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Research Competencies of Social Science Teachers - Trends in Latin American Universities

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EN | Abstract:
This article explores the close relationship between teaching and research in the educational field, highlighting the importance of teachers' research activity in the evaluation of the quality of educational institutions. Research competence is addressed according to different authors, highlighting aspects such as interest and motivation, and a new concept is proposed that integrates different areas of the development of this competence in teachers. This approach considers the domain of higher education, determined purposes, contents, participatory research methods, and the use of resources for an effective research activity in professional practice.

Key Words: teaching, research, science education, methodology, social sciences, university education, SDG 4, SDG 5, SDG 10, SDG 16, SDG.

ES | Abstract:
Este artículo explora la estrecha relación entre la docencia y la investigación en el ámbito educativo, destacando la importancia de la actividad investigativa de los docentes en la evaluación de la calidad de las instituciones educativas. Se aborda la competencia investigativa según diferentes autores, resaltando aspectos como el interés y la motivación, y se propone un nuevo concepto que integra diversas áreas del desarrollo de esta competencia en los docentes. Este enfoque considera el dominio de la educación superior, propósitos determinados, contenidos, métodos de investigación participativa y el uso de recursos para una eficaz actividad investigativa en la práctica profesional.

Palabras clave: *docencia, investigación, educación científica, metodología, ciencias sociales, educación universitaria, ODS 4, ODS 5, ODS 10, ODS 16, ODS.*

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INTRODUCTION

The relationship between teaching and research, according to Oropeza et al. (2014), has been verified throughout the history and development of education. Today, the quality of educational institutions is evaluated, nationally and internationally, on the basis of various criteria; one of the most important is related to the research activity of teachers, the implementation of research projects, and research products, among other indicators. For teachers, research has become a way of teaching; even more, it is the central axis of academic work, since it generates a link with the advancement of scientific knowledge and the culture of humanity, so teaching and research are closely related.

Research competence has been defined by various authors. For example, Pérez (2012) states that research competence involves the ability to use knowledge to observe, inquire, argue, and systematize with the aim of generating new knowledge. Notably, the aspects of interest and motivation are highlighted, as the author considers them integral to the research endeavor. These elements should be incorporated into the educational process, starting from the planning stage, in order to ensure a genuine passion for the object of study and for research itself.

Another definition of research competence is that proposed by Pla (2004), as cited in Oropeza et al. (2014), who conceptualizes it as the psychological configuration of the teacher's personality and as a construct that reflects their suitability to enhance students' educational process through research activity. This definition assumes research competence to be part of the teacher's psychological profile.

However, neither of the two aforementioned definitions encompasses the broader areas involved in the development of research competence among educators. Therefore, Oropeza et al. (2014) propose a new conceptualization of research competence that considers the conditions in which in-service teachers are trained and develop. They define it as a higher education domain based on specific objectives, content (understood as knowledge, skills, and values), the method of participatory research projects, and the use of tools and resources that facilitate effective engagement in research activities within professional practice.

Jaik (2017) also defines research competence as the set of knowledge, attitudes, skills, and abilities necessary to carry out the development of a research project. This competence is particularly relevant when considering the importance of generating and understanding scientific research processes—from project formulation to the publication of results in specialized journals.

Adapting the previously discussed concepts, this study adopts the definition of research competence as the teacher's mastery of skills, knowledge, and values related to knowing how to conduct research, how to be a researcher, and how to transfer the knowledge

obtained through research. In other words, research competence is associated with the following foundational domains of knowledge: knowing how to do, understood as the application of skills based on knowledge; knowing how to transfer, understood as the ability to transcend the immediate context to act, adapt to new situations, or transform them; and knowing how to be and live together, understood as the most complex aspect due to its attitudinal and even axiological implications.

The theoretical systematization of research competencies conducted by Estrada Molina (2014) is particularly noteworthy. The author reviewed definitions proposed by scholars from Europe, Asia, and the Americas over a 15-year period (1999–2013), essentially covering the emergence of this compound term. Estrada analyzed the dimensions and indicators embedded in the proposed concepts for the training, development, and evaluation of this competence, grouping them into five categories.

In the first group, research competence is conceptualized as the integration of cognitive dimensions—knowledge and skills; personal qualities—attitudes and abilities; and metacognitive aspects that enable students to perform adequately in research activities.

