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*Artículos científicos*

## **Trayectoria de docentes que aprobaron el examen de selección para la carrera docente en el sureste de México**

*Preparation trajectory of teachers who approved the selection examination for obtaining a teaching position in Southern Mexico*

*Carreira de professores aprovados em exame de seleção para a carreira docente no sudeste do México*

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### **Resumen**

Este presente estudio compara las diferencias de formación entre profesores que se graduaron de docencia o pedagogía en escuelas normales y aquellos que lo hicieron en distintos campos del conocimiento en otras instituciones de educación superior. Todos los participantes aplicaron al examen para obtener un puesto para trabajar en las escuelas públicas mexicanas. El objetivo del estudio fue determinar si las características y la trayectoria profesional de los profesores que aprobaron el examen del Sistema Profesional Docente son diferentes a las de los profesores que consiguieron su título en otras instituciones públicas o privadas. La metodología del estudio incluyó lo siguiente: (1)



metaanálisis de las bases de datos del Centro de Evaluación Educativa de la Secretaría de Educación del Gobierno del Estado de Yucatán, y (2) una encuesta a 30 de los 43 maestros que participaron en la primera etapa del estudio. Con esta encuesta se procuró conocer las opciones de desarrollo profesional de los profesores después de tres años de aprobar el examen de docentes profesionales. Los resultados indican que hay tres grupos: aquellos que se graduaron de las escuelas normales, aquellos que se graduaron de otras instituciones de educación superior que buscan desarrollo profesional y otros que se graduaron de instituciones de educación superior que ingresaron recientemente al sistema y no tienen interés en el desarrollo profesional. Estos grupos tienen diferentes expectativas e intereses de desarrollo profesional.

**Palabras clave:** educación básica, formación inicial docentes, México, políticas educativas.

### **Abstract**

This study compares the differences in training between teachers who completed a bachelor's in education or Pedagogy from the Normal Schools and those who graduated in other field rather than education from other higher education institutions. All participants applied for an examination exam to obtain a position for working in the Mexican public schools. The objective of the study was determining if the characteristics and professional trajectory of the teachers who passed the examination of the Professional Teaching System are different from those of the professors who obtained their degree in other public or private institutions. Methodology: (1) Meta-analysis of the databases of the Educational Evaluation Center of the Ministry of Education of the Government of the State of Yucatan. (2) A survey was administered to 30 of the 43 teachers who participated in the first stage of the study. The survey aimed to know teacher professional development choices after three years of approving the professional teacher examination. Results indicate that there are three groups of teachers, those who graduated from Normal Schools, those graduated from other higher education institutions seeking professional development, and other graduated from higher education institutions that recently entered the system and have no interest in professional development.

**Keywords:** basic education (k-12), preservice teachers, Mexico, educational policy.

## Resumo

O presente estudo compara as diferenças de formação entre professores que concluíram o magistério ou pedagogia em escolas normais e aqueles que o fizeram em diferentes áreas do conhecimento em outras instituições de ensino superior. Todos os participantes se candidataram ao exame para obter uma vaga para trabalhar em escolas públicas mexicanas. O objetivo do estudo foi verificar se as características e a trajetória profissional dos professores aprovados no concurso Sistema Profissional de Ensino são diferentes das dos professores graduados em outras instituições públicas ou privadas. A metodologia do estudo incluiu o seguinte: (1) meta-análise das bases de dados do Centro de Avaliação Educacional do Ministério da Educação do Governo do Estado de Yucatán, e (2) uma pesquisa com 30 dos 43 professores que participaram da primeira etapa do estudo. Esta pesquisa buscou conhecer as opções de desenvolvimento profissional de professores após três anos de aprovação no exame profissional para professores. Os resultados indicam que existem três grupos: os que se formaram em escolas normais, os que se formaram em outras instituições de ensino superior em busca de desenvolvimento profissional e os que se formaram em instituições de ensino superior que ingressaram recentemente no sistema e não têm interesse no desenvolvimento profissional. Esses grupos têm expectativas e interesses diferentes para o desenvolvimento profissional.

**Palavras-chave:** educação básica, formação inicial de professores, México, políticas educacionais.

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## Introduction

The performance scores of Mexican basic education students, mainly secondary school, in different standardized tests are low compared to first-world countries (National Institute for the Evaluation of Education, 2017; Márquez Jiménez, 2017). As stated by Moreno (2016), Mexico continues to occupy the last place in terms of the teaching of mathematics, reading and science.

Among the factors identified by the specialized literature that influence student performance is teacher training (Ibernón and Canto, 2013). In this sense, as mentioned by several authors (Barber, 2007; Boudersa, 2016; Hanushek, 2003; Varga, 2007), being a competent teacher with good performance is one of the most important resources in any educational institution, since it is the professional agent and the most important person in the learning process, as it is in charge of helping students improve their skills.

Therefore, it is necessary to deepen the case of teachers who take the professional teaching service exam. The need for this type of research is justified by the limited literature available on the matter and by the differences in training between students from normal schools and those from other public educational institutions in Mexico where the aforementioned exam is applied to apply for positions.

Normal schools are the educational institutions in which basic education teachers are traditionally trained in Mexico (preschool, primary and secondary). Since its creation in 1887 with the Lancasterian company and its normal teaching, they have had the mission of preparing teachers (Ducoing, 2004). In 2005, these schools were incorporated into higher education to ensure that, like others at the university level, they adopted a similar structure, where teachers perform not only teaching functions, but also mentoring, research and management. In addition to normal schools, universities have degrees in Pedagogy or Education, and there are private schools and universities that also prepare teachers for these levels and for the baccalaureate level.

Taking into consideration what was stated in the previous paragraphs, in this investigation the following objective was proposed:

### **Objective**

Determine if the characteristics and professional trajectory of the professors who passed the Professional Teaching System exam are different from those of the professors who studied their degree in other public or private institutions.

### **Hypothesis**

Teachers who passed the professional teacher examination and completed bachelor's studies in normal schools differ significantly in their training and trajectory from those who obtained their bachelor's degree in other educational institutions.

### **Literature review**

In Mexico, the teaching profession is considered one of the closest to society, since the importance of its figure is recognized to train new generations through a process of strengthening national identity (Chamber of Deputies of the Congress of the Union , 2012). However, it is also worth noting - as mentioned by Oliveira, Gonçalves and Melo (2004) - that in recent years teaching work has been questioned in relation to their

training, which can always be improved even when there is no training. deserved material and institutional support.

Due to its close relationship with society, teacher training has evolved throughout history, in the same way that concepts such as school, teaching, curriculum and educational system have. All these factors have given rise to professional profiles for teachers, such as communicator, transmitter of knowledge, planner and technician, among others. Teacher training, therefore, is linked to the evolution of society itself (Debesse and Mialaret, 1980).

Professional development is the construction of work identity, which aims to increase satisfaction in the exercise of work through a greater understanding and improvement of professional skills (Medina Ravilla, 1998).

Authors such as Hativa (2000) indicate that the reasons a teacher has for improving and wanting or not their teaching activity (their disciplinary and pedagogical preparation, their motivation to teach, as well as their beliefs about what teaching, learning and learning are role of the student) are what motivates them to seek optimal teaching.

