



## Article

# University Teaching as a Site for Professional Learning of Teacher Educators: The Role of Collaborative Inquiry and Reflection within a Professional Learning Community

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**Abstract:** While initial teacher education (ITE) has been acknowledged as an important process for improving the quality of education by preparing future teachers, less attention has been paid to the support of the continuous professional learning of teacher educators (TEs). This study reports on the supporting processes and tools for a collaborative inquiry-based systematic reflection of five TEs and the effects of their use in constructing professional knowledge about ITE. The reflective written reports and reflective discussions of the TEs are thematically analysed to show the focus of inquiry, the links among inquiry, reflection, and action, as well as the contributing role of collaboration within a professional learning community (PLC). The results show that the TE inquiry was a continuous process of exploring the beliefs, understandings, and participation of pre-service teachers (PSTs) during teaching; the impact of the teaching context on TE actions and decisions; and the ways in which their collaboration enhanced professional learning. The inquiry results informed the reflections and practice design of TEs. Guiding questions, sustained interactions among the PLC members, and support from a facilitator created opportunities for the collaborative construction of the professional learning of TEs. This article provides TEs or/and facilitators of PLCs in teacher education with a methodology for supporting professional knowledge through collaborative inquiry and reflection.

**Keywords:** teacher education; inquiry; reflection; professional learning community; higher education; collaboration



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## 1. Introduction

Initial teacher education (ITE) has been acknowledged as an important process for improving education through the appropriate preparation of pre-service teachers (PSTs). Teacher educators (TEs) are usually not educated themselves about how to support PST learning and how to make informed decisions about the course of their actions during ITE. However, expertise in a subject matter is not necessarily transferred to the ability to teach this knowledge and support PSTs' learning during ITE [1]. The importance of teacher educators having knowledge of pedagogy has been emphasized in prior research. TEs can gain this knowledge by engaging in professional inquiry of their own practice and their students' learning [2,3]. Based on the Cochran-Smith, Villegas, and colleagues' review [4], practitioner research and self-study conducted by teacher educators typically have two main objectives. Firstly, to examine strategies and practices and generate inputs concerning

teacher education processes in specific contexts. Secondly, to develop concepts, theories, frameworks, models, or strategies that can also be applied in international contexts.

There are several work-based constraints on TEs to conduct research and reflection on their own practice. The lack of funding [5] and structural barriers such as the large number of students and heavy workload for university teachers [6] may discourage TEs from undertaking the responsibility of PST learning by making inquiry-informed decisions about teaching in higher education. Moreover, TE obligations to comply with study regulations [7] and top-down organisational structures [8] create a mismatch between quality teaching and predetermined practices and, therefore, limit TE autonomy in decision making, resulting in reduced motivation. In addition, the lack of a cooperative culture at a university may not promote collaboration among colleagues to study their practice in higher education [9]. However, the systematic study of TEs' pedagogical practices in higher education can provide us with the means to critically understand and deliberately design ITE processes [10].

Teacher education has mainly been made accountable through external evaluation based on uniform standards rather than as an internal, contextual process in which TEs themselves initiate and perform for the purpose of improving their practice in a collaborative context [11]. In this article, our study is based on the alternative of democratic accountability and the concept of intelligent professional responsibility [12] to describe and reflect upon a process of collaborative and reflective inquiry by five TEs. We report on the construction of a committed PLC to improve teaching within ITE and focus on the processes and tools that support the development of TEs' professional learning. PLCs have been studied as a context to generate the professional knowledge of TEs [13]. Professional learning communities (PLCs) do not have a universally accepted definition. According to DuFour [14], the term "professional learning community" is commonly used, but it refers to a group of educators who regularly come together to share, improve, and assess the effectiveness of their teaching methods with the aim of enhancing student learning [15]. The key components of the PLC concept, which are also evident in our study, include all team members being dedicated to achieving high academic objectives, fostering a culture of collaboration and problem solving, prioritizing student learning, continuously evaluating teaching and learning and supporting each other's reflection, utilizing the results to enhance student learning, and promoting continuous learning and growth among professionals [13,14,16,17].

When collaboration among academic staff has been studied, many benefits have been presented, such as the creation of new knowledge, the construction of a "common language" for learning, staff well-being in the workplace [5,9,18,19], as well as the construction of professional learning. Still, studies regarding PLCs mainly report on their evolution, their perceived outcomes, and the factors that affect these outcomes [18]. Some other studies focus on exploring participant satisfaction based on their engagement in a PLC [20]. Even if exploration of TE actions and individual or collaborative reflections are mentioned in studies of PLCs, only in specific studies have we found detailed descriptions of what this collaboration entailed and specifically how inquiry and reflection within this collaboration assisted in the construction of professional knowledge [9,21].

