedagogical path:* Made up of 16 courses that contain teaching activities of a theoretical-practical nature, with an academic load of 4 hours a week of face-to-face work, with a value of 4.5 credits each.

- *Preparation course for teaching and learning:* Made up of 20 courses that articulate theoretical and practical activities focused on learning disciplinary knowledge and its teaching. The courses related to mathematical knowledge, science and communication and language have a load of 6 hours per week and a value of 6.75 academic credits each. The rest of the courses have a duration of 4 hours and a value of 4.5 credits. In this journey, the

teacher is ideally expected to have ICT skills, mastering application tools in related courses, with arithmetic, algebra, statistics, among others.

- *Additional language and information and communication technologies course:* Composed of 7 courses that integrate teaching activities of a theoretical-practical nature, with a load of 4 hours per week and a value of 4.5 academic credits each. This path is considered essential for the use of ICT, since the student in training must show full mastery and have achieved the competencies related to such area to be a promoter and promoter for the mastery of these competencies.

Now, with the indicated investment, two important aspects are fulfilled within the program: 1) develop and implement actions for the formation and consolidation of academic bodies, mobility activities, exchanges and academic agreements between higher education institutions at the national level or international, as well as certification in ICT and command of a second language, and 2) improve the physical infrastructure, giving priority to language, mathematics and science laboratories, libraries and multimedia classrooms, among others, as well as the acquisition of technological equipment and furniture (DGESPE, 2017).

Having explained the above, it can be said that in this work the following questions have been raised: what are the abilities of future teachers in training at ENRGEZ in relation to the use of ICT during their teaching practice, after two semesters? of having taken courses in the area of technologies? Is it necessary to re-implement subjects focused on the use of ICT in the 2018 plan of the degree in Primary Education, as was the case in the 2012 Plan?

Theoretical framework

The use of technologies in education can be traced back to the 1970s with the implementation of the audiovisual media available at that time, that is, the overhead projector, television and video recording, tools that gave the teacher the opportunity to enrich their work with innovative and stimulating mechanisms for students. The educational problem, however, does not only lie in the need to implement emerging technologies, but also in the preparation of both teachers and students in terms of the rational and informed use of these resources, because in this way the processes can be enhanced. pedagogical in general and the training needs of students in particular.

The vision of the future to be at the forefront is an element of utmost importance, as well as the economic, training, technological, and connectivity resources so that public education can have an offer in accordance with social demand. Technology then becomes a key element according to demand (Cruz, Loya, Perdomo and Rivera, 2015).

The Director of the Cabinet of the Organization for Economic Cooperation and Development (OECD) and Sherpa, before the G20 mentioned that "ensuring that each child reaches a basic level of proficiency in reading and mathematics will do more to create equal opportunities in a digital world , that only expand or subsidize access to high-tech services and devices "(para. 4). In 2012, 96% of 15-year-old students from OECD countries had a computer at home, but only 72% used one at school. In general, students who use computers moderately in school tend to achieve better learning outcomes than those who use them sometimes. However, it should also be expected that students who use computers very often in school perform worse, even after taking into account the social origin and demographic characteristics of the students.

In Mexico, 58% of students had a computer at home in 2012, the lowest percentage among OECD countries. Among favored students (those in the top 25% of socioeconomic status), 86% had an Internet connection at home, in contrast to 6% of students in the most disadvantaged 25% (OECD, 2015). Even so, it is worth noting -as the measurements made by the OECD from PISA 2006 indicate- that Colombia, Mexico, Spain and Portugal stand out as the countries that most closely approximate the OECD standards with respect to the number of students per computer in the educational establishments (Organization of Ibero-American States, August 2, 2010).

Another result of the OECD study is that in Mexico computers are used more to teach mathematics than in the average of the countries that make up that body. However, students who reported using computers frequently in their math class scored poorer on PISA math assessments than those who reported not using computers in math lessons. Mtra. Gabriela Ramos (OECD, 2015, para. 8), also noted that there is a need for school systems to find more effective ways of integrating technology into teaching and learning to provide teachers with instructional environments that support 21st century pedagogies. , and preparing children with the skills necessary to succeed in the future. "Technology is the best way to significantly expand access to knowledge. To realize the potential that technology offers, countries must invest more effectively and ensure that teachers are at the forefront in designing and implementing this change." (OCDE, 2015, párr. 7).

In addition, one must think about how to educate a generation of "alfha", children of "millennials", who will be the most formally educated generation in history, since they will begin to form earlier and for longer than past generations. . They are expected to be materialistic and technology-focused, more enterprising than previous generations, shop primarily online, and have less human contact, influenced by their Gen X and Y parents. Simply put, they will be more self-reliant, better educated, and prepared for great challenges (Rebolledo, February 20, 2017).

For all this, it is necessary to develop innovative proposals in the classroom, which, although they can be seen as a new burden for the teacher, must be worked on in the way of conceiving, managing and remunerating the work through the integration of ICT. For this reason, a transition stage is envisioned in which the representations of modern schooling are included in the information society (Castañeda, Carrillo and Quintero, 2013).

