

## **Perceptions of general elementary education students on the development of research skills in their teacher training: a qualitative case study**

Adán José Doria Velarde<sup>1\*</sup> <https://orcid.org/0000-0002-6111-3047>

Oscar Alfredo Rojas Carrasco<sup>2</sup> <https://orcid.org/0000-0002-6739-5559>

Amely Dolibeth Vivas Escalante<sup>2</sup> <https://orcid.org/0000-0002-5791-8619>

Jorge Luis Bonilla Ferreyra<sup>3</sup> <https://orcid.org/0000-0003-2704-8066>

<sup>1</sup>Escuela Militar de Chorrillos “Coronel Francisco Bolognesi”. Perú

<sup>2</sup>Universidad Miguel de Cervantes, Santiago de Chile

<sup>3</sup>Universidad Autónoma del Perú. Perú

\*Autor para la correspondencia: [adoriav@escuelamilitar.edu.pe](mailto:adoriav@escuelamilitar.edu.pe)

### **ABSTRACT**

The objective of this study is to describe the opinion of students in the General Basic Education Pedagogy program on the development of their research skills in the teacher training process. For this purpose, a qualitative approach with a descriptive case study design was used. We worked with a non-probabilistic sample of 9 students to whom a semi-structured interview of 15 questions was applied. The main results of the study show that students recognize that they perform actions that contribute to the development of their research skills, but they do not explicitly identify these actions in subjects other than research methodology.

**Keywords:** Research Skills; Teacher Education; Basic Education; Undergraduate Education; Pedagogy.

## **Introduction**

Social, economic and political changes have led to new demands for the type of education required at different educational levels. In this context, competency-based education has emerged as an educational approach that seeks to prepare students to respond to the challenges of today's society (Sobarzo, 2020).

Competency-based education is based on the development of three dimensions according to (García, et al., 2017) knowing how to be, knowing how to do and knowing how to live together. Knowing how to be refers to the development of socioemotional skills, knowing how to do to the development of academic and professional skills, and knowing how to live together to the development of social interaction skills. The incorporation of research as a central element in initial teacher training has meant that the graduate profile contemplates the construction of a research competency itself or the incorporation of this as a conditioning factor in other competencies. However, the development of research in initial teacher training faces some challenges, which can be grouped into three areas:

In the curricular area: curricula usually link subjects that are essential for the realization of research competence or research skills, but these are disjointed from the rest of the subjects. Moreover, they do not usually associate research or elements of it with teaching praxis.

In the field of the university teacher's praxis: it is possible to find difficulties in articulating mini-research or inquiry processes in the classroom with real educational contexts. It is also difficult to propose educational experiences where the skills worked on and their projection in the pedagogical or professional practice can be socialized. Finally, evaluations are usually oriented with a predominance of competition.

At the student level: they tend to focus on the processes that contribute to the execution of the scientific method, such as the search for information in primary, secondary and tertiary sources, academic writing, citation rules, etc. However, it is necessary that they also develop socioemotional skills and social interaction skills, which are fundamental for the development of research (Parraguez, et al., 2017).

The challenges of competency-based education in initial teacher training are complex and require a joint effort by higher education institutions, teachers and students. It is necessary that curricula be reformulated so that research is integrated transversally into student training. It is also necessary that teachers develop the necessary competencies to guide students in the development of their research skills. Finally, it is necessary for students to understand that research is an activity that requires a set of skills, both academic and socioemotional (Martínez and Marqués, 2014, Meneses, 2020).

## **Development**

### **The training of researchers in education at the undergraduate level**

At the undergraduate level, research training allows fostering the development of various skills and abilities, such as informational, methodological and technical skills for the execution of the scientific method. However, it is important to bear in mind that the incorporation of subjects is not enough to achieve research competence (Meneses, 2020, Ramos & Escobar, 2020).

The researcher Sánchez (2014) proposes that research training is favored and facilitated if it takes place in an appropriate space for knowledge construction, integrated by active and fruitful teams that perform tasks and activities in priority lines of research.

In this sense, higher education teachers, according to (Fernández, 2017). have the power to promote research and encourage students to participate in research seedbeds, where they can appropriate this experience and develop their research skills. In addition, they can be incorporated as collaborators of some scientific articles and therefore achieve the optimal development of the project or thesis. On the other hand, the process of linking university students with research occurs in the last semesters of their careers, when they have to carry out their final thesis, lacking previous experience. Therefore, the evaluation of the undergraduate thesis is considered as "an activity that has to be completed in order to obtain the professional degree and not as an opportunity to contribute knowledge" (Ramos & Escobar, 2020, p. 103).

Although the person in charge of being the mediator and providing tools to the student is a professor, it is necessary that in this process clear guidelines are socialized to contribute to the inquiry. In this way, the student body will be positioned from the role of being responsible for appropriating research, learning to learn, establishing an autonomous search for information and recognizing the whole process involved in carrying out such work (Martínez and Marqués, 2014).