Overall, reflection in teacher education has been discussed as a transformative and social process [22], including the act of critically examining what you are doing, why you decided to do it, and what its effects have been [23]. Increasing one's awareness of the factors and assumptions that affect and guide teaching [24] and bringing unconscious aspects of experience to conscious awareness [25] is part of a deliberate and conscientious process that employs a person's cognitive, emotional, and somatic capacities to mindfully contemplate on past, present, or future (intended or planned) actions in order to learn, better understand, and potentially improve future actions [26]. When reflective practices are used in higher education, research reports on benefits for both TEs (i.e., self-knowledge, awareness of theories and practice, and improvement in teaching) and PSTs (learning and critical thinking) [5,7]. However, research rarely describes the content, reasons, processes,

and tools for reflection as well as its effects in transforming teaching [27]. Reflective records are usually described as open-ended and self-directed procedures [28], or as having some basic axes for reflection [29–31]. Therefore, studies do not always provide us with a set of specific tools for enhancing reflection, or with information about the content, structure, and frequency of reflective records produced by TEs.

Reflection is also not clearly or necessarily linked to a process of inquiry by TEs. Thus, in some studies, inquiry is employed by those who facilitate TE professional learning to explore the processes and outcomes of their learning within a PLC [13]. When TEs themselves are involved in the inquiry of their own practice, it is not always shown how inquiry specifically facilitates TE reflection and subsequent action. Last, the results of keeping reflective records of teaching are not usually connected to results regarding PST learning [29,30,32] or to the ways they contribute to the gradual transformation of teaching practice. We, therefore, require more detailed accounts of the relationships among TE inquiry, reflection, and action and the processes by which these facilitate professional learning in a collaborative context.

For the above reasons, this study aims to examine how TEs can learn from a collaborative inquiry-based reflection of their practice.

Specifically, our research questions are:

1. What can the focus of TE inquiry be and how can inquiry be related to TE reflection and action in ITE?
2. How can TE inquiry, reflection and collaboration within a PLC facilitate the construction of professional knowledge?

## 2. Materials and Methods

A group of five experienced TEs working in four different Early Childhood Teacher Education (ECTE) university departments initially came together as participants in a funded educational programme aiming at disseminating scientific knowledge about children's participation in decision-making processes during ITE (VOICE program). The TEs knew each other well from previous participation in a national teaching practice network of ECTE departments and conferences. The TEs had varying years of teaching experience at the university. The first author who acted as a facilitator of the PLC had 28 years of experience, the next three authors had 15–19 years of experience, while the last one had 7 years of experience. All the TEs were familiar with teaching about participatory practices in early childhood education (ECE), but the first author also had research and practical experience in facilitating teachers' understanding and practice regarding children's participation in ECE. As part of the funded programme, the TEs were responsible for testing the educational materials created to help PSTs reflect on and reconsider their beliefs about children's abilities to participate in decision-making processes during their education. The materials were designed to help PSTs understand the importance and the requirements for children's participation in decision making as well as familiarise them with various strategies that can enhance children's participation in education. The first author as a facilitator of the group organised the structure of the reflective records, raised questions for further reflection, coordinated discussions, and promoted communication and dialogue among the members of the PLC.

The facilitator introduced a process for the TEs to maintain a semi-structured diary after each lesson. In this diary, they were required to record their teaching aims, the educational material used during the lesson, comments on the effectiveness of the materials, general feedback on the overall teaching intervention, and suggestions for future improvement. These diary entries were created based on TE inquiry; that is, based on their observations of PST participation in the lessons, recordings of PST misunderstandings of theories or/and examples of children's participation, and PST difficulties in transforming their beliefs and practices. The TEs evaluated the achievement of the lesson goals based on the way PSTs, either individually or working in groups, responded to questions; analysed examples from practice; or made suggestions to enhance participatory practices. The

inquiry results assisted the TEs in detecting issues that required consideration, understanding what needed to change, and designing alternative methods of action. Diaries were uploaded by all to a shared folder to provide access to each other's thinking and practice. The TEs continued to collaborate as a group after the end of the semester. Their aim was to support each other's professional learning and practice as TEs for another semester.