In general, the studies on the conformation of the teaching identity have been extensive, for which several theories have been developed. In particular, one of the most dominant in terms of the development of teacher identity - according to Rodrigues and Mogarro (2019) - is the model of levels of change of Korthagen (2004), also known as the onion model. This is made up of a series of levels that interact for the formation of identity, that is, environment / context, behavior, skills, beliefs, identity and mission.

Other theoretical developments - such as that of Lave and Wenger (1991) - also take up the interaction between practice and learning, especially starting as teachers in a relatively peripheral participatory role. Similarly, other models place meanings at the center of the development of identity, although they also take into account the images, perceptions and self-knowledge that students develop of their work as future teachers (Rodrigues and Mogarro, 2019).

The empirical support for the relationship between training, beliefs and practices of the aforementioned approaches is extensive both in teachers with traditional training and those from alternative training. For example, with respect to teachers from professional formations other than teaching, a change and conformation of identity is also observed, where although a continuity is noted in the aspect of their beliefs, they perceive more a change in external issues related to their work environment (Tigchelaar, Brouwer

& Korthagen, 2008), where a reconciliation is required between their previous professional training and their new role as a teacher (Williams, 2010).

In general, the investigations indicate that this is a dynamic process that tends to change bi-directionally between the commitment to teaching and their sunshine as teachers, especially after the experimentation of teaching practices (Zhang, Clarke & Lee, 2018). In this regard, in an interesting qualitative study carried out by Deng et al. (2018), it was found that in practice the development of the teaching identity of the students goes through several stages: enthusiasm and anxiety at the beginning of the teaching practices, shock and shame immediately after the student has taught, anger and perplexity in the midst of the internship, helplessness and loneliness towards the end of the internship, and guilt and regret after the teaching internship. Additionally, participants are faced with four dilemmas: (1) tensions between classroom authority and the ethics of care, (2) acting like a community member or outsider, (3) working as an office assistant or an “real teacher”, and (4) conflicting pedagogies regarding the teaching of different levels of student academic achievement. Other studies have obtained similar results (Oruç, 2013).

Rodrigues and Mogarro (2019) they recently conducted a review on studies of teacher identity from students to teachers. They found several recommendations aimed at the initial preparation of teachers that can be summarized in the following points: (1) the programs should promote the development of the teacher identity through reflective activities and discussion processes; (2) should be used and reflected on both positive and negative experiences of the practices; (3) a systematic approach must be taken to carry out activities that promote self-knowledge and discussion centered on genuine experiences, such as exploring their values and beliefs as teachers, and (4) clearly expressing the relationship between the study program and the society where the teaching will take place, which would encourage the student to develop coping skills related to their personal and context expectations.

In this regard, the empirical evidence reinforces several elements mentioned by Rodrigues and Mogarro. For example, studies point to the positive effects on the development of identity with having mentors, such as the development of trust and their voice as teachers (Izadinia, 2016). The viability of approaching critical incidents as a teaching and reflection method has also been established, relevant elements for shaping an identity as a teacher, especially for aspects related to inclusion (Valdés and Monereo, 2012). However, other findings indicate that teacher identity also involves negative aspects, such as poor perception when asking for help or receiving feedback, and little confidence in the use of technologies (Marcelo García, 2010).

In general, as can be seen, the process of shaping the teaching identity, its relationship with professionalism and training experiences are inseparable elements, so its study is invaluable to provide more information in this regard.

### **Normal schools**

Higher education in Mexico is made up of four types of institutions: universities, technological institutes, normal schools and technological universities. It includes the levels of university superior technician or associate professional, bachelor, specialty, master's degree and doctorate (National Institute for the Evaluation of Education, 2013).

Public and private Higher Education Institutions (IES) are responsible for training professionals for teaching activity in the different types and levels of the national educational system, in areas such as preschool education, primary education, secondary education, special education and physical education. (Cruz López and Cruz López, 2008).

The training of basic education teachers is regulated by the State and is in charge of normal schools. The Political Constitution of the United Mexican States, in its third article, states that "the federal executive will determine the plans and study programs of preschool, primary, secondary and normal education for the entire republic" (Official Gazette of the Federation, 2014 , p. 1).

Since 1984, normal schools have offered teacher training at the undergraduate level (by presidential decree), which requires the baccalaureate as a precedent (Candelario Sereno, 2006). However, despite the desire to prepare new teachers as researchers and transformers of their pedagogical work, it was not possible to promote their creative spirit due to the lack of the formative structure in normal schools.

After almost two hundred years of its foundation, normal schools have undergone different transformations, some related to curricular changes (Ducoing, 2004), access requirements for normal schools and, recently, access to higher education.

To achieve educational quality, the basic education reforms and the professionalization of the teaching profession represented new demands for normal schools. However, their incorporation into these was slow and late, since they did not enter this process simultaneously. For this reason, in April 1996 a broad consultation was started among the country's normal school community. After an inclusive and participatory process, at the end of that year, the results led to the establishment of the Program for the Academic Transformation and Strengthening of Normal Schools. With the above, began the modification of the study plans and programs of the different degrees offered in normal schools (Candelario Sereno, 2006).

For the period 2000-2006, the National Educational Program proposed a policy of continuous initial training and permanent professional development to renew the normals and articulate the professional training systems in coordination with the state governments, as well as to create networks of schools of basic education to promote the specialization of academics. Likewise, it was proposed to consolidate and articulate professional improvement with the states to promote development focused on student learning (Candelario-Sereno, 2006).

As of 2005, normal schools were effectively considered as higher education institutions, for which the General Directorate of Higher Education for Education Professionals (DGESPE) was created with the aim of proposing and coordinating higher education educational policies for teacher training institutions in order to achieve optimal levels of quality and coverage, as well as their integration to the needs of basic education in the country (Subsecretaria de Educación Superior, 2011). This has meant a huge challenge for normal schools, since their structural characteristics, guidelines and organization are not adequate to face the particularities that being part of the higher level implies. Currently, 450 normal schools operate in the country, of which 256 (58.9%) are publicly supported and the rest are privately supported (Cardaña, 2012). These schools offer, among others, degree programs in pre-school, primary, intercultural bilingual primary, secondary, special, initial, physical and artistic education (Subsecretaria de Educación Superior, 2011).

Beginning in the 2012-2013 school year, study plans were put into operation for the training of teachers that seek to improve the quality of education. This reform addresses the urgent need to increase the levels of quality and equity in education, and assumes the challenge of training teachers capable of responding to the demands posed by basic education at the three levels that comprise it.

### **Professional development of teachers**

The Official Gazette of the Federation (2014) defines the professional development of the teacher as the process followed by the teaching staff and personnel with functions of direction, supervision and technical-pedagogical and technical-teaching advice to strengthen both their competencies and their ability to have the professional performances that lead to obtaining the expected results in classrooms and public schools of basic education.

Among the various initiatives to train teachers are the Emerging Program to Update Teacher Training, which aims to improve the quality of training for teachers in





service through courses, group sessions and distance education. The objective of the program is to strengthen, in the short term, the knowledge of male and female teachers so that they can better perform their role (Bazdresch Parada, 2005).

In addition, the Teaching Career Program was established, whose objective was to stimulate the quality of education and create a clear mechanism to improve the professional, material and social condition of teachers (Diario Oficial de la Federación, 1992).

