

# Evaluative model of practice-based teacher education (core practices) to enhance metacognition and lifelong learning\*

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## ABSTRACT

In a changing society, with the uncertainties that the future holds for the education of new generations, teacher training faces considerable challenges. On the one hand, it must ensure training so that future teachers are highly prepared to teach, but also, it must emphasize the metacognitive thinking processes that allow them to develop the ability to learn to learn throughout their lives. The purpose of this document is to present the current status of a doctoral thesis research plan, referring to the initial training of teachers based on practice, which promotes metacognitive processes and lifelong learning. A mixed study of concurrent design is proposed, which allows us to jointly analyze the quantitative and qualitative results, considering the learning and evaluation activities that are carried out with future teachers in schools of education. The expected results will allow proposing an evaluation model of core practices aimed at enhancing metacognition and lifelong learning in future teachers. The document is organized in eight sections: context and motivation that drives the dissertation research, state of the art, hypothesis, research objectives, research approach, and methods, results to date and their validity, dissertation status, and expected contributions. Currently, the theoretical framework and instruments of the first phase of the research process have already been developed.

## CCS CONCEPTS

• Social and professional topics • User characteristics • Cultural characteristics

## KEYWORDS

Teacher education, practical training, Core Practices, Metacognition, Lifelong learning, Evaluation model.

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## 1 Context and motivation that drives the dissertation research

The concern for the education of new generations and, therefore, the training of teachers, has arisen as a worldwide problem. Many nations have acknowledged that teaching is one of the most critical factors in student achievement and that the preparation and development of teachers is key to ensuring excellent student performance [1]. Teachers must be educators, not instructors, professionals who, in addition to being experts in a specific subject, are capable of working important aspects such as values, beliefs, and attitudes [2]. From their initial training, they must acquire certain traits, skills, abilities, and knowledge that allow them to favor the achievement of learning in their students and the improvement of schools [3]. This implies high and renewed demands on teacher training programs at universities.

In this sense, the development of metacognition and lifelong learning play a critical role. It is increasingly recognized that this type of learning contributes to social justice, sustainable development, and global citizenship [4]. However, the review of the literature of recent years presents limited guidance regarding the development of these aspects in future teachers. Also, there is little evidence in Ibero-American countries of training based on practice; particularly in Chile, there are only two faculties of education that develop their curriculum under this model. The faculty of the Universidad del Desarrollo is one of them.

This research is presented in this environment as an opportunity to contribute with innovative evaluation procedures and instruments relevant to the practical training of future teachers, to encourage metacognitive processes and lifelong learning. Given this opportunity, it is appropriate to ask: In what way practice-based teacher education allows future teachers to develop processes of metacognitive thinking and lifelong learning

that in turn, generate knowledge of cognition, skills of metacognitive processing and ability to learn to learn?

## 2. State of the art

### 2.1 Practice-based teacher training

Teacher training based on practice offers an answer to the concern about having highly qualified teachers to educate new generations. This formative approach is a contrast to previous approaches that have trained teachers with specialized theoretical knowledge about teaching and learning but have not done much to prepare them for its implementation [5]. Teaching is a job that requires multiple skills and habits that are not simple [6] and those who train as teachers need to learn them, see the complexity of teaching and challenge assumptions about teaching and learning [7]. The practice must be at the center of the preparation of teachers, thus increasing the demands of initial teacher training programs, since students require not only to learn to think like a teacher, but also, to act like one of them [8]. The initial teacher training programs are now adjusting to this idea since they recognize the importance of practice.

In this training approach, core practices have been established that allow concerns and needs of teaching to be installed as the central focus of training. These core practices share the following characteristics: practices that occur with high frequency in teaching; beginners can apply them in the classroom through different curricula or instructional approaches; beginners can also start to master them and that allows them to learn more about students and teaching; core practices preserve the integrity and complexity of teaching; they are research-based and have the potential to improve student achievement [9]. Examples of these are leading a group discussion [10] [11] [12], eliciting the ideas of the students, supporting the ongoing changes in their thinking [13] [14], explaining and modeling contents and strategies [15], among others. Some universities and study centers have proposed a set of core practices to be addressed in teacher training, such as the University of Michigan, which has called them high-leverage practices [16]. In this way, the hallmark of a formative approach based on practice, and one of its learning purposes, are core practices.