For the purposes of this study, three reflective written accounts of teaching produced at different times during an academic year were analysed. All reflective reports were guided by questions prepared by the facilitator to support focused reflection and evidence-based construction of professional knowledge. The type of reflective questions was based on previous research that showed that when the questions foster participants' reasoning, making connections, evaluations and generalisations, the depth of reflection is enhanced [33–36]. The first reflective account (Table 1) was written individually at the end of the first semester as a report that summarised information collected in diaries after each lesson and provided evidence about the relationships among TE inquiry, reflection, and action.

**Table 1.** Aims and guiding questions for writing the first reflective report.

Guiding Questions for the First Reflective Account	
Aims	Questions
Description	What kind of materials did you use?/How are the materials connected to the content of your course?
Inquiry-based evaluation and reasoning (interaction with materials and processes)	How did the materials and the related activities foster PST awareness of participatory practices in education?
Relating inquiry, reflection, and action (PST understandings and TE actions)	<p>What issues did you detect regarding PST responses/reactions/readiness in relation to the aims of your lessons?</p> <p>What kind of PST needs did you observe while working with the materials?</p> <p>What did they find difficult to understand?</p> <p>What made an impression on them?</p> <p>What did you need to explain further?</p> <p>What did you insist on?</p> <p>What did you need to return to and re-examine?</p> <p>Was there something else that you observed, realised, or made an impression on you?</p>
Relating inquiry and reflection (PST progress)	Did you notice the influence of your teaching in the final written examination of your PSTs?
Description	Overall, what were the positive aspects of the educational material?
Description	What actions did you take to improve the educational material?

The second reflective account (Table 2) was written at the end of the second semester, aiming to enhance the production of an evidence-based construction of the gained professional knowledge.

**Table 2.** Aims and guiding questions for writing the second reflective report.

Guiding Questions for the Second Reflective Account	
Aims	Questions
Generating the gained knowledge	What did you detect as issues that concerned you during the teaching of children’s participation to PSTs?
Providing spaces for in-depth reflection	<p>Why did these issues concern you?</p> <p>Were these issues common for all your students? Were there dominant trends or were there differentiations regarding their beliefs and understandings?</p> <p>Were you aware of the issues beforehand and you just confirmed them?</p> <p>Are these issues related to the fact that you taught children’s participation for the first time?</p> <p>What did these issues make you think about or reflect?</p> <p>Did you face any dilemmas about what you needed to do in your teaching? How did you confront them?</p>
Detecting relationships between reflection and action	<p>How did your reflection influence your actions?</p> <p>Did you change something in relation to how you have designed/scheduled it? What and why did you change?</p> <p>Do you think that your teaching was consistent with the enhancement of participatory practices? Taking into account Shier’s model (2001) of participation, what level of participation did you manage to achieve?</p>
Proceeding to theorising knowledge	What kind of knowledge did you gain as a TE from this inquiry–reflective process regarding (a) the ways to teach about children’s participation in becoming teachers and (b) the support of PST learning?

The third reflective account (Table 3) was created after each member of the PLC read the reflective accounts of the other PLC members at the end of the second semester to detect commonalities or differences in the gained professional knowledge.

**Table 3.** Aims and guiding questions for writing the third reflective report.

Guiding Questions for the Third Reflective Account	
Aims	Questions
Detecting commonalities or differences in other reflective accounts proceeding to an account of collective knowledge	Which of the things you wrote about in your second reflective report do you find similar or different to the other reflective reports regarding (a) teaching children’s participation to teachers in training, (b) the ways we learn as TEs through inquiry and reflection on our teaching, and (c) how much we can foster participatory practices in higher education and why we should foster participatory practices in HE.

After the third reflective report was produced, a two-hour reflective discussion was held among the members of the PLC to share their thoughts and understandings of the collaborative production of professional knowledge (Table 4). The facilitator initially guided the discussion based on the questions shown in Table 4 and co-ordinated the exchange of opinions and experience between the group members.



**Table 4.** Aims and guiding questions for the reflective discussion.

Reflective Discussion	
Aims	Questions
Reflecting upon the processes of a collaborative creation of professional knowledge	<p>What did you gain by reading each other's reflective written accounts?</p> <p>How did the reading of the others' reflective reports function as a process for your learning? (the discussion developed after these initial questions based on exploratory dialogue among the members of the PLC).</p>