## **Research related to teaching training and career**

### **International perspective**

Studies on the training and trajectory of teachers are abundant, some of which establish differences between those educators who had training in a school for educators (such as normal schools or their equivalent) and those who had an alternative training. Alternative teaching certifications is a term that encompasses several types of programs and policies aimed at including professionals who did not complete an undergraduate program specialized in teaching as teachers (Ludlow, 2013; Zeichner and Schulte, 2001).

Some of these programs - as mentioned by Zeichner and Schulte (2001) - set minimum qualifications to prove the incorporation of professionals into the education system. In general, certification programs have been found to be associated with older teachers compared to graduates of traditional teaching programs (Baeten and Meeus, 2016; Kee, 2012; Wayman, Foster, Mantle-Bromley, and Wilson, 2003; Zeichner and Schulte, 2001), and tend to include a higher proportion of male teachers than traditional teaching programs (Kee, 2012; Wayman et al., 2003). They usually have degrees in other areas, such as mathematics or science in general (Kee, 2012; Unruh and Holt, 2010; Wayman et al., 2003), which has an impact on feeling more prepared than traditional teachers, by less in terms of content (Kee, 2012).

These training programs do not usually have the academic rigor of those specialized in undergraduate teaching (Zeichner and Schulte, 2001). This possibly causes novice teachers graduated from non-traditional programs to develop stress generated by ignorance, which is why they may perceive themselves as less prepared for the development of various educational elements, such as the application of teaching techniques, the development of the curriculum and the classroom management (Kee, 2012; Linek, Sampson, Haas, Sadler y Moore, 2012).

For this reason, a period of preparation is generally recommended for professors who have graduated from non-teaching professions (Baeten and Meeus, 2016; Tigchelaar, Brouwer and Vermunt, 2010). For example, in other countries the need to have mentoring mechanisms for these teachers is suggested (Baeten and Meeus, 2016; Fox and Peters, 2013; O'Connor, Malow and Bisland, 2011), especially if what is desired is the development of teacher leadership (Muijs, Chapman and Armstrong, 2013) or self-efficacy (Fox and Peters, 2013), which can be achieved with certain specialized courses (Tigchelaar et al., 2010).

Perhaps this is why some studies indicate that teachers with alternative training in teaching show greater concern for their professional development (Wayman et al., 2003). In this regard, the training programs offered and aimed at teachers with alternative teaching certifications frequently focus on teaching and managing the group and school environment (Linek et al., 2012; Unruh and Holt, 2010; Wayman et al. al., 2003). The latter is especially important, since this type of teacher is more likely to experience stressful events, such as acts of violence in the classroom, compared to teachers in traditional teaching programs (Schonfeld & Feinman, 2012).

However, it is also worth noting that recent reviews indicate that it is important for teachers to be trained in classroom management, since even traditional programs do not address these issues with the necessary depth and practice (Freeman, Simonsen, Briere and MacSuga-Gage, 2014), and instead tend to focus on the planning and teaching process (Alberto-Aimaretti, 2016). The inclusion of courses oriented to psychological issues also seems to have a positive impact on the fact that teachers, impeding their initial training, feel more prepared for teaching (Kee, 2012).

With respect to teachers who have a “traditional” training, that is, who attended an education-oriented program, they do not require training in teaching, and they tend to be more concerned with developing interpersonal relationships with their co-workers (Linek et al. ., 2012). In Mexico, normal school students who have real approaches through their practices generate realistic expectations, since they learn vicariously from more experienced teachers in the management of various elements of the training process (Chapa Chapa and Flores Fahara, 2015), especially when these practices are provided in non-urban settings (Cardona Hernández, Hernández Madero and Lamas Mendoza, 2017), which allow the creation of an identity of social change agent (Chávez Monfil, Ortiz López and Ramos García, 2017). Normalist teachers are also interested in the management of ICT and in the knowledge of certain aspects of psychology (Chacón Flores and Cardona Hernández, 2019).

Regarding the difference between both groups of teachers, although some studies have found that graduates of other professions have better scores in selection exams (Sass, 2015), in general it has been seen that there are no differences in the performance of teachers who have graduated from traditional teaching programs (Zeichner and Schulte, 2001), although the former are more likely to resign from the teaching profession (Redding y Smith, 2016).

### **Local perspective**

Among the investigations that address this problem in Yucatán, we can mention the work of Cisneros-Cohernour (2007), where —according to the perspective of administrators, teachers and authorities of the Ministry of Public Education— problems of professional performance of teachers of science of state secondary schools in the city of Mérida.

Another study by Peña, Salazar, and Cisneros-Cohernour (2007) examined the different factors that influence teachers to actively participate in professional development activities. The findings demonstrate evidence of professional development problems, as well as expectations of teachers.

Likewise, the data collected in a review indicate that a large amount of research has been carried out from a positivist paradigm, which is why it is characterized by its strong emphasis on objectivity and quantitative measurement methods. A classic example of this is so-called process-product research, which supports direct instruction, presentation, and repetition of desired knowledge and behavior. According to Dunkin (1986), the process-product research of the 1960s and early 1970s is the foundation of teaching in higher education today. Other researchers have focused on identifying the characteristics or qualities used as descriptors of good teaching, as shown in table 1:

**Tabla 1.** Características de buena enseñanza definidas en varias investigaciones

Autor	Características de “buena docencia”
Feldman (1989): revisión de 31 estudios en los cuales los estudiantes y el personal docente especificaron las características instruccionales que ellos consideraron particularmente importante para la buena enseñanza e instrucción efectiva.	Percepción de los estudiantes de los resultados de impacto de la instrucción, estimula el interés de sus alumnos en el curso, domina el contenido, está disponible y dispuesto a ayudar a los estudiantes, se preocupa y respeta a sus alumnos, es amistoso, proporciona retroalimentación de calidad y con la frecuencia que requieren sus estudiantes, es sensible y toma en cuenta el nivel de clase y progreso de sus estudiantes, está preparado, es organizado, anima a sus estudiantes a hacer preguntas y a participar en la discusión, está abierto a opiniones de otros, cuida la claridad, objetivos y requerimientos de otros.
Deshpande, Webb y Marks (1970) definidas en orden de importancia por 674 estudiantes de licenciatura y 32 profesores de ingeniería.	Motivación, empatía, estructura, dominio del contenido, claridad, no sobrecarga a sus estudiantes en sus tareas, utiliza variados instrumentos de evaluación, ayudas pedagógicas, habilidades instruccionales y estilos de enseñanza.

Fuente: Adaptado de Developing Programs for Faculty Evaluation (pp. 32-33), por Miller, R. I. (1974). San Francisco CA: Jossey-Bass.

## Methodology

The research was carried out based on a quantitative, descriptive paradigm, and used mixed data collection methods. As stated by Ary, Jacobs and Razaviech (1985), this type of research allows the participants to be accurately represented, since it collects current information on the phenomenon or allows to specify the nature of a situation as it exists at the time of the study. For its development, the research was developed in the following stages:

### First Stage

At this stage, a meta-analysis of the databases of the Educational Evaluation Center of the Ministry of Education of the Government of the State of Yucatán was carried out. The aforementioned database includes demographic information on the characteristics of teachers with and without a normal school degree who have taken the Professional Teaching System exam in 2015.