The second group, according to the systematization, includes the dimensions identified in the first group and adds a new one: the professional dimension. Meanwhile, the third group incorporates motivational aspects and personality traits, aligning with Pérez (2012), who considers interest and motivation as fundamental components of this formative process—elements that deserve particular attention when designing a strategy.

Likewise, the fourth group incorporates the professional's social experience as part of the conceptualization for the development of research competence. Social responsibility is an essential component of professional ethics. This aspect, like those mentioned by the previous groups, is also taken into account by the fifth group in Estrada Molina's (2014) classification. It is worth highlighting that this group includes authors aligned with complex thought, such as Morín and Tobón, among others. In this sense, research competence is defined as a complex process that enables competent and contextually appropriate performance.

To date, the research competencies of undergraduate faculty have received limited attention in the academic literature, thus revealing an epistemological gap in the understanding of research competencies at this educational level.

In Latin America, research competencies among educators focus on the development of skills for educational research, promoting the capacity to generate knowledge, apply appropriate methodologies, and contribute to the continuous improvement of the educational process. These competencies include evidence seeking, critical analysis, and the application of research findings to optimize pedagogical practices.

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In addition to basic research skills, research competencies among educators in Latin America, as noted by Macazana (2021), also encompass the ability to design and conduct educational research projects, promoting innovation and the adaptation of pedagogical strategies to specific contexts. Collaboration among teachers to share experiences and knowledge is also highlighted as an integral part of these competencies, thereby strengthening a culture of collaborative educational research in the region. Ongoing professional development and access to adequate resources are fundamental to the effective development of research competencies in the Latin American teaching context.

In El Salvador, research competencies among educators focus on strengthening teachers' capacity to address specific challenges within the Salvadoran educational system. This involves not only acquiring technical research skills but also gaining a deep understanding of local needs and applying research findings to improve teaching quality. Teacher collaboration and a strong connection with the country's socioeconomic reality are essential aspects for these competencies to have an effective impact on educational development in El Salvador.

The study presented in this article was conducted at the Universidad Modular Abierta, San Salvador campus. The initial inquiry focused on the activities carried out in relation to research competencies. According to the university's deans, these efforts have mostly been limited to training in research methodology. However, activities aimed at strengthening the mastery of research competencies remain scarce. Therefore, the inquiry helped avoid duplication of efforts or repeating what has already been done, and additionally, it allowed for the identification of gaps that had already been addressed.

In other words, it is necessary to determine the set of knowledge, attitudes, skills, and abilities that undergraduate faculty at the Universidad Modular Abierta (UMA) possess to carry out the development of a research project. This study aims to identify the levels of development of research competencies among undergraduate university faculty. Based on this diagnostic assessment, it will be possible to identify and evaluate the set of knowledge, attitudes, skills, and abilities that faculty members possess—as well as those they lack—that are essential for conducting research projects. Likewise, the findings will allow for the formulation of assertive training solutions and proposals for future studies.

METHODOLOGY

The approach of this study was quantitative, as it aimed to identify a relationship between the quantification of two variables: the research competencies of master's degree faculty at the Universidad Modular Abierta and the standardized competencies for conducting research. The purpose of this was to address the research problem and to generalize the results obtained. As Hernández-Sampieri and Torres (2018) state, "quantitative research seeks to generalize the results found in a group (sample) to a larger population" (p. 19). In other words, the results provide a general overview of the current state of faculty members'

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research competencies from a numerical pattern perspective, which, when analyzed statistically, offers insight into the level of mastery these faculty members hold at the institution under study.

The research design was non-experimental and cross-sectional, as there was no intention to manipulate the variables analyzed in this study. Rather, the phenomenon was observed in its natural context to subsequently carry out a descriptive and exploratory analysis of its behavior (Hernández-Sampieri & Torres, 2018). Additionally, it was considered cross-sectional because data collection was conducted at a single, predetermined point in time in order to obtain a current snapshot of the issue under investigation (Pita & Pértegas, 2002).

According to the level of depth, the research scope was descriptive, as it aimed to outline the traits, qualities, characteristics, or attributes of the phenomenon and sought to descriptively examine the variables related to research competencies among undergraduate faculty at the Universidad Modular Abierta. The main objective was limited to gathering information that would allow for the identification and description of data to test hypotheses and/or respond to the research problem descriptively. Moreover, the study was correlational, seeking solely to determine the relationship between two variables (Gonzales et al., 2020). In this way, the goal was to obtain statistical data to reveal how the two variables interact—if such interaction exists. It is important to note that this type of study does not determine causality; rather, it provides a diagnostic overview.