Thematic analysis of these reflective reports and discussions was employed based on an inductive process of gradual data reduction and on a continuous comparison of the TE responses to the reflective questions in their reports and discussion [37]. Specifically, each response to an open-ended question was coded firstly to describe the various meanings entailed in the text of the report or the transcript of the discussion. A comparison of these codes and an exploration of their similarity produced conceptual categories for each question analysed. For example, in their reports TEs referred to the reasons that enabled or hindered PST participation in their courses. The coding of the references “big number of PSTs in the course” and “inappropriate classroom space” formed the category “structural constraints”. Likewise, other categories emerged from the coding of TE reports such as “TE teaching methods and processes”, “PST expectations from teaching”, “PST resistance to engage in designed activities”, and “institutional context”. All these categories informed us about the various contextual factors that enabled or hindered PST participation in the course, generating a further abstraction under the theme “the role of context in shaping possibilities and constraints to enhance PST participation during teaching”. The categories and themes were cross-checked by all researchers to achieve trustworthiness and relevance. Disagreements, while rare, were discussed until a 100% agreement was reached. The themes that emerged from the analysis were the following: (a) supporting relations among TE inquiry, reflection, and action as a continuing process; (b) the role of context in shaping possibilities and constraints to enhance PST participation during teaching; (c) teaching as a dialogical and collaborative process based on inquiry and reflection; and (d) collaborative construction of professional learning.

### 3. Results

#### 3.1. The Focus of TE Inquiry and the Relationship between Inquiry, Reflection, and Action in ITE

The inquiry of teaching had varying foci during TE practice: inquiry into PSTs' prior beliefs about participation, inquiry into PSTs' interactions with the materials and the teaching process (i.e., PST reactions, questions, and understandings during teaching), inquiry into the progress observed in PSTs' understandings, and inquiry into PSTs' learning outcomes. However, in all cases of inquiry, the results of each inquiry were closely linked to TE reflections and design or re-design of their practice as we show below.

Initially, the inquiry of the prior beliefs of PSTs was explored through the common use of a questionnaire with open-ended questions at the beginning of the semester. These questions asked PSTs to describe the meaning and necessity of children's participation, give examples of children's participation, and present their knowledge about the strategies for enhancing it in education. The analysis of PST responses played a crucial role in the TEs achieving an awareness of the starting point of the intervention and, thus, what PSTs thought about and knew about children's participation. PSTs' beliefs were characterised by all TEs as having a general, abstract, simplistic, and stereotypical understanding of children's participation. This awareness guided TEs in reflection about how to foster the deconstruction of stereotypical beliefs, facilitate their reconsideration by PSTs, and assist in their in-depth understanding of children's participation. These reflective questions based on the results of the inquiry led to the design of TE goals of action and the development of appropriate activities. For example, the TEs utilised the initial PST responses as examples in

the lesson to create opportunities to reflect and question their prior beliefs. They also used examples from practice that PSTs examined to detect the level of children's participation according to Shier's model of participation [38]. In this way, both personal beliefs and theoretical models were employed to assist PSTs in analysing situations, detecting the level of participation, and providing alternatives for teacher actions.

The inquiry of PST interactions with materials and teaching processes focused on PST difficulties in understanding and applying theories of participation as well as on their misconceptions. The inquiry also focused on the restrictions and pitfalls of the teaching materials in relation to facilitating the successful understanding of children's participation by PSTs. Indicative reflective questions developed from the inquiry results were "how can I make easier PSTs' understanding of children's participation? What needs to be altered in the teaching process to give more opportunities to PSTs to develop their understanding of the concepts? How can I enrich/change the materials and towards which direction? How can I promote a dialogue to assist PSTs to express and clarify their opinions?". After this reflection, some of the TEs related the notion of children's participation to what PSTs already knew or were familiar with to provide opportunities for them to cooperate in groups and present their different or contrasting views and ideas as a source for further dialogue, to enrich the materials with more examples and audio-visual resources for further analysis, and to give more time than scheduled to the theme of children's participation and insist in achieving an understanding with PSTs. Reading each other's diary entries was also mentioned as a resource for making decisions regarding the methods for confronting similar difficulties and re-organising the materials to be used during teaching.

The inquiry of PST progress involved continuous observations of changes observed in PST thinking, abilities, and practice. For example, the TEs gradually observed the ability of PSTs to refer to the theoretical context when reasoning their ideas, to doubt their initial beliefs, to proceed to an emphasis on looking at children's perspectives, to recognise the need to decrease teacher guidance, and to reflect upon the ways they could support children's participation. These findings informed further actions related to the distribution of time regarding the course content and the detection of issues that they still needed to insist on based on a formative evaluation of their teaching practice.

Last, the inquiry of the teaching intervention outcomes was based on asking PSTs to respond again to the questions posed at the beginning of the semester regarding the meaning, necessity, and strategies for children's participation. All the TEs spotted changes as well as stability in PST beliefs by comparing their responses at the beginning and end of the semester. At the same time, the success rate of the final evaluation exams was considered by one TE as an indication of added value to the teaching intervention. Considering these outcomes, the TEs proposed further changes to the educational materials and the teaching processes they employed.