The integration of three databases was taken, which together amounted to N = 18,954 records. Strict filters were applied to choose only those with sufficient information to perform the analysis. The result was a database of size n = 43. Of these, 30 (69.8%) were women and the rest were men. The sample had an average age of 31.53 years (D. E. 6.37 years), with the participant under 24 years of age and the largest of 47 years.

According to the analysis of demographic data, information was obtained from the variables indicated in Table 2:

**Tabla 2.** Especificación de las variables utilizadas en el estudio

Variable	Valores o unidades	Nivel de medición
Sexo	Hombre o mujer	Nominal
Edad	Años	Intervalo
Formación	Normalista u otra formación	Nominal
Nivel académico	Último nivel académico: licenciatura o Maestría	Ordinal
Especialización	Área de especialización: docencia, paradocencia, otras ciencias.	Nominal
Promedio de calificación	Promedio de calificación de la licenciatura.	Intervalo
Tiempo de titulación	Años que tardó en graduarse	Razón
Cursos	Tomó o no cursos, temáticas de los Cursos	Nominal
Resultado de evaluación	Idoneidad medida en los niveles A, B y C	Ordinal

Fuente: Elaboración propia

### Process

Once the database with the complete information was obtained, descriptive statistics were performed to know and characterize the set of variables in the sample. Subsequently, it was analyzed whether there were statistically significant differences between those with training in a normal school, in contrast to those who had training in another type of institution. The contrasts were carried out as follows: for nominal variables, the Chi-square test was used; and for ordinal variables, interval and ratio, the nonparametric Mann-Whitney U test was used. In both cases, a significance level of  $\alpha = .05$  was considered. Subsequently, the relationship between these variables was analyzed in a multivariate manner from a multiple correspondence analysis (Greenacre, 2017). The results were represented graphically and interpreted in a descriptive way.

## Second stage

In this second stage, we worked with a focus group of 12 teachers to adapt the Castro (2011) questionnaire. Once the instrument was adapted, it was reviewed by personnel from the State Government Secretariat of Education involved in the training of basic education teachers. In total, three interviews were carried out to improve the adaptation of the instrument and to gain a better understanding of their perceptions about the differences between teachers with different professional careers.

Based on the analysis of these interviews, the final version of the questionnaire was obtained, which was applied to 30 of the 43 teachers who participated in the first stage of the study in order to know their trajectory three years after having passed the professional teacher examination.

## Participants

Of the 30 participants, 23 were women (76.7%) and the rest were men, with ages ranging from 22 to 46 years, with an average age of 31.76 years and a standard deviation of 6.51. Likewise, it was determined that 80% ( $n = 24$ ) had a base, while the rest contract. Similarly, 6.7% worked at the preschool level, 53.3% at the primary level, and 40.0% at the secondary level. Furthermore, 73.3% of the participants were in a work center located in a rural area, and the rest in the urban one.

## Instrument

The questionnaire included aspects related to the general data of the participants: their academic training, academic update, professional trajectory, employment situation and data about their workplace. It was applied in pencil and paper mode, and was presented to the participants in the form of a self-report.

## Process

To examine the data, a univariate analysis was first considered, for which the variables of interest were described individually using relative frequencies and bar graphs for their representation. In this regard, it was considered whether they used the professional teaching service, other alternative courses and the number of courses taken. Training, postgraduate studies and other non-conventional updating methods were also considered.

Finally, factors that promote the update were taken into account, as well as the reasons for not updating. Subsequently, multivariate analyzes were performed using multiple correspondence analysis to identify relationships between the mentioned variables, which generated a two-dimensional model. The scores of each participant in the dimensions obtained were later used to perform a cluster analysis to identify groups among the participants that explained the behavior of the variables.

## Results

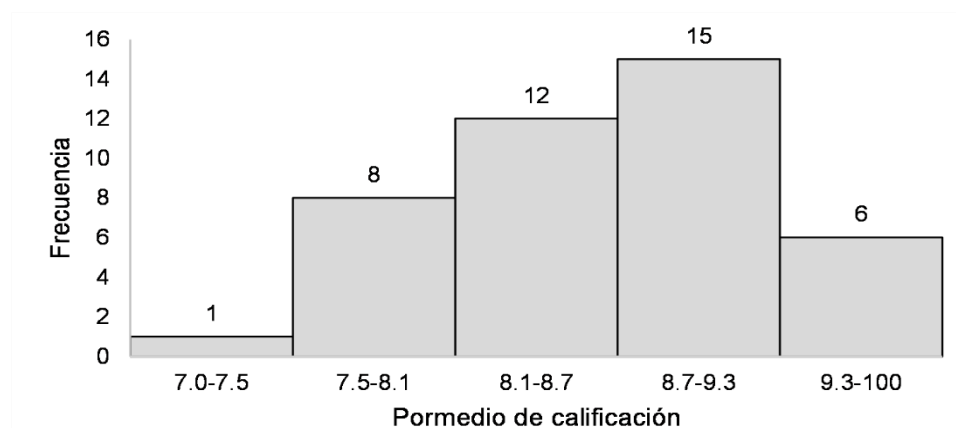
The results of the study are described below. For greater understanding, first, the data from the database analysis are presented, followed by the results of the focus group to the teachers who approved the Professional Teaching System.

### Results of the first stage

The results of the database analysis indicate that, of the total number of participants, practically 70% of the selected sample came from a normal school, while 30% from another training. That is, 7 out of 10 supporters were normalistas. Regarding their training, the majority had a bachelor's degree, and only 14% had a postgraduate degree (master's). In fact, the majority specialized in educational / teaching science, followed by paradox (eg, psychology, special education), and less than 10% specialized in other sciences.

Regarding the distribution of undergraduate qualifications obtained, a large proportion (62%) obtained marks higher than 8, but less than 9.5, and it was uncommon to obtain qualifications less than 7.5 (Figure 1).

**Figura 1.** Calificaciones de los sustentantes

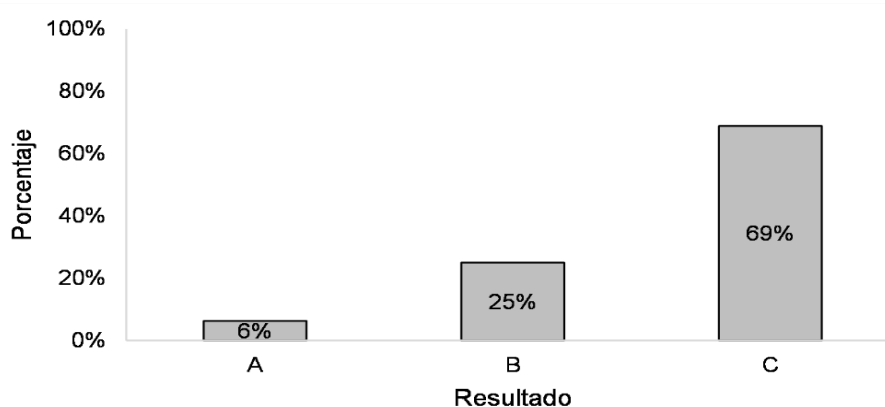


Fuente: Elaboración propia

Another important aspect considered in the instrument was the training that the subjects received prior to the exam. The results indicate that 6 out of 10 of them had previously attended a diploma or course. In this sense, most of the courses correspond to those dedicated to teaching-learning or human development processes (20.9% each), followed by educational models (RIEB, PEP) (14%), then others (9%), ICT (7%) and with a lower percentage appear those who had training in educational management or administration (4.7%).

