La formación pedagógica del docente rural con el apoyo de las tecnologías como una herramienta de enseñanza-aprendizaje en el aula

Pedagogical training of rural teachers with the support of technologies as a teaching-learning tool in the classroom

A formação pedagógica de professores rurais com o apoio de tecnologias como ferramenta de ensino-aprendizagem em sala de aula

Francisco Flores Cuevas
Universidad de Guadalajara, Centro Universitario de la Costa, México
francisco.fcuevas@academicos.udg.mx
https://orcid.org/0000-0002-8874-9918

Claudio Rafael Vásquez Martínez
Universidad de Guadalajara, Centro Universitario de la Costa, México
crvasquezm@gmail.com
https://orcid.org/0000-0001-6383-270X

Heriberto Campos López
Universidad de Guadalajara, Centro Universitario de la Costa, México
hcamposl@gmail.com
https://orcid.org/0000-0002-7922-5987

Resumen

El presente trabajo se enfoca en el estudio de los procesos formativos de docentes de educación rural que laboran en la región del Tequendama, departamento de Cundinamarca (Colombia), específicamente en tres instituciones ubicadas en el municipio de San Antonio del Tequendama. Este objeto de análisis fue elegido debido a la necesidad que existe de estudiar la formación docente tanto en aspectos pedagógicos como en el uso de las herramientas tecnológicas, conocimientos esenciales para mejorar la calidad formativa en los diversos niveles educativos. Los participantes, elegidos por conveniencia, fueron 90 maestros y maestras que laboraban en el año lectivo 2019. Para recabar la información se empleó una encuesta constituida por 27 preguntas en las que se relacionaron la formación del docente rural y el conocimiento y uso de las TIC en el aula. Los resultados demuestran, en cuanto a las TIC, que esos medios tecnológicos son usados por los docentes más para fines particulares y personales que pedagógicos, por lo que no han tenido el impacto esperado dentro de los procesos de enseñanza-aprendizaje. Además, cabe señalar que en el presente trabajo se ha evidenciado que los maestros no han sido formados para el trabajo en zonas rurales, ambientes en los cuales se presentan particularidades y necesidades muy distintas a las de las zonas urbanas.

Palabras clave: calidad de la educación, educación comunitaria, educación permanente, tecnologías de la información y comunicación.

Abstract

This paper focuses on the study of the training processes of rural education teachers who work in the Tequendama region, department of Cundinamarca (Colombia), specifically in three institutions located in the municipality of San Antonio del Tequendama. This object of analysis was chosen due to the need to study teacher training both in pedagogical aspects and in the use of technological tools, essential knowledge to improve the quality of training at various educational levels. The participants, chosen for convenience, were 90 teachers who worked in the 2019 school year. To collect the information, a survey consisting of 27 questions was used in which the training of rural teachers and the knowledge and use of ICT were related. in the classroom. The results show, in terms of ICT, that these technological means are used by teachers more for private and personal purposes than pedagogical, so they have not had the expected impact within the teaching-learning processes. In addition, it

should be noted that in this work it has been shown that teachers have not been trained for work in rural areas, environments in which there are particularities and needs that are very different from those of urban areas.

Keywords: Quality of education, community education, lifelong education, information and communication technologies.

Resumo

Este artigo se concentra no estudo dos processos de formação de professores de educação rural que atuam na região de Tequendama, departamento de Cundinamarca (Colômbia), especificamente em três instituições localizadas no município de San Antonio del Tequendama. Este objeto de análise foi escolhido devido à necessidade de estudar a formação de professores tanto nos aspectos pedagógicos como na utilização de ferramentas tecnológicas, conhecimentos essenciais para melhorar a qualidade da formação nos diversos níveis de ensino. Los participantes, elegidos por conveniencia, fueron 90 maestros y maestras que laboraban en el año lectivo 2019. Para recabar la información se empleó una encuesta constituida por 27 preguntas en las que se relacionaron la formación del docente rural y el conocimiento y uso de las TIC en la aula. Os resultados mostram, em termos de TIC, que estes meios tecnológicos são utilizados pelos professores mais para fins particulares e pessoais do que pedagógicos, pelo que não tiveram o impacto esperado nos processos de ensino-aprendizagem. Além disso, deve-se destacar que neste trabalho foi demonstrado que os professores não foram capacitados para atuar no meio rural, ambientes em que existem particularidades e necessidades muito distintas das do meio urbano.

Palavras-chave: qualidade da educação, educação comunitária, educação ao longo da vida, tecnologias de informação e comunicação.

Introduction

This work focuses on the study of the training processes of some rural education teachers who work in the Tequendama region, department of Cundinamarca (Colombia), specifically in certain institutions located in the municipality of San Antonio del Tequendama. This object of analysis was chosen due to the need to study teacher training both in pedagogical aspects and in the use of technological tools, essential knowledge to improve the quality of training at various educational levels. Based on this premise, the following research questions have been formulated:

Main question: how to promote teacher training through the use of ICT in the rural context of the Tequendama region (department of Cundinamarca, Colombia) to improve educational quality in that community and in other areas?

Secondary questions: how important are the teaching experience and training in the use and management of ICT in the teaching-learning processes at the secondary educational level in a rural area? What is the level of knowledge on the part of of teachers on the use and mastery of ICT and how this impacts on secondary school in a rural area? How much do secondary school teachers in that rural area use and master ICT as pedagogical and methodological strategies to improve each of the the teaching-learning processes? What has been the motivating effect of the use and management of ICT as a pedagogical and methodological strategy in each of the teaching-learning processes within the classroom?

Research premise (hypothesis): pedagogical training, as well as the use and management of ICT within the teaching-learning process have been insufficient to improve the quality of education and the strengthening of skills of teachers who teach classes in the Tequendama area (departamento de Cundinamarca, Colombia).

Background and rationale

By Barroso (2012), "Conceptualizing the new role of the teacher in daily and real educational practice entails placing it in the idea of postmodernity and in the concept of globalization, since the latter relativizes everything it touches in its expansive movement" (p. 202). In this sense, "postmodernity has exerted a strong influence on the nature of intellectual life in a variety of disciplines, both in the university and outside of it" (Cabero, 2015, p. 218), which "represents a state of spirit, a way of naming various phenomena that has to do with the uncertainty of our days "(De Pablos, 2007, p. 48). Therefore, it is worth mentioning that

"ICTs make it possible to put into practice communicative and educational strategies to establish new ways of teaching and learning, through the use of advanced management concepts, in an increasingly demanding and competitive world, where there is no room for improvisation" (Koskinen, 1999, p. 79).