Having described a fundamental component in the content of the courses that make up a practice-based curriculum it is also essential to establish the pedagogy that will be used to train students. For this, it is necessary to ensure consistency with how their future students are expected to learn [9]. In this sense, the concepts of Approach, Representation, and Decomposition described by Grossman and his team [17] about the pedagogy of practices are fundamental to organize and focus work around practices. They include the segmentation of practices, their representation from videos or other models, the incorporation of spaces for simulations or rehearsal, which seem to function as a bridge from the method courses to practice in the classroom [18].

The evaluation of learning, that arises mainly from a training purpose, is scarcely mentioned in recent research, there being few guidelines in terms of procedures and instruments that are relevant, therefore, there is a gap in this aspect.

### 2.2 Metacognitive skills

Training should prepare future teachers to reflect deeply on their practice and the processes developed by it. In this sense, the questioning of the practical approach revolves around the focus on the practical aspects of teaching [19, 20] and gives less consideration on critical and reflexive aspects [21]. Pre-service teachers who use a metacognitive strategy to reflect on multidimensional case studies appear to be capable of considerable reflective skills. [22]. A classroom that emphasizes metacognition, therefore, allows time to focus on the learning process, the sharing of thinking about thinking, and creates spaces in which the learners can act on their reflections (time for reflective and strategic thinking). [23]. Therefore, promoting metacognition in future teachers is an opportunity to enrich their reflective processes.

Metacognition has been defined extensively by various authors who refer to it as consciousness, judgments, and beliefs of individuals about their own cognitive potential and the conscious act of cognitive operations [24-26]. Learning to learn, metacognition is one of the ten so-called 21st-century skills as way of thinking [27]. Metacognition has two dimensions: metacognitive knowledge and metacognitive skills [28]. Metacognitive knowledge refers to knowledge individuals have about their cognition and consists of three subcomponents; declarative (of oneself as a cognitive processor), procedural (on the execution of procedures for a specific cognitive task) and conditional knowledge (why and when to use a particular strategy for a particular cognitive task) [29]. Metacognitive skills refer to active planning, monitoring, and evaluation of processes during the execution of a cognitive task [25]. The latter has also been described as productive mental habits and self-regulated thought [30]. The different components of metacognition connect to form a metacognitive thought.

Metacognition is very important in pedagogical work in the classroom in order to favor students' self-regulation skills. The application of metacognition in the classroom is a powerful method of teaching. Thus, it is essential for teachers to be able to use it appropriately [24]. Preservice teachers make in-the-moment decisions when teaching and can articulate and justify their decisions when the "metacognitive decision-making" process has been modeled and supported [31]. Explicit modeling of a student's metacognition helps others develop their own metacognitive thinking. Hearing and seeing another student's thinking, then comparing it with one's thoughts, evaluating shared thinking, and determining what to do with thinking is critical for metacognitive development [32]. Teacher training should intend these processes not only as a way to enrich reflective thinking but also as an opportunity to acquire the ability to learn to learn.

### 2.3 Lifelong learning

During 2018, UNESCO, through the lifelong learning institute, has been helping member states to develop intersectoral lifelong learning policies based on specific plans and strategies according to the contexts and needs of countries [33]. In turn, the European Commission [34] defined lifelong learning as all learning activity is undertaken throughout life, with the aim of improving knowledge, skills, and competencies within a personal, civic, social and/or employment-related perspective. Lifelong learning is a certainty within the uncertainties that the future of education holds for us.

This ability is not innate and therefore, can be learned and taught. The University constitutes a remarkable moment to develop lifelong learning among its students [35] since it offers multiple spaces and training opportunities. However, the orientation towards lifelong learning must be the result of an intentional learning experience [36]. Several voices promote its relevance, including those of teachers who participate in teacher training who consider that some of the teaching and research methodologies provide the necessary experience for lifelong learning [37]. Another voice is that of graduates of pedagogical programs who at the end of their training realized that their journey to teaching was not complete, recognizing that being a teacher requires lifelong learning and updating their skills and knowledge [38]. The challenge of incorporating lifelong learning into university training and teacher training is relevant and shared.