Finally, the level obtained by the participants in the evaluation carried out for the competition was considered. The results can be seen in figure 2, where it is observed that a high percentage obtained level C, followed by level B and A.

**Figura 2.** Nivel obtenido por los participantes en la evaluación de oposición



Fuente: Elaboración propia

Likewise, the training of the supporters was contrasted in relation to the variables described by means of group comparison tests. As can be seen in Table 3, the only variable that showed statistically significant differences was the specialization of the participants. In other words, neither the academic degree, age, years until graduation, qualification, suitability or courses taken showed differences between those who were trained in a normal school, in contrast to the participants trained in another type of school.



**Tabla 3.** Comparación de variables según formación de los sustentantes

Variable†	Normalistas	Otra formación	Estadístico	Sig.
Grado académico			.032	.858
Licenciatura	86.7 %	84.6 %		
Maestría	13.3 %	15.4 %		
Especialización			7.494	.024
Educación básica	83.3 %	61.5 %		
Paradocencia	16.7 %	15.4 %		
Otras ciencias	0.0 %	23.1 %		
Edad	31.56 (±6.14)	31.46 (±7.13)	187.0	.832
Años hasta titularse	0	1	128.0	.274
Calificación	8.65 (±.69)	8.77 (±.52)	167.5	.727
Idoneidad (B y A)	30.0 %	33.3 %	115.0	.811
Cursos de formación	60.0 %	61.5 %	.009	.925
Modelos educativos	10.0 %	23.1 %	1.292	.256
Desarrollo humano	20.0 %	23.1 %	.052	.820
TIC	6.7 %	7.7 %	.015	.903
Dirección y administración	6.7 %	0.0 %	.909	.340
Enseñanza-aprendizaje	23.3 %	15.4 %	.346	.556
Otros	10.0 %	7.7 %	.057	.811

† Se reportan porcentajes para las variables nominales, y se reporta como estadístico la  $\chi^2$ .

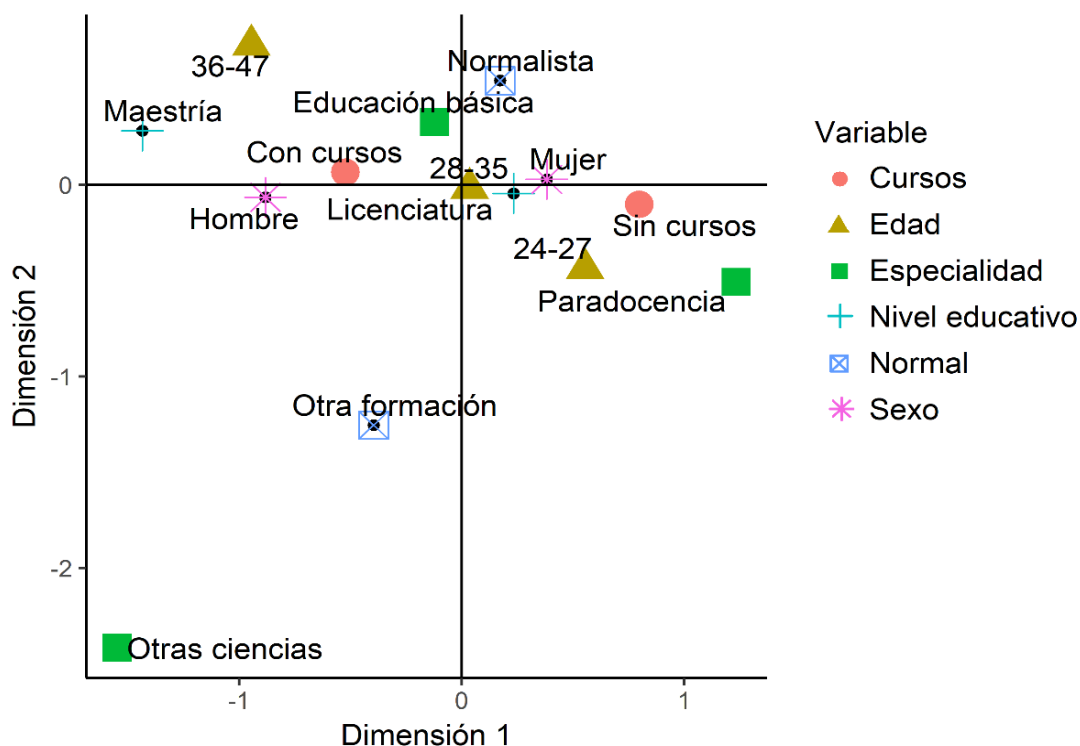
Fuente: Elaboración propia

As can be seen in Table 3, in both groups, the bachelor's degree was the degree with the highest frequency. The average age was similar, close to 31 years. Likewise, both took approximately 0 to 1 years to graduate, had similar percentages of suitable applicants (approximately 30%), and had a percentage of similar courses (approximately 60%), with neither of them having taken a subject more frequently. course than another.

The specialization variable was the only one that presented statistically significant differences. Those who had a normalist training are more likely to dedicate themselves to basic education compared to those who have other training. According to the results, they report specializing in basic education topics such as preschool, Spanish, mathematics and other subjects addressed at the various levels of basic education. In contrast, participants with other training tend to dedicate themselves to various specializations, such as educational sciences or pedagogy, which allows them to function in basic education. In fact, the latter usually have a training in another science (such as social sciences), while the normalistas did not present any specialization other than the branch of education. However, in both cases there was a similar proportion of specialization in tasks typical of paradox, such as special education or psychology.

Finally, it should be noted that the previous results were carried out in a univariate way, so it was also considered pertinent to analyze the multivariate relationship between all the variables. To do this, a multiple correspondence analysis was performed between the variables of interest, additionally considering the sex and age of the participants. The result was a two-dimensional model that explains 55.5% of the variance between the variables. The first dimension encompasses the relationship between courses, sex, academic level and age, and explains 31.7% of the variance. For its part, the second dimension, which explains 23.8% of the variance, encompasses the variables of training, specialty and age.