The study sample consisted of 64 undergraduate faculty members, all from the Universidad Modular Abierta. The sampling method used was of a non-probabilistic nature and is classified as purposive sampling, in which the researcher selects the population for the study without aiming for statistical representativeness (Otzen & Manterola, 2022). However, the specific sampling technique applied in this study was stratified random sampling, which, according to Crespo (2022), divides the population into strata that will form part of the sample, either randomly or using prior knowledge to guide the selection. In this context, faculty participation was homogeneous, with representation from the various faculties within the Universidad Modular Abierta.

The data collection technique employed was a survey using a structured questionnaire, which was validated in the study by Parra (2021), titled Evaluación de Competencias Investigativas, and further validated and applied by the Colombian Ministry of Education in students from both public and private universities. Although originally applied to students, the instrument was considered appropriate for faculty as it assesses both basic and advanced research competencies, which are relevant to evaluating faculty proficiency for improved teaching practices. The questionnaire consists of 43 items addressing the taxonomy of research competencies and employs a Likert-type scale with the following response options: Yes, No, and With difficulty. Additional questions were included to collect general demographic data such as gender, faculty affiliation, and type of contract

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(adjunct/hourly or full-time).

Data collection was carried out via email using a standardized Google Form distributed to the faculty population included in the sample through the respective academic deans.

The data were analyzed by examining the presence or absence of the targeted competencies. Accordingly, responses marked as “No” and “With difficulty” were categorized as “Absence,” while “Yes” was categorized as “Presence.”

RESULTS

The question that has guided this research was: What is the level of mastery of Research Competencies by the Undergraduate Teachers of the Open Modular University? Based on this question, the findings have been organized into five main sub-themes: Critical-Reflective Competencies, Methodological Competencies, Technological-Digital Competencies, Logical-Mathematical Reasoning Competencies and Communicative Competencies.

The results are presented in bar graphs, which clearly show the participation of 64 teachers in the survey to self-evaluate their research competencies. The general information shows that 52.3 % of the subjects under study are from the Faculty of Economic Sciences, 30.8 % from the Faculty of Jurisprudence and Social Sciences and 18.5 % from the Faculty of Sciences and Humanities. In addition, of the total number of respondents, 40% are female versus 60% of male teachers, most of the teachers who participated are of the Class-Hour modality with 92% and only 8% are full-time teachers.

In relation to the variable Methodological Competencies, the 22 indicators that help determine methodological competencies were taken into account. Figures 2, 3 and 4 present these data visually.

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Figure 1.

Graphical representation for teachers and their answers for "Critical-Reflective Competencies".

The graph shows, first of all, that the majority of teachers have critical-reflective competence. They affirm that they know how to create research ideas from real situations specific to the exercise of the profession, demonstrated by 97%, 95% affirm that they recognize the importance of the studies for the community, 93% have a critical stance on the conceptualizations presented by the authors, 92% of the teachers surveyed affirm that they propose actions for a possible intervention to solve the problems studied, interprets the definitions presented by the authors in order to clarify concepts and envisions the contributions that could be derived from the study to improve the practice of the profession, of the indicator "deduces conclusions from the results analyzed" 87% claim to do so and only 75% analyze results from graphs (pie charts, bar graphs, histograms).

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Figure 2.

Graphical representation for teachers and their responses to "Methodological Competencies" (Part II)

Of the teachers under study, 89% know how to identify the type of research based on their interests and spatially locate the field of action, 88% delimit the time frame for the study, 80% delve into conceptual references that explain the topic, 76% explore the state of the art of the study, 75% recognize the research design selected in correspondence with the type of study, the same percentage constructs variables operationally.