Theoretical-contextual referents

Regarding the theoretical bases, in this research various references have been taken to try to have a more precise vision of the subject under study (Brunner, 2011, p. 227). For this reason, the following categories have been developed: teaching-learning process in the educational field, incidence of ICT in said process, rural areas in Colombian territory, teacher training for rural education and its characterization according to different perspectives . Likewise, an approach is made to the implications and the definition of educational quality. Finally, the issue of equity is discussed and how it affects the quality of education.

Educational quality

The following concepts show a clear evolution of what quality is and that in each one of them they have been built in different circumstances and have been evolving and meeting different needs.

For Beeby (1976) establishes that "it is important to distinguish and contrast between the quality of the product and the quality of the process, the latter being more important since it is the added value that schools and educational systems have" (p. 27). Likewise, he highlights two conceptions of quality: "internal quality, which responds to the fulfillment of the proposed goals to be achieved; and quality seen as suitability, that is, that the system is adequate to produce the kind of people that society needs ".

On the other hand, an educational institution may have high internal quality, but lack suitability; or vice versa. Therefore, the quality of education depends on the presence of these two dimensions. For García Hoz (1981) the explicit reference to quality within the educational field is "recent and is determined by the right to education, which should not only be applied in terms of quantity but also of quality" (pp. 9- 2. 3). In addition, the same author defines educational quality as: "the way of being of education that meets the

characteristics of integrity, coherence and effectiveness" (pp. 9-23). In other words, an education has quality to the extent that it is complete, coherent and effective "(pp. 9-23).

In this sense, "efficiency allows a transition from an education that attends quantity to one that does it with quality" (García, 1981, pp. 9-23). On the other hand, De la Orden (1981) came to consider that "the education crisis was explained as a quality crisis and this concept became fashionable in the educational field. In this same sense, De la Orden comments that, in the face of any lack or problem in education, poor quality became the main causal explanation and, therefore, as a consequence, the improvement or achievement of quality became the priority objective for educational authorities "(pp. 111-132).

According to Aguerrondo (2012), the concept of quality, linked to education, arises "from educational technology and curricular ideology, where the quality of education is assumed under the premises of efficiency, and is understood as school efficiency" (p. 572).

> Another important characteristic of the concept of quality applied to education is the fact that it can serve as a standard of comparison to adjust decisions and readjust processes in the educational field so that by optimizing the means available, it is capable of providing quality education to the whole population (Aguerrondo, 2012, p. 572).

The quality of education: axes for its definition and evaluation

The concept of rurality is of utmost importance since it is characterized by being located in rural areas far from urban areas and in which various activities are developed, such as agriculture, livestock and livestock, which are fundamental for its development, as well The same as rural education, which plays an important role in these geographic spaces that are mostly not served, nor are decent policies created for educational development in rural areas.

Likewise, Páez, Fernández and Mayordomo (2000) express "Rural education is the backbone of rural development, without it the absorption and adoption of technology will not be possible, history presents us with obvious examples in this regard" (pp. 51) -71).

Therefore, it is evident that rural education is a fundamental part of every society and for the Colombian state it is not the exception, that it allows through education all different areas and for the development of all areas, and that Through it, all aspects, both technological

and scientific, that are within reach for the advancement of society in all its aspects can be made known.

The analysis of the quality of education is an aspect that is becoming visible and important today. In this regard, Blanco (2008) points out:

> The quality of education is a constant aspiration of the educational systems shared by the whole of society, and one of the main objectives of the educational reforms of the countries of the region, which implies a certain relevance, relevance and timeliness, which requires be reflected, thought and debated (p. 2008).

For all the above I express the common perception that we have of the rural is that it is in opposition to the urban, assimilating that the latter to life in the city under the paradigm of industrialization and modernization. Due to the above, the concept of the rural is life in the country understood as a synonym of backwardness, tradition, and localism.

Community education in rural areas

At present, in many ways reference has been made to the rural, hence they have become common expressions such as rural life, rural credit, rural health, rural poverty, rural development and, of course, rural education, the latter used as a category that is considered clarified and understood by those who use it.

However, reality shows that the rural area can generate confusion in many people, hence the need to make an approach to this term to try to offer guidelines that allow generating a more precise definition. In this regard, Castro and Reboratti (2008), although referring to the Argentine context, indicate:

> The concept of rurality needs a revision and this statement fully fits our environment, since, as in the previous country, our ideology "continues to use a meaning of rurality coined in France in the 19th century, whose main criterion of differentiation rural-urban is the number of inhabitants per locality (p. 15).

So ... what is rural?

It is possible to start from the base that establishes that the rural is a social construction; However, when it comes to defining a definition, it is found that there is no consensus around this term, although it can be said that any theoretical approach involves attending to diversity, since there is a great variety of ways of expressing the rural. In this sense, Pérez (2001) believes that in "a new vision of the rural area, it should not consider the unidirectionality of change (from the backward to the modern, from the rural to the urban), but rather consider a series of characteristics that show the multidirectionality of the process "(p. 24). This, logically, means a drastic change of vision vis-à-vis the rural, which implies overcoming dichotomous conceptions vis-à-vis the urban in order to take into account the heterogeneity of the rural, its dynamism and its socio-cultural, economic and geographical characteristics. In the words of Itzcovich (2010), "the territory concept (not limited to spatial-territorial) encompasses, to a large extent, the realities, processes, dimensions and situations that develop there" (p. 28).

Rural education

By Lozano (2012), One of the first studies on rural education carried out in the Tabio municipality (Cundinamarca) is that of Seibold (2014). This author found that the schools analyzed were only able to teach a small number of children the rudiments of writing, reading and the use of the four arithmetic operations.

For their part, Guhl (1956) and Coll, Rosera, Mayordomo and Naranjo (2007) mention that "in separate studies they presented reports on rural education in the departments of Caldas and Nariño, respectively" (p. 21).