### *3.2. Constructing Professional Knowledge Based on Inquiry, Reflection, and Collaboration*

TEs' professional learning was affected by the specific contexts of their teaching. The construction of professional knowledge was based on a dialogue among TEs and PSTs informed by inquiry and reflective processes as well as on a collaboration among the members of the PLC.

#### *3.2.1. The Role of Context in Shaping TE Actions*

As explained above, all the TEs recorded PST interactions with the teaching process and the materials to gain knowledge of their understandings, misconceptions, or difficulties in designing their practice informed by inquiry and reflection. However, the focused reflection on the issue of whether or not the TEs encouraged PST participation during teaching, and in what ways, was dealt with in the second reflective report. The use of Shier's [38] model of participation provided an opportunity for an in-depth reflection on teaching as a participatory practice. Specifically, reflection referred to whether the TEs observed a consistency in the content of their teaching that focused on how to enhance

participation in education and the opportunities they provided to PSTs to participate actively in shaping the course of teaching.

All the TEs described in their reflective reports that there were several ways in which they fostered PST participation. For example, they encouraged the expression of PST beliefs, opinions, and suggestions (pedagogy of listening) and utilised them systematically for further exploratory discussion and reflection. They used multiple tools to encourage PSTs' expression of opinions and suggestions, such as written texts in open questions, online learning games (i.e., Kahoot), and discussions in groups. One TE explained that he informed the PSTs about the content and ways of working with the materials at the beginning of the course and discussed with them their suggestions for the evaluation methods of the course, providing them with the possibility to select one of the evaluation methods.

At the same time, the TEs were aware that they were not able to foster PST participation in the decision-making processes in teaching since although they tried to explore and adjust teaching to their difficulties and needs, the final teaching decisions were made by them. The TEs were critical not only of their practice but also of several contextual factors that they perceived as constraints for supporting higher levels of PST participation. These constraints regarded PST expectations of the role of TEs and their own role during teaching. Some of the PSTs expressed a desire for clear-cut answers, guidelines, and bodies of knowledge that they could easily understand to pass the course. This desire created a relevant constraint for the TEs as it demonstrated the resistance of PSTs to engage in activities designed to enhance their critical thinking or to read and discuss supplementary materials. The TEs also mentioned difficulties faced by some of the PSTs, such as their inability to express their opinions in a clear and concise manner. In addition, since PSTs had limited experience in kindergarten classrooms, a difficulty was noted both in extracting and processing their own experiences of classrooms and in reasoning their ideas and proposals for alternative actions.

The TEs also recognised other contextual factors that affected PST participation. These were the large number of PSTs on the course (from 70 to 150 PSTs), together with the fact that this large group of PSTs displayed different levels of knowledge and abilities. Thus, the TEs felt that they should encourage different levels of PST participation simultaneously to respond to their varying levels of knowledge and abilities; a fact that they found difficult due to the number of PSTs. In addition, the organisation of classroom space (i.e., amphitheatre) did not easily facilitate group work and discussions among the PSTs. Last, it was communicated that the context of university teaching did not encourage a higher level of PST participation in decision-making processes because the TEs were required to submit and upload a detailed course outline before the start of the course in which the aims, content, teaching, and evaluation methods, as well as the learning outcomes, were fully described.

### 3.2.2. Teaching as a Dialogical and Collaborative Process Based on Inquiry and Reflection

The written accounts of the TEs based on the professional knowledge they gained about how to support PST learning highlighted the inquiry of practice and relevant reflection as necessary preconditions to shape the teaching process. Specifically, making connections among the inquiry of PST understandings as well as participation and TE actions verified inquiry as a process informing reflection and teaching in ITE. The following examples of these connections were mentioned by the TEs: "I utilised PST's feedback to modify my lessons and encourage their analytical and critical thinking" (TE1); "Exploration of PSTs' beliefs and understandings made me give attention to and stress things that I would ordinarily take for granted" (TE4).

Inquiry and reflection were also important for the TEs to construct professional learning because they facilitated their awareness and conscientious action, as shown in the following excerpts from the reflective reports: "I became aware that PSTs' difficulties and misconceptions assisted me in understanding better what I teach and how" (TE3), "I realised the need for teaching tools that facilitate PSTs' voices and the need for less 'silent' materials that do not encourage participation" (TE4), "I encouraged PSTs to talk about



emotions that the discussion of their beliefs created to them" (TE5), and "I realised that it is important to raise more questions than give clear cut answers" (TE3).