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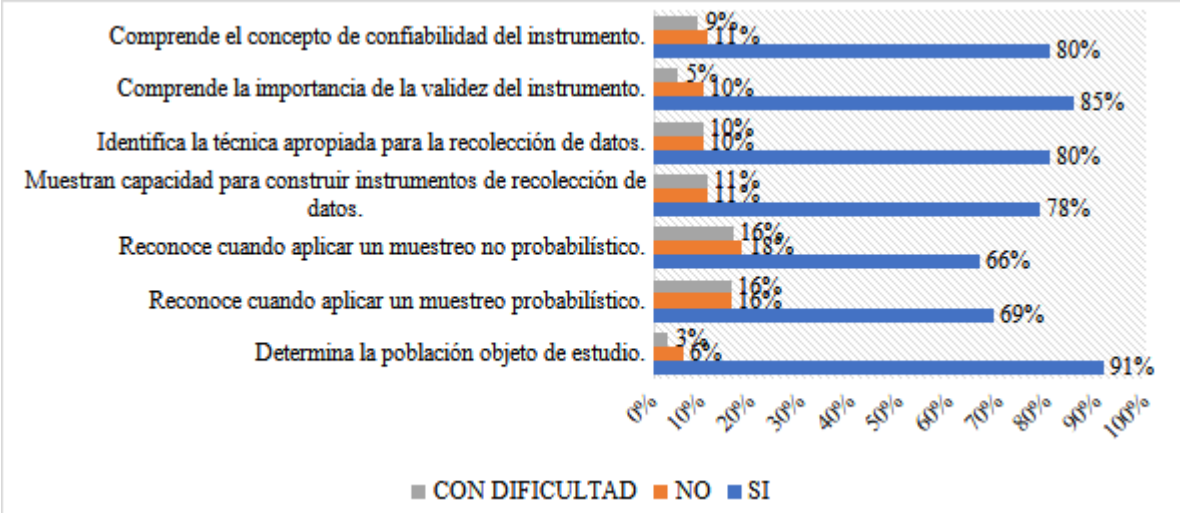
Figure 3.

Graphical representation for teachers and their answers for "Methodological Competencies" (Part III)



Of the total population 91% determine the target population of the study, 85% of the teachers understand the importance of the validity of the instrument and 80% understand the concept of reliability, the same percentage identifies the appropriate technique for data collection, 78% show the ability to construct data collection instruments, only 69% recognize when to apply probability sampling and 66% recognize when to apply non-probability sampling.

To find the development and mastery of digital technological competencies, six indicators were taken, which are visible in Figure 5.

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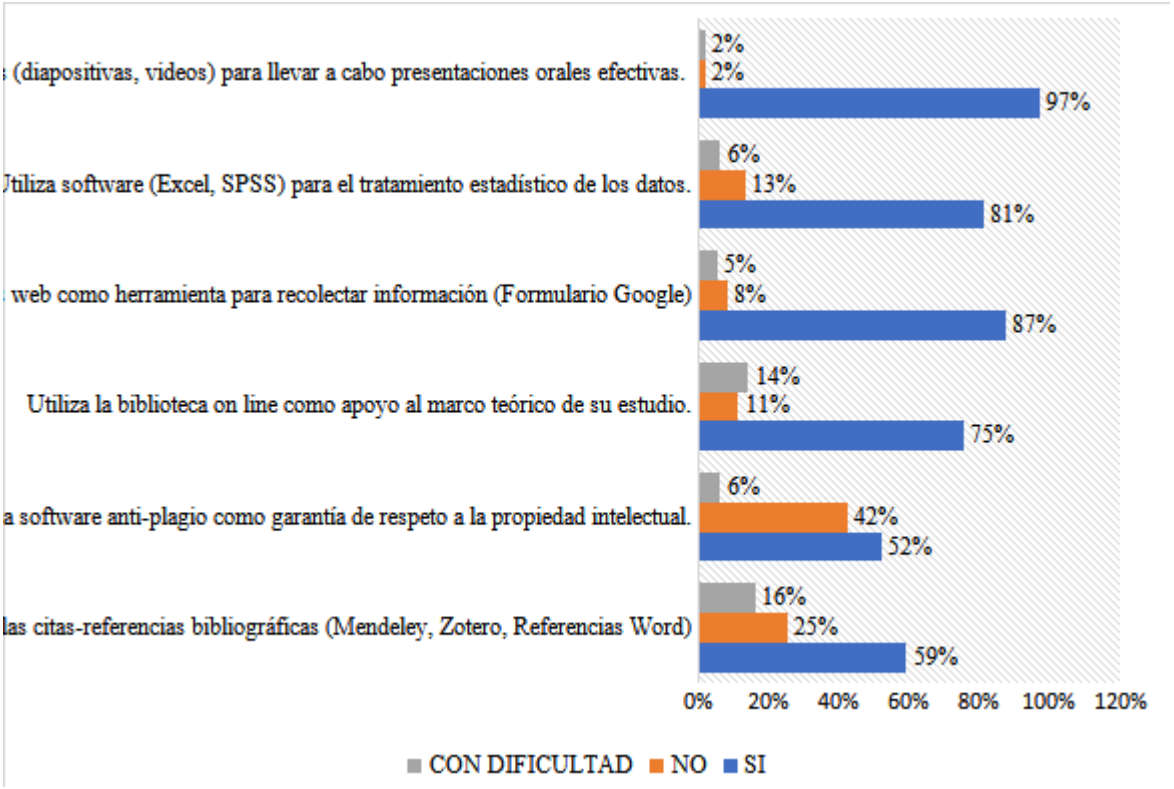
Figure 4.