Permanent education of rural teachers

The analysis of rural teacher training and its impact on the educational quality of this area is a barely explored field; Although some studies have been carried out on the training of rural teachers —be it initial or permanent—, its correlation with educational quality is insipient.

In Costa Rica, between 2006 and 2007, Vargas (2014) conducted a study on "the teaching work and training of rural educators, which sought to explore the work of rural teachers in Costa Rica and analyze the training plans taught by public universities "(p. 28). This work tried to align with what was indicated by the National Institute of Teacher Training (2007):

Try to respond to specific training requirements and attend to particularities of a permanent or temporary, personal and / or contextual nature, in order to guarantee equality in the right to education and comply with the legal, technical and pedagogical requirements of the different levels educational (p. 14).

These types of initiatives are essential because they attempt the following:

Make contributions from the specialty in the various disciplines of General and Specific Training, as well as in training spaces in Professional Practice, differentiating the common aspects of teaching work and the particularities that the rural context requires both in initial training as in the oriented (Instituto Nacional de Formación Docente, 2007, artículo 6).

In this same sense, Brumat and Baca (2015), in an investigation carried out in some rural primary schools in the province of Córdoba (Argentina), indicate the work carried out, which consisted of describing "some characteristics of teaching practice in contexts rural areas describing the teachers' working conditions, some notes referring to their training and their daily practice "(p. 10).

On the other hand, with regard to continuous training, some efforts made by some entities to offer some type of approach to the rural environment stand out, which - as Brumat and Baca (2015) point out - has been insufficient:

In the 1990s, with the implementation of the Federal Law on Education, Rural Education had been neglected in general terms and also with regard to teacher training, with little or no reference to specific training for this modality educational (p. 13).

This reality has served for various Latin American countries to adopt initiatives to address some perceived problems in this area:

Based on new training proposals for teachers (...) currently, Latin American countries have developed a series of postgraduate training programs as

strategic means to increase social capital and the well-being of the community, with the possibility of contributing significantly to culture, art and science (Romero, 2012, p. 17).

The purpose has been to promote in the teacher an awareness to propose and develop permanent training strategies, an essential need in the current times of demand, evaluation and surveillance (Lorenzatti, Brumat & Beinotti, 2014; Ramírez, 2014; Zamora, 2015), and that some studies - such as the one carried out by Cruz and Juárez (2018) in Mexico and El Salvador - show that "teachers are not trained or trained to face the particularities of multigrade rural classrooms" (p. 40).

Information and communication technologies concept

There are multiple definitions of ICT. Even so, Cabero (2015) points out:

In general terms, we could say that information and communication technologies are those that revolve around three basic media: computing, microelectronics and telecommunications; but they rotate not only in an isolated way, but what is more significant, in an interactive and interconnected way, which allows us to achieve new communicative realities (p. 221).

In this same sense, Beck (1998) considers that "ICTs find their role as a specialization within the field of didactics and other applied sciences of education, referring especially to the design, development and application of resources in educational processes" (p. 67), while Beck (1998) mentions that "the impact of ICT is not only reflected in an individual, group, sector or country, but extends to all societies on the planet" (p. 78).

The impact of ICT in education

According to Unesco, ICTs are "those means and services that allow the collection, storage and transmission of information with electronic means" (Unesco, 2013, p. 10). To this definition, the referred body adds:

These ICTs have had different historical milestones in their development and social implementation, highlighting among the last (although by no means the only ones, as we will see) those that occurred during the so-called "digital revolution", especially those that refer to the spread of computers personal and, more recently, the internet. In any case, it must be borne in mind that

technology must be conceived rather as a continuum that goes from books or blackboards, through radio or video, to computer elements or the most advanced internet applications (Unesco, 2012, p. 14).

In this sense, Majó and Marqués (2001) explain:

This emerging information society, driven by a dizzying scientific advance in a neoliberal-globalizing socio-economic framework and sustained by the widespread use of powerful and versatile information and communication technologies, involves changes that reach all areas of human activity (p. 738).

Likewise, Aviram (2002) identifies three possible reactions of schools to adapt to ICT and the new cultural context:

- Technocratic scenario. Schools adapt by simply making small adjustments: firstly, the introduction of "digital literacy" of students in the curriculum so that they use ICT as an instrument to improve productivity in the information process, and then progressively the use of information. ICT as a source of information and provider of teaching materials.

- Reform scenario. The three levels of integration of ICTs pointed out by Beltrán (2003) are given, the previous two (learning ABOUT ICT and learning from ICT) and new constructivist teaching / learning methods that contemplate the use of ICT as a cognitive instrument (learning WITH ICT) and for carrying out interdisciplinary and collaborative activities (Beltrán, 2003).

- Holistic scenario: The centers carry out a deep restructuring of all their elements. Similarly, Morín (2007) states that "the school and the educational system not only have to teach the technologies, but these, apart from producing changes in the school, generate a change in the environment" (p. 470).

Methodology

Due to the nature of this research, it has been decided to predominantly follow a quantitative approach with a descriptive and correlational design, although it is worth noting that after answering each of the research questions, as well as the hypothesis formulated, they were taken into It has some aspects of a qualitative nature. This amalgam of approaches has the advantage of offering greater depth in the information collected, as well as dispersion, interpretive richness and contextualization of the environment. Therefore, the methodological design —in principle— consisted of a theoretical-empirical investigation, since being educational in nature the correlation of its variables was established: teacher training in rural areas, use of ICT as a pedagogical model and quality educational.

Type of study

The research design consisted of a single and inclusive case study, within which characteristics were combined from samples. This qualitative research - like any other - is subject to a process that includes six phases (Saad, 2007), which are presented below:

- Are committed to a naturalistic perspective and an interpretive understanding of the human experience.
- The field of qualitative research is inherently political and is outlined through multiple ethical and political positions (Paniagua, 2003 p. 30).
- In this case, teachers as important and leading subjects.
- They are taken as units of analysis, included in the general case.
- The object of study is taken in its natural conditions.
- Experimental or artificial situations are not created, but the processes are covered as they are presented in their daily environment.