A common understanding that developed among the TEs was the approach of teaching in ITE as a dialogical and collaborative process co-shaped with the PSTs. This understanding skipped the distinction between teacher-centred and student-centred orientations of teaching in higher education and emphasised the co-construction of the teaching process. One of the TEs summarised this point well in her reflective report: "Teaching is a kind of conversation with our students, a co-shaping process with our students based on a continuous exploration and evaluation of this process that helped me become more inventive in my teaching" (TE4).

### 3.2.3. Collaborative Construction of Professional Learning

The collaborative construction of professional knowledge was achieved through reading each other's reflective accounts and taking part in joint discussions during meetings. Four processes were detected by all the TEs that enhanced the development of their professional learning within the PLC. Finding commonalities in TE observations, reflective writings, understandings, and actions facilitated the production of professional knowledge within the PLC. Such commonalities pertained to PST misconceptions, TE practices that re-organised the time and emphasis given during their teaching according to PST difficulties, and contextual restrictions they faced in their efforts to enhance PST participation. In this way, professional knowledge was constructed and verified by a comparative process of written or oral reflective records produced by the TEs. The second process detected by the members of the PLC to enhance their professional knowledge was the fact that sharing each other's perspectives assisted them in raising new questions or acquiring new lenses to view their own practice. Again, this learning occurred based on the comparison of one's own thinking and practice to the other members' thinking and practice. The third process of constructing professional knowledge was based on learning new things by sharing ideas and practices during discussions or reading alternative proposals of action in the diaries and reflective records. Last, in some cases, the TEs also acted as "critical friends", posing questions to one another after reading the reflective reports (i.e., "do you think that PSTs' previous experience of online learning during COVID had a share of responsibility for their passivity and lack of eagerness to participate in the discussions?" (TE2)).

Therefore, the uploading of diaries and reflective reports in a shared folder and the reflective discussions in meetings facilitated access to each member's thinking and practice and allowed for the exchange of ideas and awareness of one's teaching profile. As the TEs indicatively explained: "The uploading of my colleagues' diaries and reflective reports in a common folder in which I could look for their observations, remarks and proposals was important. We exchanged ideas, utilised ideas from others, shared experiences regarding our teaching and our concerns" (TE 2). "I learnt new things by reading each other's reports and made a step further at looking into my teaching in depth" (TE3).

The active involvement of all members in shaping the course of the PLC, a climate of respect, and lack of competition among the PLC members were important to avoid hierarchical relationships among them, as stated in the reflective discussion: "It was important that we gradually built a framework and criteria for what is important to teach and how and that these criteria were built through collaboration" (TE2). "It was important for our collaboration the fact that we were all open or well-intentioned to work on this matter, without competition, without saying who did it better or worse and so on. It was the basic condition for us to be able to talk meaningfully with respect to the different point of view that was being heard and to move forward" (TE3).

In addition, guiding questions for the diaries and reflective reports were found valuable for making professional knowledge conscientious and concrete. As one TE explained, "guiding questions provoked an internal monologue to bring knowledge to the surface. At the same time, comparing my perspective to the others' experiences and remarks provided me with new lenses to look back at my teaching experience and bring in new perspec-

tives" (TE4). And another TE explained during the reflective discussion: "The questions assisted us to examine in-depth our pedagogical practices and to foster our development as researchers, making the knowledge we gained as TEs more concrete" (TE5).

#### 4. Discussion

This study contributes to extending our knowledge of methodological tools and processes by which TEs construct their professional learning through the inquiry of their teaching practice, their reflections based on the results of the inquiry of their practice, informed design of teaching, and collaboration among them in a PLC. While there are studies which refer to collaboration and reflection processes among TEs, many of them focus on an evaluation of the learning outcomes of PLCs rather than a detailed account of the processes of learning within the PLC [11,13]. At the same time, while the inquiry and engagement of TEs in research (i.e., exploration of PST beliefs and learning processes) are often mentioned as forwarding TE professional learning within PLCs [13], we do not have detailed information about the kinds of inquiry TEs employ and the ways in which inquiry informs their reflection and action. Previous studies have reported that PST feedback contributes to understanding the impact and efficiency of our teaching as TEs [5], stressing the role of inquiry in evaluating the outcomes of teaching. In our study, the inquiry into practice was expanded to include a continuing exploration process: inquiry of PST beliefs at the beginning of the course; PST interactions with the materials and the teaching processes; PST progress as shown in changes in their beliefs, understandings, and abilities; and, finally, PST learning outcomes. Thus, the inquiry into practice formed a continuous process for TEs to construct their knowledge based on the exploration of teaching contexts, processes, progress, and outcomes. The results of the inquiry facilitated focused reflections from the TEs and informed their decisions about the content and processes of teaching in ITE, as shown in this study's results. By showing the different foci of inquiry and how they facilitated reflection and action, this study highlights methods that TEs can adopt to foster their professional learning. In addition, by showing the interconnectedness among the methods of inquiry, reflection, and action of TEs, we provide examples for facilitators of PLCs about the use of inquiry and reflection in enhancing the development of conscientious and robust professional knowledge.