In this sense, the "Connected Mexico" project of the government of the Republic that contributes to guaranteeing the constitutional right of access to broadband Internet service (article 6 of the Constitution), specifies that all this effort that the government of the Republic deploys, In keeping with the constitutional mandate to achieve a Connected Mexico, it aims to close the digital divide in our country and achieve what is undoubtedly the challenge of our century: "Digital literacy, ensuring that all Mexicans have access to information technologies "(Ministry of Communications and Transportation [SCT], April 7, 2015, paras. 4-5). The Normal Rural has the infrastructure, but no signal is received.

For some time now, plans to integrate the use of ICTs into the education system have been part of the public policy agendas of several countries, since they can be used as tools to improve public education at a lower cost than traditional investment in infrastructure. educational content production and dissemination; however, they should only be part of the actions aimed at improving instruction (Vásquez, March 22, 2016).

On the other hand, in the 1997, 1999 and 2018 study plans, subjects or courses that are related to the use of ICT as another support tool in the teaching and learning process in students were not incorporated and were discontinued. . In other words, it seems that there is no congruence between the infrastructures implemented with the development of the study plans.

Methodology

For the analysis of the incorporation of ICT in teaching practices and in the optional subjects of the 2018 ENRGEZ curriculum, a questionnaire was designed in order to know the degree of demand and didactic rigor with which the teachers in training use technologies in the classroom during their teaching practice. This information collection technique allows obtaining data on the concepts that derive from a previously constructed research problem (López and Fachelli, 2015).

Specifically, 73 female students enrolled in the fifth semester of the 2018-2019 school year participated. These students entered during the 2016-2017 school year with the 2012 study plan. For the application of the questionnaire, the online survey platform Survio was used, since it was impossible to attend in person the 50 primary schools in which they participate approximately 30 teachers who supervise the teaching practice day. The data collected later was transferred to the teacher SPSS Statistic 19, software for analysis of the survey. The questions that were asked in the questionnaire are shown below:

1. Did the classroom where you were doing your internship have technological means such as a computer, projector, audio and internet?

2. From 0% to 100%, what percentage do you consider that you make use of some technological means?

3. In what percentage do you consider your mastery in the management of ICT?

4. How often do you have technical problems in the use of technologies? What are the main ones?

5. Does the ENRGEZ have computer equipment and software so that you can develop digital teaching materials?

6. Have the subjects you studied in the first and second semester focused on the use of ICT help you during your teaching practice?

7. Mention some software that you use for development and during your teaching practice.

8. Do you consider a refresher course necessary after two semesters of not having received a subject in this regard or do you think that optional subjects should be implemented in the 2018 Plan?

Results and Discussion

The questionnaire applied to the students during their teaching practice day shows very interesting data, which are shown in table number 2, which clearly reflect the demand for the use of technologies in the primary schools where they carry out their teaching practice.

Tabla 2. Respuestas de la encuesta estructurada dirigida a las alumnas que estuvieron en jornada de práctica docente

PREGUNTAS	RESPUESTAS DE LAS ALUMNAS PRACTICANTES
1	Las alumnas refieren que 75 % de las escuelas primarias donde realizan su práctica docente cuentan con equipos tecnológicos, como computadoras, proyector, audio y servicio de internet, mientras que 25 % señaló que carecen de estas herramientas. Por tal razón, hacen uso de ellas por lo menos una vez al día.
2	Todas las alumnas informaron que por lo menos una vez al día utilizan proyector para revisar algún material didáctico o para la elaboración de su planificación.
3	Las estudiantes consideraron que su dominio de las TIC se hallaba entre 60 % y 80 %.
4	Las alumnas señalaron que los problemas técnicos presentados eran mínimos y que se solventaban con facilidad.
5	Todas las alumnas dijeron que contaban con equipos de cómputo para desarrollar material didáctico (teniendo congruencia con la fuente de información consultada en el área de contabilidad con la carpeta de comprobación del ProFEN 2012 ante la DGESPE).
6	Con respecto al Plan 2012 de la licenciatura en Educación Primaria sobre las materias enfocadas al uso de las tecnologías, las alumnas consideran que adquirieron los conocimientos necesarios para poder elaborar material didáctico digital, así como para desarrollar sus planeaciones y presentaciones multimedia.