Graphical representation for teachers and their answers for "Technological-Digital competences".



In terms of digital technological competencies, teachers claim to have developed some indicators to some extent in a high percentage, but then we see a decreasing effect in terms of this, detailed as follows; 96% use technological resources (slides, videos) to carry out effective oral presentations, 87% use web applications as a tool to collect information (Google Form), 81% use software (Excel, SPSS) for statistical treatment of data, only 75% use the online library to support the theoretical framework of their study, 59% use software to manage bibliographic references-citations (Mendeley, Zotero, Word References) and 51% use anti-plagiarism software as a guarantee of respect for intellectual property.

In addition, the competencies on Logical-Mathematical Reasoning were investigated by means of two major criteria shown in Figure 6, below.

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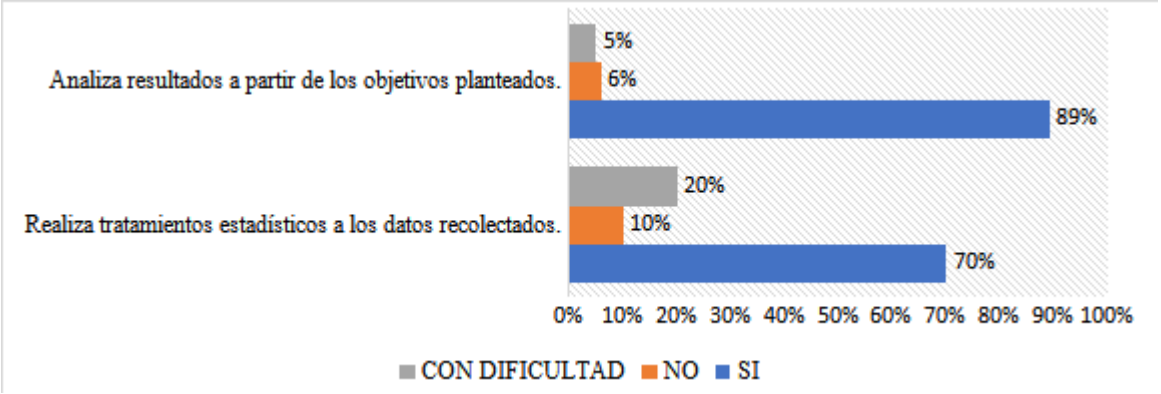
Figura 5.

Graphical representation for teachers and their answers for "Logical-Mathematical Reasoning Competencies".