Techniques for data collection

The techniques and instruments are the elements that allow to collect the adequate and necessary information to carry out any type of investigation. These mainly include the analysis of surveys, questionnaires and official documents, as well as texts by authors who have developed a theme about the central issue. Specifically, the review focuses on

determining how much the selected teachers use and master ICT within the teaching-learning processes in rural areas of the Tequendama region (Colombia).

Sample

The total population was made up of 121 rural teachers from three different educational institutions, although from the same municipality, of which 57 guide the processes in primary school, and 64 in secondary (basic and middle). Of these, 90 teachers were taken as a convenience sample, corresponding to 74% of the total population of teachers who worked in the 2019 school year.

Tabla 1. Población

Docentes	IED San Antonio del Tequendama	IED mariano Santamaría	IED Pradilla	Total	Tamaño de la Muestra
Primaria	18	21	18	57	40
Secundaria	17	27	20	64	50
Total				121	90

Fuente: Elaboración propia

Instrument description

First of all, it is important to say that the data obtained are shown below and as a result of the research work that was exposed in the previous sections and that it is related to the investigative premise that was a guide during the application of the survey on the formation of the rural teacher and pedagogical aspects in this area, as well as the use of ICT in relation to the educational quality of rural education already described.

The instrument applied in the sample was raised in the questionnaire regarding the attitude, use and mastery of ICT; It was divided into the following fields: I. Academic training, II. Pedagogical training, III. Methodological strategies for using ICT in the classroom and IV. Teaching skills in the use of ICT.

Data processing

In the applied survey, 27 questions were established in which the training of rural teachers, the knowledge and use of ICT in the classroom in the pedagogical processes of each teacher were related. This instrument of a quantitative nature served to collect information that was later analyzed qualitatively.

Discussion

Next, in Figure 1 and in Tables 2 and 3, the information collected regarding the age of the teachers, their years of experience and their levels of training is offered, which serves to try to answer the following question: How important are the teaching experience and training in the use and management of ICT in the teaching-learning processes at the secondary educational level in a rural area?

Figure 1 shows that 23 teachers, corresponding to 26% of the total number of teachers surveyed, are in the age range of 20 and 30 years, which means that they are starting their professional career and that they must take on new challenges for improvement. continuing educational. Likewise, 46 teachers corresponding to 51% are in a range between 31 and 40 years of age, which indicates that they are in a productive average in which their academic trajectory in training for skills in the use and management of ICT It will be essential to enhance your teaching practice. Similarly, 18 teachers 20% are in the range between 41 and 50 years of age; They are at a productive age where their commitment will be to strengthen each of the learning strategies focused on teaching competencies for the level that corresponds to them. Finally, only 3 with a percentage of 3% of teachers are in the range between 51 and 60 years of age, who think more about their retirement than about their academic training.

Figura 1. Rangos de edad de los docentes participantes
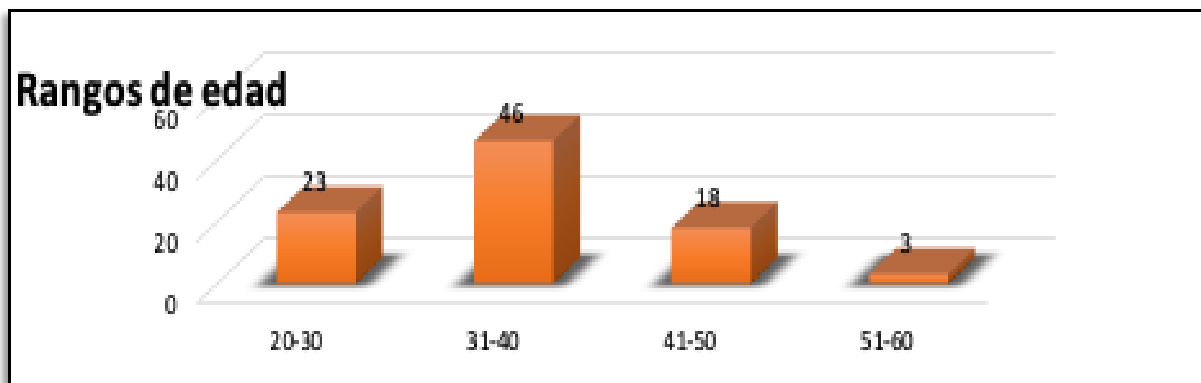
Fuente: Elaboración propia

Table 2 shows that only 3% of teachers have between 0 and 5 years of teaching experience, which shows youth and lack of experience to develop different learning processes and strategies, although it could also indicate a high level of familiarity with ICT to apply them in the classroom. The highest percentages are in the ranges 6-10 (31%) and 11-15 (26%) years of experience.

Tabla 2. Años de experiencia docente

Años de docencia	N.°	%
0-5	3	3 %
6-10	28	31 %
11-15	23	26 %
16-20	17	19 %
21-25	12	13 %
26 o más	7	8 %
TOTAL	90	100 %

Fuente: Elaboración propia

Regarding the last level of training, with 49% representing 44 of the teachers are graduates, 32% representing 29 teachers are specialists, while 17 teachers representing 19% have the master's degree and none have doctorate (table 3).

Tabla 3. Ultimo nivel de formación

Último nivel de estudios	N.°	%
Licenciatura	44	49 %
Especialización	29	32 %
Maestría	17	19 %
Doctorado	0	0 %
TOTAL	90	100 %

Fuente: Elaboración propia

Now, then, in figures 2 to 5 information is shown with which an attempt is made to answer the following question: what is the level of knowledge on the part of teachers about the use and mastery of ICTs? , and how does this impact secondary school in a rural area?

Figure 2 shows that 57 teachers who represent 63% of the total sample frequently use technological resources in the classroom, while 23 teachers corresponding to 26% sometimes use them, no teacher said they never used them, although it is worth note that for 10 teachers corresponding to 11% consider that this question did not apply.

Figura 2. Utilización de medios tecnológicos en el aula

Fuente: Elaboración propia

Figure 3 shows that 45, which corresponds to 50% of teachers have never had training in the use of ICT for rural education, 32 with a percentage of 36% of teachers saying that sometimes and 13 equivalent to 14 % of the teachers surveyed think that it is seldom.