Another point to highlight is that the TEs gained professional knowledge by conducting a reflective inquiry of the processes by which they gained this professional knowledge that guided their practice. The use of systematic inquiry and reflection upon their practice allowed for the production of professional knowledge about goals, priorities, and ways of teaching. Most importantly, it allowed learning to teach to occur as a co-constructing process among TEs and PSTs whose understandings and actions are in a continuous dialogue since they inform each other in making decisions about teaching. Additionally, this study confirmed curricular structures and organisational conditions that may bring about constraints in the autonomy and flexibility of TEs in implementing teaching based on inquiry and reflection [6–8].

Learning from each other in a PLC was based on sharing and triangulating experiences [6] and acquiring different perspectives on the issues of concern [39]. The results of this study show that a PLC can contribute to TE learning by offering structure, content, interactions, and collaboration among its members [40]. Specifically, collaboration among the TEs within the PLC entailed finding commonalities among inquiry results and practices, raising new questions based on the others' perspectives, learning new things, and receiving feedback from the members of the PLC. PLC as a context for collaborative professional learning functioned as a "critical friend" to TE professional knowledge development [39,41]. However, although the development of professional knowledge within a PLC required a common interest and exchange of experience among its members, this study showed that this was not adequate. The facilitation of inquiry and reflection as well as coordination of systematic interactions among the members of the PLC were important to articulate and make concrete the professional knowledge gained from participating in a PLC. Thus,

the facilitator's preparation of tools for inquiry used by all members of the PLC (i.e., the questionnaire used at the beginning and end of the course as a way to plan teaching and also reflect upon its effects) and the provision of guiding questions to enhance TE reflection and structure the writing of their reflective reports were important actions to fostering professional knowledge creation based on inquiry and reflection. In addition, the facilitator ensured sustained interactions among the members of the PLC and initiated a constant comparative method of reading each other's reflective reports and sharing understandings to support the collaborative construction of professional knowledge. Finally, ensuring the active role of the PLC members in shaping the course of the PLC and working together in a climate of acceptance and respect was also important in the development of TE professional knowledge.

In this study, five TEs from different universities came together initially by participating in a funded program that involved them in exploring the use of specific materials to enhance PSTs' knowledge and understanding of children's participation in education. As described in this article, this collaboration proceeded based on a common interest to learn together based on inquiry and reflection upon our practice. However, it is important to ask whether the improvement in teaching in teacher education is related only to TE initiatives to improve teaching or whether support of a collaborative culture and practice from the institution is also required. Cooperative and collegial relationships assist in developing communities of practice [9] but are not adequate, as there are several structural and organisational barriers to TEs [5–7]. TEs require a proactive stance to improve teacher education processes rather than only a reactive stance to external accountability processes. Therefore, democratic accountability and intelligent professional responsibility [12] can play significant roles in improving teaching, as this study shows, without ignoring the demand of institutional support for improving TEs for the benefit of PST learning and, finally, for the benefit of the pupils themselves and society.

This study has some limitations that could impact the depth of the insights gained. One limitation of this study was the lack of a longitudinal component to track the impact of collaborative reflection on TE pedagogical thinking and practice over time. In addition, this study highlights the need for more extensive evidence on the impact of TE collaborative inquiry and reflection on PST learning outcomes. It is crucial to acknowledge that this research might not accurately represent the experiences or viewpoints of PSTs, since it did not incorporate their opinions. Moreover, external factors such as educational policies and student demographics could have influenced the outcomes, but they were not explored in depth in this study. Additionally, there were constraints originating from the institutional context, such as time, audience, and scope, which limited the participants' actions. Collaborative inquiry and reflection were not part of the institutional working culture, which further limited this study.