7	Las alumnas refirieron que usaban algunos *software,* como Word para la redacción de sus planeaciones, Power Point o Prezi para las presentaciones, Excel para las litas de asistencia, y plataformas en línea para gamificar el aprendizaje de los alumnos durante sus prácticas docentes en el aula y fuera de ella. Uno de estos *softwares* en línea mencionados fue Educaplay, en la que se realizan crucigramas, sopa de letras, mapas interactivos y videoquiz, etc. Este tipo de actividades se llevan a cabo gracias a la existencia de aulas de cómputo, las cuales ofrecen óptimos resultados de aprendizaje, pues los alumnos de manera lúdica se pueden relacionar con los contenidos, gamificando la actividad; además, de este modo se consigue que los estudiantes se familiaricen cada vez más con el uso de las TIC en el ámbito educativo.
8	Finalmente, consideran necesario tener materias enfocadas en el uso de las tecnologías en quinto y sexto semestre para reforzar y actualizar sus conocimientos sobre el uso de las TIC. Además, consideran pertinente la implementación de materias enfocadas en el uso de las TIC en las materias optativas para las alumnas que cursan la misma carrera, pero con el Plan 2018.

Fuente: Elaboración propia

Based on the data collected, it can be assured that the investment made by the federal government through DGESPE was timely to try to close the technological gap that existed in the ENRGEZ, since since its creation in 1974 there had not been a investment of such magnitude. However, it is also worth commenting that there is an incongruity between the perceived reality and what is established in the current 2018 curriculum, since courses focused on information and communication technologies (ICT), learning technologies and technologies were no longer implemented. knowledge (TAC) and empowerment and participation technologies (TEP) as construction tools to favor the significance of teaching and learning processes (SEP, 2018).

On the other hand, it can be said that the next aspect to improve is connectivity, since there are problems with the company that provides this service. It is true that DGESPE is making a great effort to transform infrastructure, academic capacity and educational assistance, but especially in ENRGEZ there is no company that can provide a good internet signal. It is expected that the Loon project of the Google company can offer a solution, since its main objective is to create a global

network of balloons that provide areas without network connection coverage (Morales, 24 de junio de 2013).

Likewise, it is worth noting that the students take advantage of the benefits of gamification to make their activities more fun and meaningful. In this sense, they use applications and tools such as Powtoon for animations and videos, Emaze for multimedia presentations and Timeline for the elaboration of timelines. Likewise, they use technologies in their internship days, such as Pipoclub for reading and writing in the first six months and even throughout the first year of primary education. In this way, they work on the identification of words that begin with the same letters as the students' names, that is, they use existing methods such as phonetic and syllabic spelling in a playful, graphic and multimedia way. In Educaplay, in addition, they create interactive maps to work with the subject of geography for the fourth year of primary school and make word searches to find endangered animals, as well as crosswords with definitions of animals. In Pixtón, on the other hand, female students teach third-year primary school students to create comics instead of just writing in their notebooks. This tool, in fact, is useful to create the characters (they define height, color of skin and eyes, hair).

Finally, the students comment that although the plan for the Bachelor of Primary Education 2018 suggests practice with ICT, in reality there is no subject where they can acquire these technological skills.

Conclusions

Based on the responses obtained with the questionnaire applied to the ENRGEZ students during one of their teaching practice sessions, the following can be indicated: the degree of demand regarding the use of ICT is high because in the communities where they carry out their internship they are already urbanized and have a computer lab and internet. Regarding the rigor of demand, the students make use of ICT both in the classroom and outside of it, with programs such as Microsoft Office or various online platforms.

However, it is necessary to emphasize the domain and use of ICT, for which courses can be taught to develop skills on platforms such as Classonlive (ideal for creating webinars, courses, classes, workshops), Survio (to design surveys in line for the preparation of questionnaires, data collection and analysis), Canva (to create graphic designs with images for communication via the

Web), Goconqr (to generate metal maps with the possibility of inserting images, videos, links and notes), Coggle (for concept maps), Picovico (for videos based on photographs), Animoto (to make short videos with a maximum of 30 seconds to share information).

For a better use of all the above, it would be ideal to include in the 2018 plan for the degree in Primary Education courses focused on the use of ICT, as happened in the 2012 plan, and not only in the first two semesters, but also in the fifth and sixth. They can even be incorporated as elective courses, since the students consulted consider ICT to be essential in today's education.

As favorable points are the infrastructure and having the Testing Program 2016 Cloud certification, since the ENRGEZ is one of the institutions that grants accreditations in Microsoft Word, Excel and Power Point, which can be achieved through an online exam. In addition, there are three teachers with the necessary skills to teach these courses to the students enrolled in the 2018 plan. These actions would close gaps with respect to the strategy for strengthening and transforming normal schools; In addition, it would guarantee that normal schools continue to be the pillar of the training of teachers in Mexico, which would be in tune with the educational challenges of the 21st century.

Future lines of research

For future research related to the use of ICT by ENRGEZ students in their teaching practice day, it could be proposed that they continue with their students in the next school grade (except for the students who were practicing with sixth-grade students). grade), because that way they would be in charge of a group throughout the school year, and not just for a week of practice. In this way, there would be a study with more information and, therefore, it would be much more relevant, since data would be collected from a complete school year. This would help to improve the courses and subjects that are planned to be taught to strengthen the technological competencies that are essential for the teaching-learning and evaluation process during and outside the practice session carried out by the ENRGEZ students.

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