Figura 3. Las TIC y la educación rural
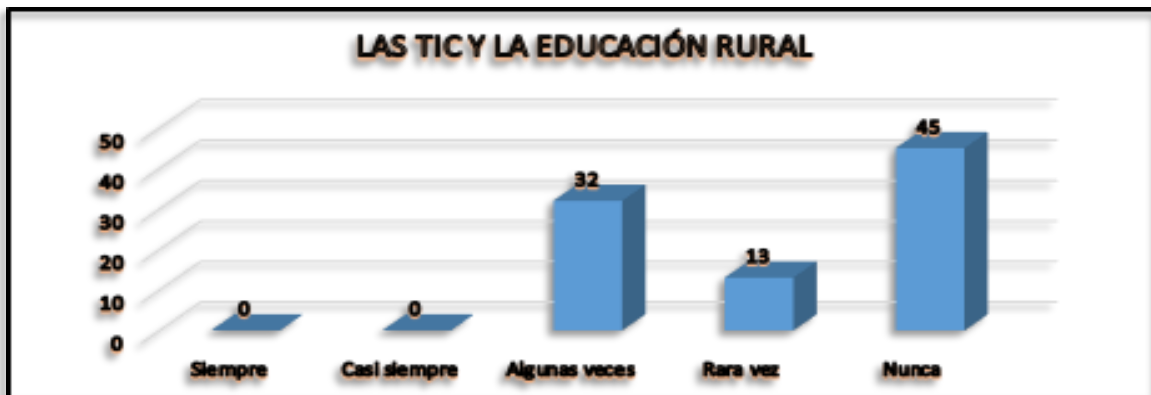
Fuente: Elaboración propia

Regarding the use of educational platforms, it can be indicated that 43 of the teachers, which corresponds to 48% of the teachers, never use them, while 21 teachers, which is equivalent to 23% three times a week, in addition to the fact that 15 teachers correspond 17% use them once a week, 7 teachers with 8% rarely a week and 4 teachers with 4% twice a week (figure 4).

Figura 4. Frecuencia de uso de plataformas educativas.
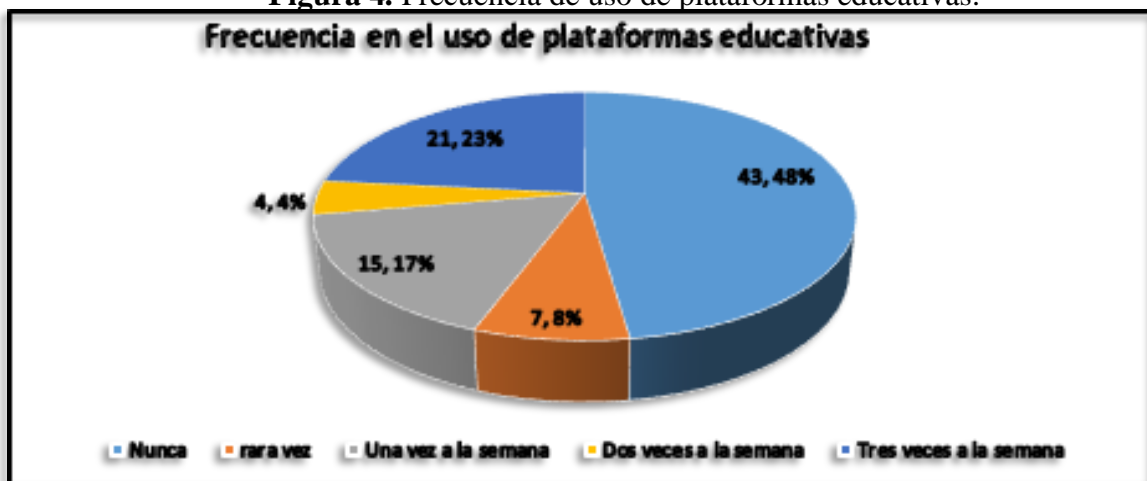
Fuente: Elaboración propia

Now there is a specification of some particular technological tools and the frequency with which teachers use them, starting with the teacher's website; In this case, 53% that corresponds to 48 teachers of the respondents say that they have never used them, while 9 teachers that correspond to 10% rarely, once a week 19 teachers use it, equivalent to 21%,

while that 5 teachers use it twice a week, which is equivalent to 6% of the total of teachers surveyed and three times a week 9 teachers, that is, 10% (figure 5).

**Figura 5.** Frecuencia de uso de la web docente

Fuente: Elaboración propia

On the other hand, and to answer the following question (how much do ICTs use and master as pedagogical and methodological strategies to improve each of the teaching-learning processes by secondary school teachers in a rural area?), Figures 6-10 below show the information collected.

Regarding the evaluation and use of ICTs and the way in which they affect the teaching-learning process, 39 teachers indicate that they are sometimes aware of said impact, while 18 believe that they are always aware of this impact.

Figura 6. La evaluación en el proceso de enseñanza-aprendizaje
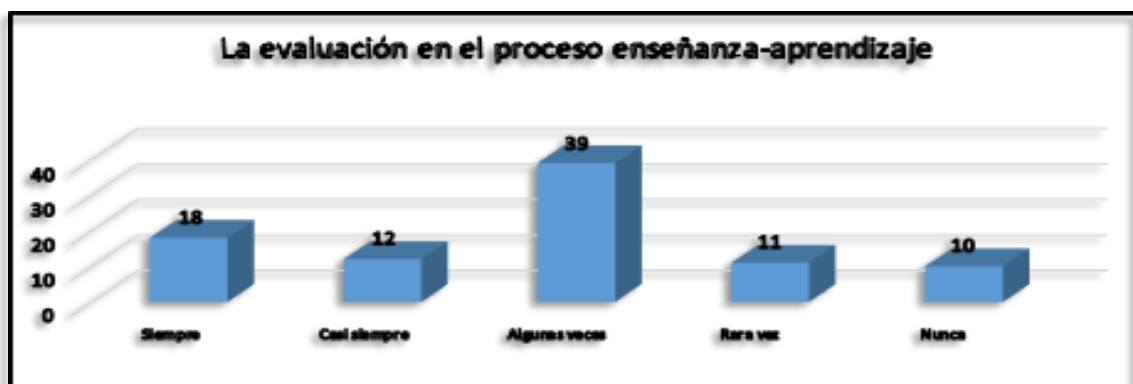
Fuente: Elaboración propia

Regarding the selection and design of instruments for the assessment of learning through ICT, 30 teachers stated that they rarely knew how to do it, while 28 teachers sometimes knew how to do it.