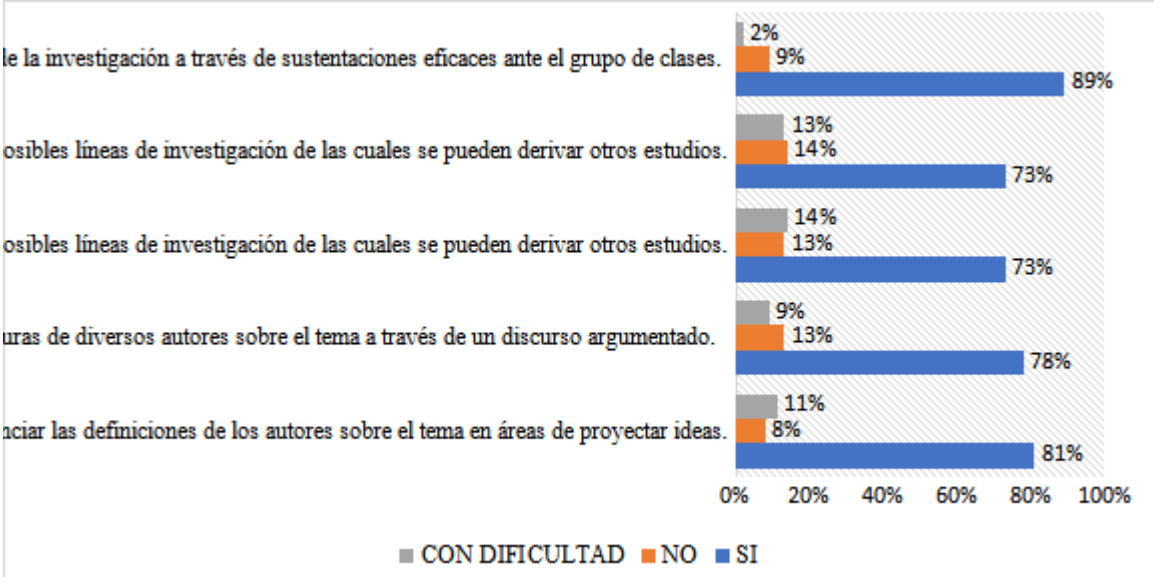


Regarding the competencies on logical-mathematical reasoning, 89% state that they analyze results from the objectives set and only 70% perform statistical treatments in a traditional way to the data collected, that is the difference with the indicator where 81% use software (Excel, SPSS) for statistical treatments.

The five indicators that helped to measure the development of communicative competence are shown in Figure 7 below.

Figure 6.

Graphical representation for teachers and their answers for "Communicative Competences".



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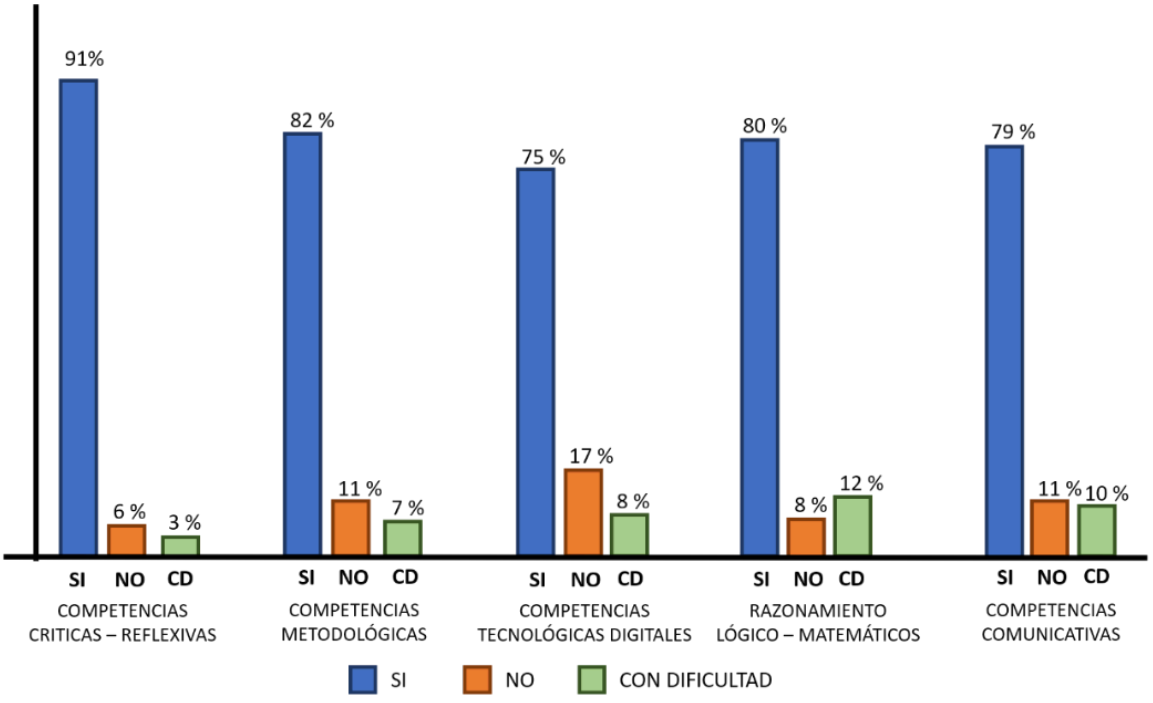
To measure the development of communicative competencies, 89% affirm that they present the progress of the research through effective presentations when presenting their research projects before the class group and any audience, 81% identify the types of quotes to be used to reference the definitions of the authors on the topic in areas of projecting ideas, 78% confront positions of different authors on the topic through an argued discourse, and 73% make explicit the possible lines of research from which other studies can be derived.