**Figura 3.** Relación multivariada entre las variables de interés



Fuente: Elaboración propia

In figure 3 the following patterns can be observed:

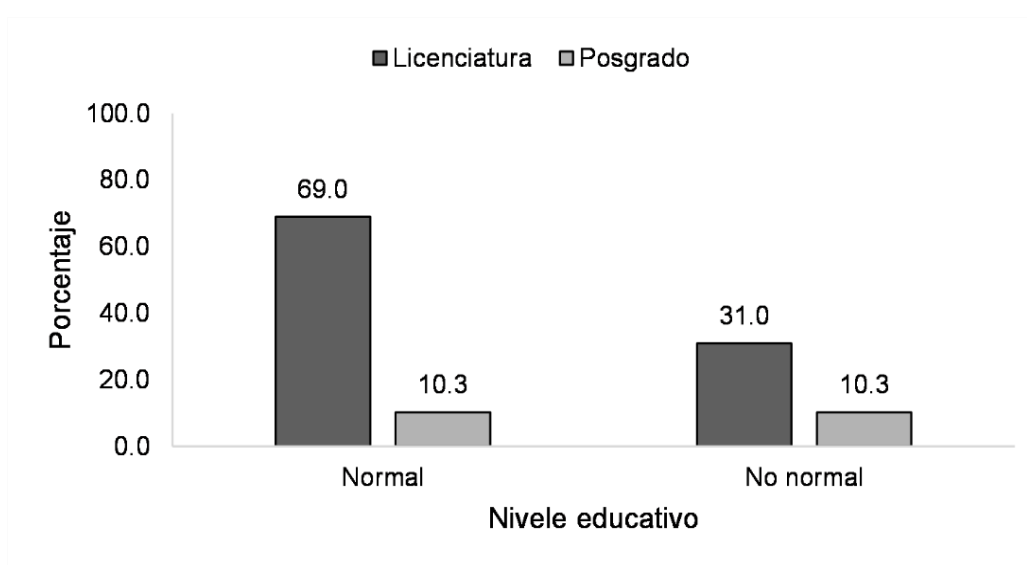
- Para-teachers are related to the fact of not having courses, and with young ages, ranging from 24 to 27 years.
- Being a woman is related to having a degree, being a normalist, specializing in basic education, being between 28 and 35 years old and having courses. For its part, being a man was related to having courses, having an older age (36 to 47 years) and studying until masters.

- On the other hand, specializing in another science only had a relatively close relationship with having a different training than normal, which should not be surprising given that training was related to specialization.
- Finally, according to the sequence of the variables in the plan, it seems that having refresher courses and a postgraduate degree is more associated with age than with other variables, since their patterns of distance from dimension 1 are similar. This points to time or age as the variable more related to the trajectory than any other variable studied.

## Results of the second stage

As indicated above, in this stage 30 of the 43 teachers who participated in the first stage were followed up to examine their trajectory after three years of having approved the professional teaching system and continuing their educational practice in their contexts. . According to the results, 69% of the participants (n = 20) studied their professional training in a normal school, while 31% (n = 9) did so in another type of institution (eg, universities, technological , etc.) as can be seen in figure 4. When it was analyzed whether there is an association between professional training and studying a postgraduate degree, no statistically significant differences were found between those who were trained in a normal school compared to those who had other training ( $\chi^2=.019$ ; gl = 1; p = .625).

**Figura 4.** Formación profesional y de posgrado según modalidad de estudios



Fuente: Elaboración propia

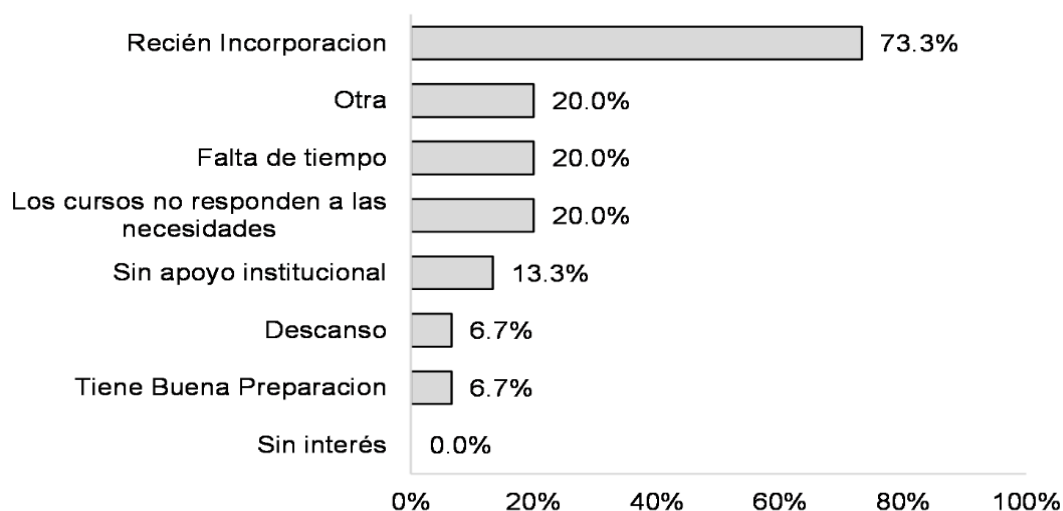
The courses that teachers have taken as offered by the National Council of Professional Teaching Service were also explored. In this regard, the majority have not taken any course (83.3%). However, there are some participants who have taken courses in teaching Spanish (12.5%), followed by mathematics (4.2%), as well as the national course on educational integration (4.2%) or the media didactics (4.2%) .

Likewise, the main reasons for updating teachers were explored. For 63.2%, the main reason is to improve teaching practice, closely followed by improving academic development (57.9%) (this in some way indicates the teaching interest to improve at a professional level). In third place, 21.1% explained the domain of subjects, 15.8% the favorable economic condition, 10.5% comply with the regulations, and 5.3% by interest and personal taste.

Likewise, it was considered essential to explore who had received the most support. The majority believed that it was on their own initiative (68.4%); in second place are managers (21.1%), followed by colleagues (15.8%), and in the last places are educational authorities, school supervision and “others” (5.3%).

On the other hand, when the main reasons why teachers are not updated were explored, it was found that most of them are due to their recent incorporation into the educational system (figure 5).