Figura 7. Selección y diseño de instrumentos y recursos para la evaluación del aprendizaje
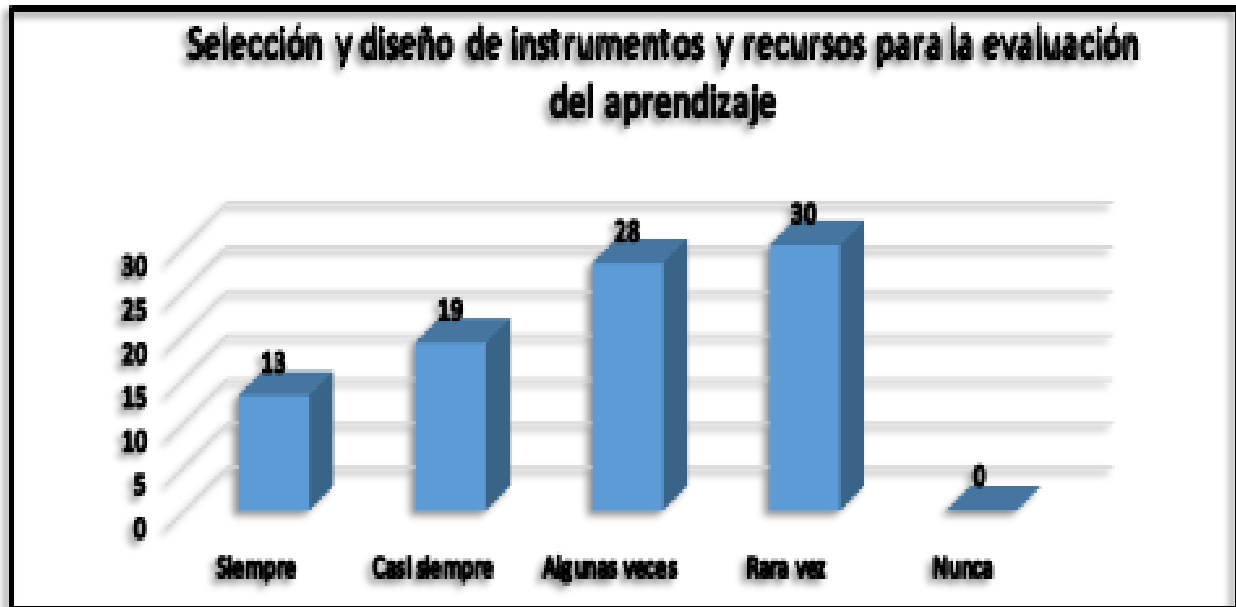
Fuente: Elaboración propia

Regarding the evaluation and selection of educational materials in relation to their impact on the teaching-learning process mediated by ICT, 47 teachers consider that they sometimes have this knowledge, while 23 always do.

Figura 8. Evaluación y selección de materiales educativos
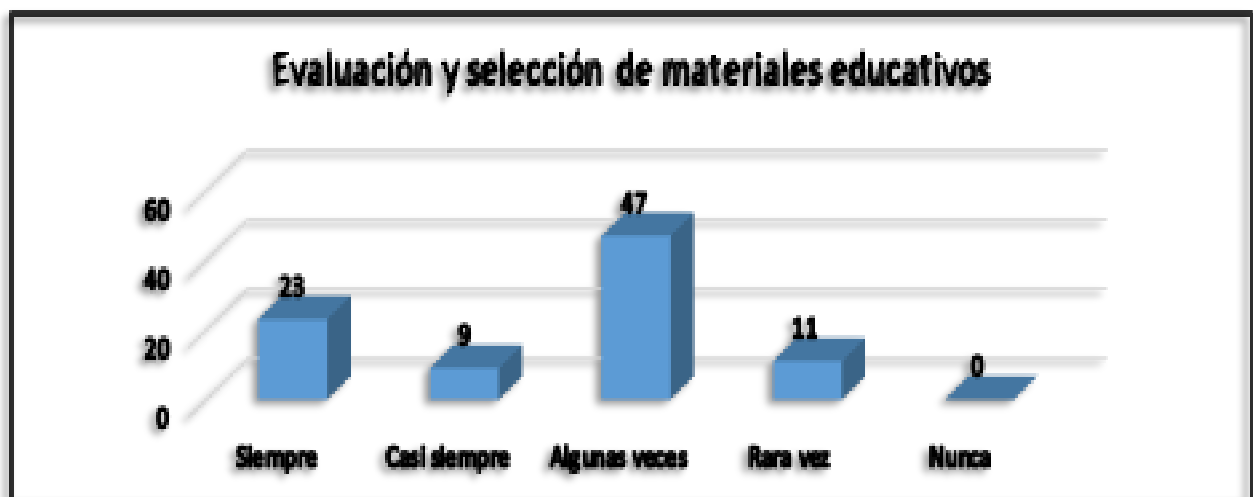
Fuente: Elaboración propia

Regarding the use of technological means and their influence on learning, 47 teachers indicate that ICTs have contributed to improving the teaching of classes, while 12 teachers find it irrelevant.

Figura 9. Contribución de los medios tecnológicos para mejorar la impartición de las clases
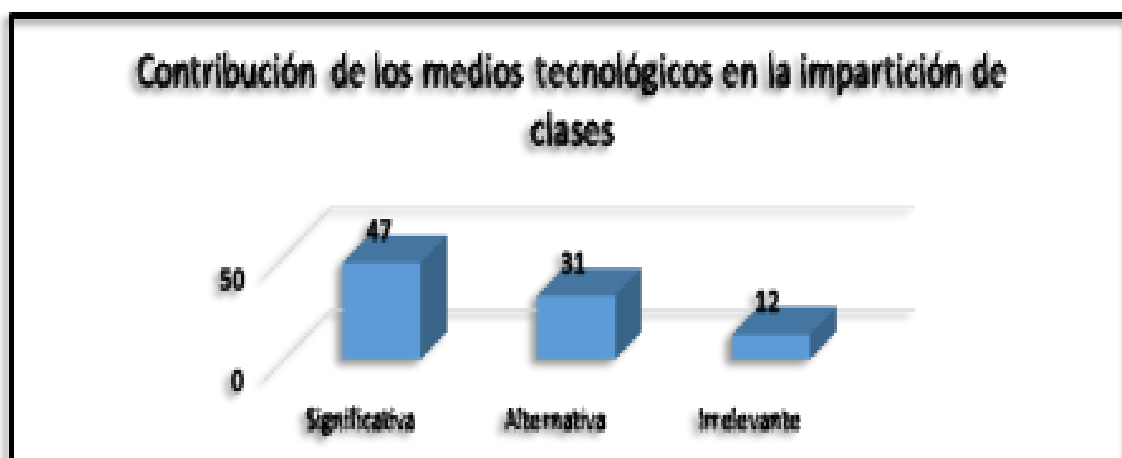
Fuente: Elaboración propia