Therefore, it is advisable to include lifelong learning in training programs, especially those of teachers, in order to encourage them to incorporate it into their lives and then promote it in their teaching [39]. Teacher training programs must, therefore, be revised in order to increase lifelong learning trends [40] as they have the potential to help shape future classroom practices by helping -the pre-service teacher to live together as mutually respectful social beings that embrace diversity and are always open to new perspectives [41]. During their training process, pre-service teachers face and will continue to face, various challenges in their practice of the profession. Many times they are placed in unknown cultural contexts that can challenge their views, their values or their understanding of the world, and it is necessary that they can begin their journey of developing the dispositions, knowledge, and understanding required to work effectively [42]. Teachers should be lifelong learners and should have the skills that learners have throughout life. ng should prepare future teachers to reflect deeply on their practice.

### 3. Hypothesis

The hypothesis that this study raises is: Practice-based training models encourage the development of metacognitive processing skills and lifelong learning of future teachers.

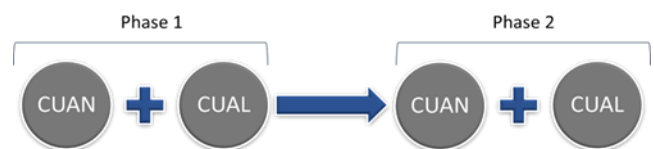
### 4. Research objectives/goals

The study aims to analyze practice-based teacher education program, through a mixed study of activities carried out with pre-service teachers, in order to propose an evaluative model of core practices aimed at enhancing metacognition and lifelong learning. The following are specific objectives:

1. To deepen practice-based teacher education programs, teaching, and evaluation of core practices, evaluative models, metacognitive processes and lifelong learning, developed in pre-service teachers.
2. To evaluate perceptions, activities, and resources associated with core practices, in terms of their ability to develop metacognitive processing skills and lifelong learning in pre-service teachers.
3. To synthesize the teaching and evaluation methodologies around the most relevant core practices to encourage the development of metacognitive processing skills and lifelong learning in pre-service teachers.
4. To design an evaluative model of core practices that enhances metacognition and lifelong learning in pre-service teachers.

### 5. Research approach and methods

The research has been projected with a mixed research method [43], in which the researcher gathers quantitative and qualitative data integrating them, to then draw interpretations based on the combined strengths of both data sets, to understand the research problem and look for meanings [44]. Specifically, the explanatory model will be applied in two phases [43], with a concurrent mixed methods design [45], that will be used in two moments, with quantitative (QUAN) and qualitative (QUAL) data in the Phase 1 and, subsequently, quantitative (QUAN) and qualitative (QUAL) data in Phase 2, with equal preponderance and significance. Figure 1 shows the research design.



**Figure 1: Research design**

In the first phase, Likert scales (QUAN) and teacher interviews (QUAL) will be applied to future teachers. In the second phase, a semantic differential scale (QUAN) and analysis of core practice simulations will be applied, as well as interviews with professors, training experts, and stakeholders (CUAL).

#### Population and sample

The study population will be pre-service teachers, teacher educators, teacher education experts and stakeholders related to core practices. A probabilistic sampling (quantitative approach) and purposive sampling (qualitative approach) will be used to select the sample (Creswell, 2015).

### Variables in study and instruments

Three variables have been established in the study. These are core practices, metacognitive processing, and lifelong learning.

Core practices: described as the hallmark of a practice-based approach [46], they consist of putting knowledge, beliefs, and dispositions into action, through strategies, routines, and movements that can be broken down and learned by teachers [47].

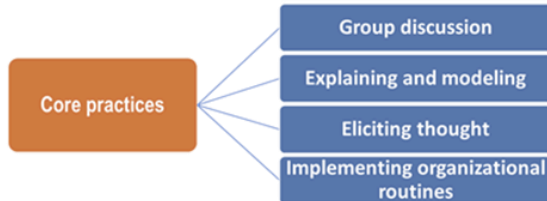


Figure 2: Core practices

Metacognitive processes: Two components of metacognition are highlighted. Knowledge of cognition, consisting of declarative, procedural and conditional knowledge, and metacognitive processing skills that correspond to planning, monitoring, and evaluation [24] [48]. Figure 3 shows the components of this variable.



Figure 3: Metacognitive processing skills

Lifelong learning: described as intentional learning in which people are involved during their life, for personal and professional fulfillment and to improve the quality of their lives [49] as a result of a learning experience [48]. Figure 4 shows the components of this variable.