**Figura 5.** Razones para no actualizarse según los participantes



Fuente: Elaboración propia

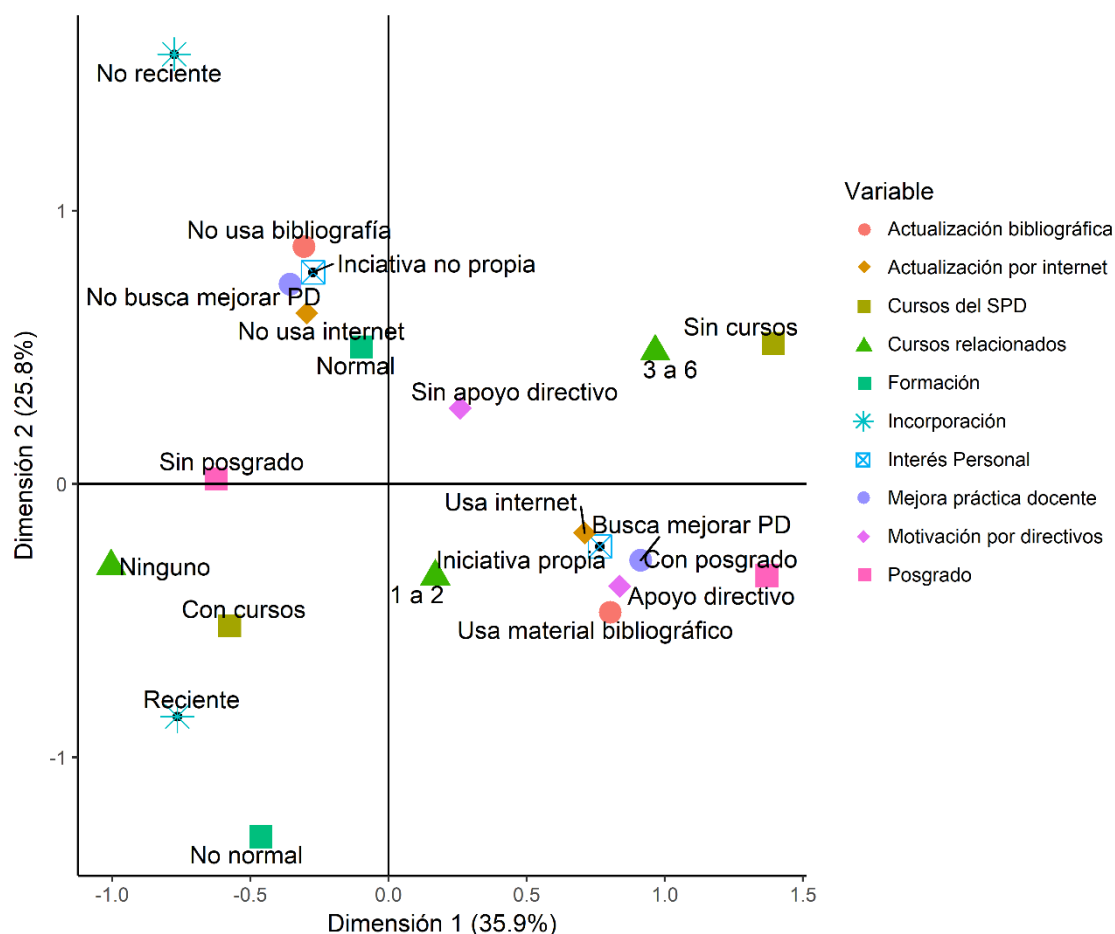
### Multivariate analysis

Subsequently, based on the previous descriptions, it was decided to analyze existing multivariate relationships by means of a multiple correspondence analysis that considered the following variables: education (normal or not normal), whether or not they have postgraduate studies, whether it is updated by the two most frequent alternative means (bibliography or internet), if you have accredited professional teaching service courses, how many courses have you taken related to your training (zero, one to two, or three to six), if it is not updated because it is of recent incorporation, if you have a personal interest in updating, if you consider that you should update to improve your teaching practice, or if you have been supported by the directors to update.

The analyzes that considered these ten variables provided a two-dimensional model. The first explains 35.9% of the variance, with an internal consistency of  $\alpha = .802$ ; while the second dimension explains 25.8% of the variance, with an internal consistency of  $\alpha = .680$ . In total, the two-dimensional model manages to explain 61.7% of the variance of the information.

In general, you can see how the variables are related in figure 6. See that, in the upper left quadrant, the values of those variables that do not seek updating in any way are grouped. For example, those who do not consider that they need to improve their teaching practice (DP), do not use bibliography to update themselves or the internet, and tend to have little initiative of their own. Likewise, in the lower right quadrant are those values that are seeking update and have conditions that favor it. Thus, for example, those who seek to improve their teaching practice (DP) usually have postgraduate degrees, support from directors and use alternative means for updating.

**Figura 6.** Relación multivariada de la actualización docente, formación y motivaciones



Fuente: Elaboración propia

Subsequently, descriptive statistics of the ten variables of interest (Table 1) were run to determine the characteristics of each group. The results presented in Table 4 indicate that, in particular, group 1 is made up of normal students, with a large proportion of participants without postgraduate degrees, most of whom do not usually use bibliographic material to update themselves, and attend service programs teaching professional (SPD), but not alternative courses. In addition, they do not consider their recent admission as a limitation for taking courses, and although most of them have their own initiative, they do not usually have support from managers.

For its part, group 2 is made up of professionals with different training than normal, with a considered proportion of postgraduate studies, they usually use alternative means of training (both books and the internet), as well as SPD courses, and other alternative courses. However, they consider that being a newcomer does not allow the initial update. Despite this, they show much greater self-initiative, support from managers, and consider improving their teaching practice important.

**Tabla 4.** Descriptivos de los grupos obtenidos en las variables de interés

Variables	Categorías	Grupo 1		Grupo 2		Grupo 3	
		N	%	N	%	N	%
Formación profesional	Normal	15	<b>100.0 %</b>	2	33.3 %	3	37.5 %
	No normal	0	0.0 %	4	<b>66.7 %</b>	5	<b>62.5 %</b>
Estudio de posgrado	Sin posgrado	13	<b>86.7 %</b>	2	33.3 %	8	<b>100.0 %</b>
	Con posgrado	2	13.3 %	4	<b>66.7 %</b>	0	0.0 %
Se actualiza por medio de material bibliográfico	Sí	5	35.7 %	7	<b>100.0 %</b>	0	0.0 %
	No	9	<b>64.3 %</b>	0	0.0 %	2	<b>100.0 %</b>
Actualización por internet	Sí	8	57.1 %	5	71.4 %	0	0.0 %
	No	6	42.9 %	2	28.6 %	2	100.0 %
Cursos acreditado del SPD	No	7	77.8 %	5	71.4 %	8	100.0 %
	Sí	2	<b>22.2 %</b>	2	<b>28.6 %</b>	0	0.0 %
Cantidad de cursos alternativos	Ninguno	6	<b>40.0 %</b>	1	14.3 %	8	<b>100.0 %</b>
	1 a 2	4	26.7 %	3	<b>42.9 %</b>	0	0.0 %
	3 a 6	5	33.3 %	3	<b>42.9 %</b>	0	0.0 %
No actualización por incorporación reciente	Sí	2	33.3 %	3	<b>100.0 %</b>	6	<b>100.0 %</b>
	No	4	<b>66.7 %</b>	0	0.0 %	0	0.0 %
Motivación: iniciativa propia	Sí	7	<b>53.8 %</b>	6	<b>100.0 %</b>	0	0.0 %
	No	6	46.2 %	0	0.0 %	2	<b>100.0 %</b>
Motivación: apoyo de directivos	Sí	2	<b>15.4 %</b>	2	<b>33.3 %</b>	0	0.0 %
	No	11	84.6 %	4	66.7 %	2	<b>100.0 %</b>
Razón: mejorar práctica docente	Sí	6	<b>46.2 %</b>	6	<b>100.0 %</b>	0	0.0 %
	No	7	53.8 %	0	0.0 %	2	<b>100.0 %</b>

Fuente: Elaboración propia

Finally, group 3 is made up mostly of professionals with training in non-normal institutions, without postgraduate studies, who do not use alternative forms of training, nor do they use SPD or alternative courses. They are not updated because they have just entered the educational system, and they have not yet indicated their own initiative, the support of managers or the identification of the need to improve their teaching practice.

## Discussion

The factors that can influence the differences in training received between different types of teachers is a topic that has been studied for years. In this work, it was possible to partially verify the hypothesis that the professors who completed their degree in normal schools differ significantly from those professors who studied their degree in other public or private institutions. However, the evidence is not totally conclusive and leaves the dialogue open for possible research that deepens the study of the quality of teacher training.

The results of the study were consistent with the investigations of Ludlow (2013) and Zeichner and Schulte (2001) in that differences were found between teachers who had normalist training and those who did not, even when the latter received training later. This may be because—as Zeichner and Schulte (2001) and Linek et al. (2012) - training programs for teachers who do not have a degree in education or pedagogy have less coverage and duration, so these teachers may be less prepared to apply teaching techniques, develop the curriculum or manage the classroom. Although, on the other hand, those whose original training is not in education or pedagogy, but in a disciplinary area, have a greater mastery of content (Kee, 2012). This is important because a study conducted on science teaching in Yucatán found that secondary school mathematics, chemistry, physics and biology teachers did not have mastery of the disciplinary content they teach at the level where they should teach it (Cisneros-Cohernour, 2007).