Regarding their mastery and use of ICT, 57 teachers, corresponding to 63% of the total teachers surveyed, consider it to be good, while 33 of the teachers surveyed, equivalent to 37%, believe that it is sufficient (figure 10).

Figura 10. Dominio de habilidades que tiene en el manejo de las TIC.

Fuente: Elaboración propia

Finally, and to answer the question, what has been the motivating effect of the use and management of ICT as a pedagogical and methodological strategy in each of the teaching-learning processes within the classroom? The information that is taught in the classroom is offered. Tables 4 and 5, as well as in Figure 11.

In this sense, in Table 4 —in a general way— it can be indicated that 84 surveyed teachers, equivalent to 94% of the surveyed teachers, consider that it is a determining factor

in student learning; On the other hand, 45 professors surveyed, equivalent to 50% of the professors surveyed, consider that it is a fashion given the technological era in which we live; Likewise, 78 teachers surveyed, equivalent to 87% of the teachers surveyed, consider that it is an alternative support tool for teaching the various contents; while 87 professors surveyed, equivalent to 97% of the professors surveyed, consider that it is a totally dispensable tool; on the other hand, 25 professors surveyed, equivalent to 28% of the professors surveyed, consider that it is an alternative that does not necessarily influence student learning; Another element considered by the teachers in this survey is that 25 teachers surveyed equivalent to 88% consider that it is an important resource for the improvement of the teaching-learning processes; as well as 84 teachers out of 93% of the total stated that it facilitates group work and collaboration with their students.

Tabla 4. Uso de las TIC como herramienta pedagógica

CONSIDERA QUE EL USO DE LAS TIC EN CLASE (PUEDE SELECCIONAR MÁS DE UNA OPCIÓN):	CANT.	%
Es un factor determinante en el aprendizaje de los estudiantes	85	94%
Es una moda dada la era tecnológica en que vivimos	45	50%
Es una herramienta de apoyo alternativa para la enseñanza de los diversos contenidos	78	87%
Es una herramienta totalmente prescindible	87	97%
Es una alternativa que no necesariamente influye en los aprendizaje de los estudiantes	25	28%
Es un recurso importante para la mejore de los procesos de enseñanza aprendizaje	79	88%
Promueve el interés y motivación de sus alumnos	88	98%
Facilita el trabajo en grupo y colaboración con sus alumnos	84	93%
TOTAL DE DOCENTES ENCUESTADOS	90	

Fuente: Elaboración propia.

On the other hand, in Table 5 it can be seen that 97% of those consulted use Word, 30% Excel and none the blackboard (others indicated that Hot Potatoes, Prezzi, etc.).

Tabla 5. *Software* empleado como apoyo para desarrollar las clases

SOFTWARE QUE EMPLEA COMO APOYO PARA DESARROLLAR SU CLASE	CANT.	%
Word™	87	97%
Excel™	27	30%
Software asociado al pizarrón electrónico	0	0%
Otro	20	22%
TOTAL DE DOCENTES ENCUESTADOS	90	

Fuente: Elaboración propia

Likewise, it is worth mentioning that 38 teachers surveyed, equivalent to 42%, consider that the computer resources available to the institution where they work are insufficient; While a high percentage that corresponds to 52% corresponding to 47 teachers stated that they do not have the technological resources to carry out their teaching work, and finally 5 teachers that correspond to 6% of teachers believe that the computer resources of their institution are enough.

Figura 11. Recursos informáticos que tiene su institución y los estudiantes

Fuente: Elaboración propia

Answer to the main question

To answer the central question of this work (how to promote teacher training through the use of ICT in the rural context of the Tequendama region - Cundinamarca department, Colombia - to improve educational quality in said community and in other areas?), it must be taken into account that ICT currently plays an important role in education in general and in school training in particular. However, different situations and factors have meant that

these technologies have not had the expected impact on the teaching-learning processes. It should be remembered that the teaching function at any educational level is impressive, essential and preponderant, hence it is necessary for teachers to have sufficient training to face the complex task of promoting knowledge in children, adolescents and young people who are increasingly more surrounded by new technologies.

In this sense, it is mandatory for teachers to prepare and continue their training around the use of these tools to improve educational quality, especially in rural areas. For this, logically, it is imperative that teachers, as well as students, have the various electronic means to generate the various professional competencies.

However, it should also be noted that this work has shown that teachers have not been trained to work in rural areas, environments in which there are particularities and needs that are very different from those of urban areas. This, in short, deteriorates the educational quality of these places and, consequently, deepens the historical inequality promoted by state policies that have been maintained over time.

The latter can be affirmed because neither the State itself has really been concerned with retaking the figure of the rural teacher or with giving him the place and the possibility of integrating him into the educational reform process.

In short, it is not enough only with sterile courses or diplomas that —to comply with the norm— require the teacher to take them, but guidelines must be established in universities that aim to train future teachers capable of facing a context as specific as the rural.

Conclusions

As already indicated in the previous section, the data obtained allow to support what was initially proposed regarding the use and management of ICT in teachers of departmental educational institutions of the San Antonio del Tequendama municipality (Cundinamarca, Colombia) in terms of that such training has been insufficient as a contribution and support for the improvement of educational quality in rural Colombia, specifically in the aforementioned region.

The findings found make it clear that teachers have not had any type of training for rural areas, neither initial nor continuous, although they are carrying out their pedagogical work in such areas. In fact, although the Ministry of National Education has issued flexible

pedagogical proposals for rural areas, reality shows that these are not implemented in the institutions included in this research.