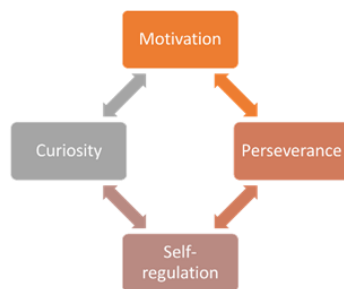


Figure 4: Lifelong learning components

The aforementioned variables will be analyzed based on the information provided by the following instruments:

- Likert scale (pre-service teachers). To investigate their perceptions regarding the opportunities of metacognition and lifelong learning in the learning of core practices. It will be applied to at least 200 participants (Variables: metacognitive processes and lifelong learning).
- In-depth interviews (teacher educators). Open questions related to the opportunities of metacognition and lifelong learning that they offer in their teaching and evaluation of core practices. At least ten interviews will be carried out (Variables: metacognitive processes, lifelong learning, and core practices).
- Semantic differential scale. To determine the adequacy and relevance of the evaluation model prototype in terms of the three variables under study. It will be applied to at least 100 participants (variables: metacognitive processes, lifelong learning).
- Observation protocol of simulations and real cases that will be used in the review of videos, to be applied approximately to 10 cases (Variables: metacognitive processes and core practices).
- In-depth interview protocol for teacher educators, teacher education experts, and stakeholders (approximately 10 participants) (Variables: metacognitive processes, lifelong learning, and core practices).

Figure 5 shows the relationship between the phases of the process and the procedures and instruments that will be applied in each one.

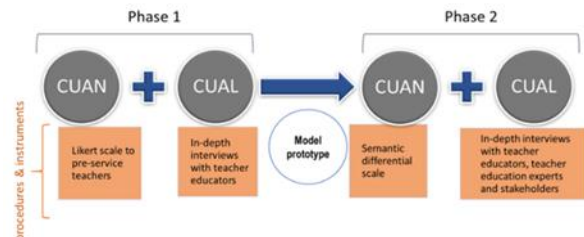


Figure 5: Procedures and instruments that will be applied in each phase

### Information sources

The sources of information for the study will be different participants and digital and printed material. Among the participants, pre-service teachers, teacher educators, teacher education experts, and stakeholders in training programs based on practice have been considered.

The digital material will correspond to videos of simulation recordings or real cases of teaching and evaluation of core practices. The printed material will be articles from Scopus, WoS, and other databases, books, and e-books.

### Information collection and analysis

In the first phase, a Likert scale will be applied to pre-service teachers (approximately 200 participants) and interviews (approximately 10 participants) will be carried out to teacher

educators. The results of this phase will be examined to determine what data could be studied further in the compilation of the following stage's data and in the creation of an evaluation model prototype of core practices aimed at enhancing metacognition and lifelong learning.

Later, in the second phase, a scale of semantic differential will be applied (approximately to 100 participants), and cases of simulations and real cases (approximately 10) where pre-service teachers will put into action segments of core practice will be selected to test the evaluative model. Also, in-depth interviews will be conducted with teacher educators, teacher education experts, and stakeholders (approximately 10 participants). The result of this two-phase process will improve the evaluation model prototype.

In terms of ethical aspects, as this study deals with educational context, responsibilities towards participants will be taken care of, so that informed consent will be signed where objectives, risks, and use of information will be explicit. The integrity of the participants will be respected as well as the right to leave, avoiding any type of bias and protecting their identity and privacy. Finally, publication and communication of the results will be responsibly shared. (British Educational Research Association, 2018).

## 6. Results to date and their validity

Currently, the practice-based teacher education approach is being successfully implemented in a series of universities, especially English-speaking universities. There is also plenty of empirical and recent evidence of the experiences in the implementation of this approach.

## 7. Dissertation status

To date, we have carried out the theoretical framework, the temporary planning of the study, the revision of some instruments, and the sample selection.

## 8. Current and expected contributions

From this research, we hope to contribute to the field of initial teacher training in Ibero-American contexts, on the teaching and evaluation of core practices, and the development of metacognitive processes and lifelong learning among teachers in training.

In addition, both the scientific community and the teacher education communities will be able to have evidence on the evaluation of perceptions, activities, and resources associated with core practices in terms of their ability to develop metacognitive processing skills and the orientation to lifelong learning in pre-service teachers.

Also, we hope to develop an evaluative model of the acquisition of core practices by future teachers, which considers the development of cognitive processes and lifelong learning orientations.

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