Self-regulation and self-learning are essential elements to be acquired and developed by any professional. However, this process does not develop independently. (Cortes-Osorio, et al., 2021) state that "one forms oneself, but only through mediation. The mediations are diverse; the formators are mediators, also the readings, the circumstances, the

accidents of life, the actions, the relationship with others" (p. 78). Regarding the process of development and formation of research skills, it has been recognized as one of the elements that facilitates the integration of knowledge while serving as a support for the promotion of constant self-learning in students (Machado, Montes and Mena, 2008; Martínez and Marqués, 2014).

One of the most used strategies in universities to train and initiate research skills in students are the research seedbeds. These began to appear as an action plan in response to the needs of universities to initiate undergraduate students in the field of research, through motivation and participation in the development and method of research (Meneses, 2020, Orellana-Fonseca, et al., 2019). According to (Claure, 2019), the main action related to research is that educational entities such as universities should put all their interest in the development of research skills or competencies, applied at three different levels such as conceptual, procedural and attitudinal.

### **Undergraduate Research Skills in Education**

At the undergraduate level, students must acquire and develop a set of research skills that will enable them to perform effectively in their teacher education and in their future workplaces. These skills can be classified in different ways, but in general they fall into three categories:

- Cognitive skills: include the ability to think critically, solve problems, analyze information and generate new ideas.
- Procedural skills: refer to the techniques and procedures necessary to carry out a research process, such as information search, data collection and report writing.
- Attitudinal skills: these are related to motivation, curiosity and willingness to do research (Rodríguez, De Maturana & Nelly, 2021).

The development of these skills according to (Blanco, 2016) is fundamental "for the formation of competent professionals with problem-solving skills. However, their acquisition should not be limited to research methodology subjects" (p. 89). On the contrary, it is important that they be promoted in all subjects of the curriculum, through activities that allow students to apply them in real contexts.

How to develop research skills at the undergraduate level. There are a number of strategies that can help teachers develop their students' research skills. Among them are the following:

- Employ active learning methodologies: these methodologies, such as problem-based learning or project-based learning, allow students to actively participate in the learning process and to apply their knowledge in real contexts (Núñez, et al., 2018, Troncoso-Pantoja & Amaya-Placencia, 2017)
- Propose research activities: these activities can be simple or complex, depending on the developmental level of the students. Examples include conducting surveys, observing phenomena, or writing reports.
- Encourage reflection and self-assessment: it is important for students to reflect on their own learning process and self-assess their research skills. This will help them identify their strengths and weaknesses and set goals for improvement (Orellana-Fonseca, et al., 2019, Ramírez-Díaz, 2020).

### **Importance of research skills in teacher training.**

Research skills are fundamental to teacher training, as they enable future teachers:

- Acquire up-to-date knowledge in their area of specialization.
- Develop the ability to think critically and solve problems.
- Apply their knowledge in real contexts.
- Generate new ideas and contribute to the development of educativos.

In this sense, it is important that higher education institutions incorporate in their curriculum strategies that promote the development of research skills in their students (Poblete-Valderrama, et al., 2018).

### **Methodology**

The present research is based on a qualitative approach (Hernández et al., 2010; Bisquerra, et al., 2016; Choque, 2014), since it aims to approach the educational reality through the perception of the subjects of study that they have of their own training process based on the academic experience acquired. In relation to the design of the study, what was proposed by Pérez (2014) and Stoppiello (2009) was used in the use of the case study, of descriptive type with a depth of research corresponding to exploratory, given that it is carried out through an initial approach to the study phenomenon. The study population corresponds to the students enrolled in the period 2022 who are studying the career of Pedagogy in General Basic Education at an anonymous university in the Ñuble Region, Chile. The use of a non-probabilistic sample with a total population of N=35 was considered, being selected a sample of a total of n=9 students, through the convenience sampling technique (Macchi, 2013).

For the present research, a semi-structured interview was used as the only information collection instrument, which was constituted in a category with two aprioristic subcategories (Torruco-García, et al., 2013; Troncoso-Pantoja & Amaya-Placencia, 2017), the first is entitled training process in scientific research skills, the second corresponds to intellectual skills of scientific research, thus, a total of 15 questions were considered for both sub-categories, being applied in the focus group modality. The focus group option was considered because of the ease of discussion on a topic contemplating variable levels of structuring that is effectively coupled with the semi-structured interview (Edmunds, 1999). Finally, the focus group was constituted with 9 students, a moderator and a person in charge of video and audio recording with two devices.

For the present research, when contemplating the instrument of the semi-structured interview that provides the possibility of flexibility according to the interviewee, allowing to motivate the interlocutor, clarify terms, recognize ambiguities, to process the information, the discourse analysis was used with the technique of paradigmatic or associative relations of exploratory depth level (Santander, 2011). The aim was to link the association in the discussions, allowing the linkage between the theoretical and the discourses.