Based on the results, the importance of specialization in the training of teachers who work in rural communities is emphasized as a strategy to strengthen teaching practice in those contexts. Especially when official documents such as the PND (2019-2024) affirm that during the neoliberal period the public education system was devastated, which resulted in the degradation of the quality of education at the basic, middle and upper levels. (Presidencia de la República, 2019).

In particular, it is important to strengthen teachers in their empowerment in digital technologies, mainly in rural contexts where more than 73% of participants work, since the incorporation of technologies into the basic education curriculum every day it demands more of teachers' familiarity with these tools.

Previous studies in rural contexts (Domínguez Castillo, Canto Herrera, Ortega Carrillo and McCalman, 2016; Domínguez Castillo, Cisneros-Cohernour and Cab Pech, 2017; Domínguez Castillo, Cisneros Cohernour and Barberà, 2019) have documented the

Importance of teacher training in digital technologies as a strategy to strengthen their technological competencies, improve their teaching practice, the learning of their students and favor their insertion in the knowledge and information society of them and of the communities where they work.

Finally, the importance of reinforcing the comprehensive professionalization of teaching staff through training is emphasized as an essential element for basic level teachers. This action is contemplated in objective 2.4.2 and in strategy 2.4.2.1 of the State Development Plan for Yucatán (2018-2024), which mentions that it is important to improve the quality of the state education system and strengthen it at all levels (Government of the Yucatan State, 2018). To this end, the role of managers and the



continuous improvement that each teacher seeks for their teaching practice will be extremely important for the improvement of the learning of students and our peoples.

## Conclusions

The work carried out allowed to partially verify the hypothesis that the teachers who completed their bachelor's degrees in normal schools differ significantly from those who studied their bachelor's degrees in other public or private institutions. In general, it was observed that not all the variables obtained statistically significant differences, since only the area of specialization was related to the training of teachers, being those from normal schools those who usually specialize in areas related to basic education in its various levels, while those who come from other institutions tend to specialize in other areas and even other sciences. In addition, both teachers present similar proportions of specialization in para-educational areas, such as special education or educational psychology.

However, the rest of the variables did not show differences because, without considering the area of specialization, it is a group of professors -the majority- with general undergraduate studies, who study the same proportion and course topics, and whose degree period (approximately one year) is practically the same. Although initially it was considered that these variables could possibly differentiate in both formations, the truth is that it did not. It is possible that this is due to the fact that the calls tend to require certain homogeneous criteria for the opposition and selection of teachers.

On the other hand, although taking courses and their subject matter was also considered as a possible variable that presented differences, it did not. Again, it is possible that it is due to the fact that the courses offered to teachers are either compulsory or open to any interested party, so that the quantity or subject matter is not a differentiator of teacher training. However, the descriptions obtained reveal an important thing: certain especially relevant topics do not present a high prevalence, such as the use of ICT or specialized courses in management skills or educational administration.

The foregoing is especially relevant for two considerations. On the one hand, it is appropriate to offer training to teachers with regard to the use of ICT, since the use and penetration of these technologies is not only more frequent in daily life, but also their incorporation into the curriculum of basic education every time it demands a greater familiarity with the subjects. For example, nowadays it is common for primary school not

only to explain the characteristics and benefits of ordinary mail, but also to include the use of email, so it is relevant that teachers are offered and required knowledge in ICT.

The results obtained in the follow-up of teachers after three years of having passed the professional teaching system indicate, based on the univariate and multivariate analyzes, that there are at least five possible conclusions that should be considered.

There are contextual and personal variables that promote the updating of teachers, such as support from directors or the identification of a need to improve teaching practice that should be included in future programs that seek to influence teacher updating.

Obtaining three groups (normalistas, non-normalistas seeking updating, and non-normalistas recently admitted) indicates the presence of factors specific to each group.

On the one hand, although the normalistas seek more formal training (such as the professional teaching service), and fewer other ways of alternative updating, it is possible that this is due to the fact that their initial training is fully related and focused on the educational and teaching field, which possibly has repercussions in considering to a lesser extent the need to improve their teaching practice.

On the other hand, the non-normalistas who seek updating probably present training that is far from teaching or at least not as focused as the

normalistas, which is why, in addition to formal updating, they also look for alternative means of updating. It is possible that this is because their training makes them consider it necessary to improve their teaching practice, and therefore they actively seek courses and training opportunities. In addition, it is also possible that managers notice this need, so they usually have more support for improvement.

Finally, the newly admitted non-normalists are not yet looking for the update, and consider their recent admission as a limitation in knowing what to take. Possibly their lack of practical relationship with teaching work also explains that they have not yet identified teaching improvement as a necessity.

## Recommendations

The study allows us to recommend that possibly at least three separate teacher update programs should be considered according to the groups identified. For example, the group of normalistas, having a solid training in teaching, may not require courses related to teaching-learning, but rather to other areas that should be explored in greater depth. For their part, non-normalistas require at least two plans: one for those who are starting and who must seek their updating needs and, on the other hand, those who are already immersed in the educational system and who possibly require not only training

in aspects teachers, but also facilitating mechanisms (greater support from managers and colleagues, and alternative training on the internet or in bibliographic sources). Undoubtedly, teacher update programs must consider the homogeneity of these three groups.

Second, offering courses in management skills and educational administration is especially relevant considering that many teachers may have the opportunity to grow professionally or organizationally, either by filling management positions in schools or in the Ministry of Education itself. The latter highlights the need for teachers to know and have skills that allow them to properly manage and administer the resources of their campus or their future area. Therefore, it is considered appropriate to offer courses taking into account an organizational growth plan for teachers.

Finally, the results also demonstrated the relationship between training and teaching career with other variables in a multivariate manner. In the analysis, although information was obtained consistent with previous analyzes (such as the relationship between specialization and training), additional information was also obtained, such as the fact that taking courses or educational level (aspects related to continuous training) are more directly associated with the age of the teachers than with any other variable. Undoubtedly, the above is not an unexpected result, since an older age is linked to having had more opportunities for continuous training, although this also reflects the need to start a training plan from an early age in the teaching career, in addition perhaps to consider a development plan and continuous training planned according to the age and development of the individual in the educational organization.

In summary, the present study made it possible to detect differences (although only in a matter of area of specialization) in the training of teachers who studied in normal schools compared to those who studied in other types of institutions. In this sense, the continuous training trajectory seems to be more influenced by the age of the teachers, and not so much by the institution of origin.

### **Future lines of research**

Based on the conclusions, future studies may examine in greater depth the quality of the teaching performance of teachers with different types of training, as well as the extent to which the conditions of the context in which they teach favor updating and teacher training.

Given the new conditions in which distance education takes place, as a result of the covid-19 pandemic, future studies need to examine how this context has been affected and how teachers respond to the conditions imposed by the pandemic, as well as the existence of support for teachers and students to develop distance teaching and the most significant obstacles and learning and the new training needs of teachers.

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