After analyzing the results, a summary of the research competencies of undergraduate university teachers is presented in Figure 8.

Figure 7.

Average mastery of research competencies among UMA undergraduate teachers.



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FINAL ASSESSMENTS

The undergraduate faculty members at the Universidad Modular Abierta report having mastery of research competencies. Regarding critical-reflective competencies, an average of 91% demonstrate proficiency in specific competencies such as generating research ideas based on professional practice, recognizing social relevance, and conceptualizing problems through literature review.

As for methodological competencies, 82% of faculty members report mastering specific competencies related to methodology, such as formulating research questions and topics, reviewing prior studies, and describing the research problem. However, it is concerning that 11% acknowledge not mastering methodology, and 7% report doing so with difficulty. Technological-digital competencies show the lowest levels of proficiency, with 75% of faculty affirming mastery and 17% reporting they do not master competencies such as using bibliography management software, plagiarism detection tools, or tools for data collection and processing. Regarding logical-mathematical reasoning competencies, 80% affirm proficiency in conducting statistical analyses based on research objectives, 12% report difficulty, and 8% do not master these competencies. Concerning communicative competencies—which include identifying citation styles, comparing academic perspectives, and clearly defining research lines—only 79% report mastery, while 10% report difficulty and 11% report not mastering them at all.

These percentages demonstrate that, while the overall level of research competency among faculty is relatively high, it is noteworthy that a significant proportion of faculty members either struggle with or lack these competencies altogether. This highlights a critical weakness in classroom-based or formative research projects, as students do not receive adequate feedback or guidance in research from their instructors.

DISCUSSION

With the results obtained in the survey, it is possible to determine the development and level of application of research competencies in the teachers of the Open Modular University, such as searching for scientific information, writing scientific articles, analysis and processing of data, management of resources and procedural and computer scientific methodologies, obtaining psychometric characteristics such as validity and reliability of measurement instruments, among others, related to measurement and evaluation skills, achieve a significant percentage of 81% in the acquisition and application of this type of competencies in the university context by undergraduate teachers. This is a medium level of mastery, since when teaching there is no room for medium points of mastery, since knowledge must be transmitted and a 19% remaining to excellence may compromise the future of many professionals. In reality, the results obtained are not so different from those expected, since the evidence of knowledge is reflected in the amount of research by faculties, and this data is low in comparison to the teaching population.

Nowadays, the quality of educational institutions is assessed, both nationally and internationally, based on various criteria. One of the most important, according to Oropeza et al. (2014), relates to faculty research activity, the implementation of research projects, the production of research outputs, among other indicators. Rincón et al. (2022) argue that research competence forms part of a teacher's personality within the psychological domain. However, neither of these two conceptualizations fully integrates the broader dimensions involved in the development of research competence among educators. Therefore, Oropeza et al. (2014) propose a new definition of research competence that considers the context in which in-service teachers are trained and developed. They define it as the mastery of higher education grounded in specific objectives, content (understood as knowledge, skills, and values), the participatory research project method, and the use of tools and resources that facilitate effective performance in research-related professional activities.

In this regard, the findings suggest a relatively satisfactory outcome, as the majority of the faculty studied are familiar with and apply these competencies. Nevertheless, a small percentage apply them with difficulty, and a minimal portion are unfamiliar with research competencies altogether. Although this last group is small, it is a critical data point that must not be overlooked, as these educators are not contributing comprehensively to the core pillars of higher education: teaching, research, and community engagement.

This situation presents an opportunity for improvement in terms of continuous faculty development within the university. It highlights the need to incorporate specific topics that support the enhancement of research competencies and their practical application in course development. This premise can serve as a diagnostic foundation for future studies focused on integrating teacher education, the core functions of higher education, and the updating of the continuous training curriculum, among other areas.

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