A request was extended to the direction of the career of Pedagogy in General Basic Education, which consisted of an invitation addressed to the third and fourth year students of the aforementioned career. So that they could participate as subjects in the realization of a focus group, oriented to the topic of research skills in their training process.

### **Interview results**

The following is a detail of the results of the focus group applied.

#### *Subcategory No. 1*

#### ***"Training process in scientific research skills"***

Subcategory No. 1: Training process in scientific research skills.

Student teachers associate scientific research with research methods. When asked what type of work teachers ask them to do, they mention work such as essays, articles and reports. However, when asked which of these works they think are associated with the research area, they mention only reports and essays. The students point out that the teachers have given them tools for the realization of academic works, such as the selection of sources, the structure of a research and the APA norm. At the university there are several technological tools for the preparation of academic papers. The most used by students are Zotero and Scielo.

For students it is complex to identify in which educational process they are using the higher and lower order skills found in Bloom's taxonomy. Some students mention that these skills are used only in the curriculum subject. Other students believe that these skills are developed in planning and practice.

The interviewees associate internalizing the theories related to the career and to the different practices they experience in it with the planning they have to do. In addition, they report that they are given different methods and methodologies in their classes. Students mention that they implement joint classes with differential pedagogy to reinforce their classes and diversified learning in the classroom. This helps them to enrich their classes and the ways of teaching and learning for their students. The findings of the group focus show that student teachers have a basic understanding of scientific research. However, they need to develop more inquiry skills, such as the ability to identify in which educational process they are using these skills.

#### Subcategory No. 2: Intellectual skills of scientific research

Student teachers use a variety of tools to search for information for their academic papers, including the university library's digital platforms, Google Scholar, and PDF books. To assess the reliability of sources, students often focus on the date of publication, the existence of bibliographic index cards, and authorship by professionals in the field. In general, students use more than three bibliographic sources and select authors based on the research topic. Once they have compiled the information, students store it in a Word document, abstract it, and sort it by year of publication. To substantiate their proposals, they use the paraphrasing technique.

Students are aware of the importance of ethical engagement with information sources. They cite textual quotations in quotation marks and use APA format for indirect quotations. However, some students believe that teachers do not conduct adequate review of ethical engagement in academic papers. Most students find writing conclusions to be a relatively straightforward process. However, some students find that it can be difficult to answer the questions posed in the introduction. Students also note that the lack of feedback from faculty makes it difficult to identify areas for improvement in the conclusions.

### **Discussions**

Student teachers consider that the development of research skills is limited to certain academic works, such as essays, articles, reports, simulations and dissertations. However,

these works are not always linked to topics that invite students to associate pedagogy with the discipline in real educational contexts. Therefore, it needs to be considered in a transversal way in the different subjects to foster and enhance lower and higher order skills in students.

Students point out that teachers provide them with the necessary tools to carry out their academic work, such as the selection of appropriate sources of information and the use of the APA standard. They are also trained in the use of technological tools, such as software for the search of reliable sources and ICTs for the preparation of their pedagogical development.

However, students find the use of higher and lower order skills complex, specifically talking about Bloom's taxonomy. The students mention that they have only worked on this taxonomy in the curriculum subject and in activities related to initial teacher development.

Regarding academic work, students use different tools, both in digital and physical format. The most renowned are Scopus, E-books and Scielo. They also use Google Scholar for searching scientific journals and books in Pdf. Students focus on the authors of the information sources to assess their reliability. They also look at publication dates to use the most current ones. For students, writing the conclusion is a relatively simple process for some, while for others it is complex, as it must answer the questions raised in the introduction. Students point out that teacher feedback is critical to their learning. However, most of them do not receive feedback, especially on the conclusion and the bibliography.

## **Conclusions**

The results of the present research show that the student body perceives the academic support received in the area of research in a positive way. In particular, the following appreciations stand out:

- Training on bibliographic resources: Students value positively the training they receive on the bibliographic resources offered by the university, particularly the online databases. These trainings allow them to learn how to use digital platforms, to identify truthful sources and to respect authorship when quoting.



- Implementation of informational tools: Students also value positively the implementation of informational tools by the faculty. These tools help them to select appropriate sources of information for their research or academic work.
- Formation of research skills: The interviewees' accounts show that teachers are forming students' research skills through academic papers. In these assignments, students must understand information, analyze it, apply it, and make decisions.

However, the results also show that the formative processes require improvement in some aspects. In particular, the students highlight the lack of feedback from a group of faculty on elements such as the completion of academic papers and the correct use of citation rules. Finally, it is important to note that the phenomenon under study was observed from only one perspective, that of the student body. In order to have an integral observation, the appreciation of all the actors involved in the educational process is required.