As for ICT, it must be said that these technological means are used by teachers more for private and personal purposes than pedagogical, so they have not had the expected impact within the teaching-learning processes. This situation is similar to that experienced by students, since they use these resources mainly for recreational purposes (games, social networks), and not so much for academic purposes. In other words, it seems that the use of electronic devices and their social networks is not only hindering the teaching process, but is also becoming a problem for classroom management.

On this matter, it is worrying to know that teachers are unaware - and therefore do not take advantage of - the infinite possibilities offered by the Web to promote collaborative work. In other words, the focus should not be on fighting to ban the use of these devices, but on finding a way to incorporate them into educational processes.

Therefore, the results obtained in this work invite to promote a program that can be divided into didactic units, which can be developed virtually by using the website of each institution. In this space, the teacher would find novel and attractive proposals to implement with the student, so that they can promote knowledge using various tools and technological resources for the student to build their own knowledge and acquire the necessary skills.

Logically, it must be foreseen that any program proposed to different people may be ineffective; However, it must be said that this ineffectiveness is not due to the program itself, but to the lack of interest in preparing for the use of ICT, which can be more accentuated in older teachers and when the mission, vision and purpose are unknown. profile of the professional to be trained.

Another factor that could torpedo the application of this type of initiative has to do with the greater work involved, since the teacher would have to set aside a space of his time to work with the students in person and virtually.

In addition to this, it should be taken into account that one of the most difficult problems to solve is internet access in rural areas. In addition, the economic factor is another factor that could impede the development of this type of proposal, since in some cases teachers feel that there is no economic motivation or incentive to continue preparing in the use of ICT.

In summary, it can be concluded that many of the teachers consulted are unaware of the type of technology they can use to promote the teaching-learning processes of students.

Contributions to future lines of research

As future lines of research, it is proposed that, through the training of teachers within the rural environment in the management of ICT, this through the application of various pedagogical strategies that should be introduced within the classroom as a motivating effect on students of any educational institution, and particularly those that are outside the urban area of the municipalities, of each of the departments in the Republic of Colombia. Allowing with this a motivating effect on the student in terms of learning any subject in each of their subjects taught; and that they are a true impact in each of the teaching-learning processes; This through simulators in subjects such as physics or mathematics, the use of interactive encyclopedias, the management of social networks with a pedagogical sense to carry out their academic activities, videos related to topics of interest. To achieve this purpose, rural teachers must be involved in the design of various constructivist methodologies that are adequate for the development of citizenship skills in students and that are reflected in higher school performance. In addition, to generate commitments in its various academic activities of students, teachers, parents for the improvement of the quality of education in their educational community and within their social context.

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Francisco Flores Cuevas

Doctor en Gerencia y Polítuca Educativa Universidad de Baja California, Maestro en Educación por la Universidad del Valle de Atemajac UNIVA, Licenciado en Informática Instituto Tecnológico de Ciudad Guzmán. Diplomados en Competencias Docentes Universidad de Arizona, Certificación de Cisco IT Essential, Diplomado en Educación a Distancia Universidad de San Diego, California USA, Diplomado en Competencias Docentes para el Siglo XXI por el Tec de Monterrey en convenio con la Universidad de Cambridge, England. Es catedrático de tiempo completo en la Universidad de Guadalajara, Campus CUCosta Puerto Vallarta, docente y asesor de tesis doctorales de la Universidad de Baja California. Líder del cuerpo académico en consolidación UDG-CA 653 "Tecnologías Aplicadas a la Educación". Perfil PRODEP Nivel XVII. Autor de mas de 15 libros relacionados con Competencias docentes y de mas de 25 artículos publicados en revistas nacionales e internacionales.

Claudio Rafael Vásquez Martínez

Doctor en Educación Universidad Autónoma de Guadalajara, Maestro en Sociología de la Educación Universidad de Antioquia Medellin Colombia, Licenciado en Tecnología Industrial Universidad de San Buenaventura Medellin Colombia. Diplomados en Competencias Docentes Universidad de Arizona, Doctorado Honoris Causa por la Universidad Autónoma de Nayarit, Galardonado por el H. Ayuntamiento de Puerto Vallarta y por la Universidad de Guadalajara. Es catedrático de tiempo completo Titular C en la Universidad de Guadalajara, Campus CUCosta Puerto Vallarta, docente y asesor de tesis doctorales de la Universidad de Baja California. Miembro del cuerpo académico en consolidación UDG-CA 653 "Tecnologías Aplicadas a la Educación". Perfil PRODEP Nivel XVII. Candidato al Sistema Nacional de Investigadores. Ha publicado un libro y varios artículos en revistas nacionales e internacionales.

Heriberto Campos López

Doctor en Desarrollo Sustentable Universidad de Guadalajara, Maestro en Derecho Penal y Abogado por la Universidad de Guadalajara Campus Puerto Vallarta, Jalisco. Diversos diplomados disciplinares en formación docente por la Universidad de Guadalajara dentro de los programas para el Fortalecimiento Docente y del PROINNOVA. Es catedrático de tiempo completo en la Universidad de Guadalajara, Campus CUCOSTA con sede en Puerto Vallarta Jalisco, y actualmente funge como presidente de academia de Derecho Laboral. Cuenta con Perfil Deseable del Programa de Mejoramiento del Profesorado (Promep). Ha publicado libros y varios artículos en revistas nacionales e internacionales.

Rol de Contribución	Autor (es)
Conceptualización	Francisco Flores Cuevas
Metodología	Francisco Flores Cuevas
Software	Francisco Flores Cuevas
Validación	Claudio Rafael Vásquez Martínez
Análisis Formal	Claudio Rafael Vásquez Martínez
Investigación	Francisco Flores Cuevas
Recursos	Francisco Flores Cuevas
Curación de datos	Heriberto Campos López
Escritura - Preparación del borrador original	Heriberto Campos López
Escritura - Revisión y edición	Claudio Rafael Vásquez Martínez
Visualización	Heriberto Campos López
Supervisión	Francisco Flores Cuevas
Administración de Proyectos	Francisco Flores Cuevas
Adquisición de fondos	Francisco Flores Cuevas