This study analysed the results of a specific process. Further research could validate the tools and processes of supporting the professional learning of TEs within PLCs based on larger groups of university teachers. However, other strategies such as verbal interviews and extensive discussions, peer observations, etc., may suit some TEs more than the proposed process. Thus, future research could also explore how to encourage and support inquiry, reflection, and collaboration based on technologies, like electronic portfolios and weblogs, since they might influence the nature and outcomes of reflective practices. Additionally, comparative analyses of the formation of teaching styles and the challenges faced by TEs in different global contexts, as well as longitudinal studies tracking the experiences of academics and their development over time are suggested. Collaborative inquiry and reflection could also be used to explore ways in which TEs can creatively respond to institutional demands and the impact of different support mechanisms. These suggestions aim to expand our understanding of the formation of learning interactions in higher education, the effect of external stressors on TEs, and the support mechanisms needed during times of social turmoil.

Future studies should also consider the perspectives of PSTs with diverse backgrounds to understand their thinking, challenges, and the outcomes of reflective interactions in different teaching methods, including lectures, interactive sessions, and online resources. Moreover, future research could focus on innovative teaching models that integrate theory and practice to promote reflective teaching practices and support the development of critical thinking in TEs and PSTs. Finally, future research could explore the scalability of the proposed collaborative inquiry and reflection process to determine its feasibility for implementation in different disciplines and courses of study.

## 5. Conclusions

This research inquiry explores the practices and experiences of TEs and is motivated by two primary research questions: The first research question focused on the spectrum of TE inquiry and its impact on TE professional learning within a community of practice. The focus of inquiry for TEs can be on exploring the beliefs, understandings, and participation of pre-service teachers during teaching; the impact of the teaching context on TEs' actions and decisions; and the ways in which collaboration enhances professional learning. The inquiry results can facilitate reflection and action in ITE by informing the reflections and practice design of TEs.

The second research question asked how TEs constructed their professional knowledge. TEs' professional knowledge was constructed based on inquiry and reflection upon their teaching practice and collaboration among them. This study found that when collaborative inquiry-based reflection is facilitated to be a systematic and continuous process, it can support the professional learning of teacher educators. This study also highlights the importance of creating a supportive culture of collaboration and reflection within a professional learning community for teacher educators.

In summary, the research presents a systematic approach to enhancing professional expertise via collaborative investigation and introspection. This approach might be valuable for those involved in educating becoming-teachers and overseeing communities focused on professional development in teacher education. The study's results highlight the need for institutional backing to enhance TE professional learning processes and emphasise the significance of fostering a culture of cooperation and reflection among TEs. Rather than only responding to external accountability procedures, this research recommends that TEs actively work to improve teacher education processes. Improving teaching methods in teacher education may be achieved via the application of intelligent professional responsibility and democratic accountability, according to this study.

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## References

1. Zeichner, K.M. A Research Agenda for Teacher Education. In *Studying Teacher Education: The Report of the AERA Panel on Research and Teacher Education*, 1st ed.; Cochran-Smith, M., Zeichner, K.M., Eds.; American Educational Research Association: Washington, DC, USA; Lawrence Erlbaum Associates Publishers: Mahwah, NJ, USA, 2005; pp. 737–759, ISBN 0203864042.
2. Cochran-Smith, M.; Grudnoff, L.; Orland-Barak, L.; Smith, K. Educating Teacher Educators: International Perspectives. *New Educ.* **2020**, *16*, 5–24. [\[CrossRef\]](#)
3. Cochran-Smith, M. Learning and unlearning: The education of teacher educators. *Teach. Teach. Educ.* **2003**, *19*, 5–28. [\[CrossRef\]](#)
4. Cochran-Smith, M.; Villegas, A.M.; Abrams, L.; Chavez, L.M.; Mills, T.; Stern, R. Research on teacher preparation: Charting the landscape of a sprawling field. In *Handbook of Research on Teaching*, 5th ed.; Gitomer, D., Bell, C., Eds.; American Educational Research Association: Washington, DC, USA, 2016; pp. 439–547, ISBN 978-0-935302-48-6.
5. Kuit, J.A.; Reay, G.; Freeman, R. Experiences of reflective teaching. *Act. Learn. High. Educ.* **2001**, *2*, 128–142. [\[CrossRef\]](#)
6. Bergman, L. Supporting academic literacies: University teachers in collaboration for change. *Teach. High. Educ.* **2016**, *21*, 516–531. [\[CrossRef\]](#)
7. Porto, M. A teaching narrative: My growth as a foreign language educator through teaching diaries. *J. Furth. High. Educ.* **2008**, *32*, 185–206. [\[CrossRef\]](#)
8. Mälkki, K.; Lindblom-Ylänne, S. From reflection to action? Barriers and bridges between higher education teachers' thoughts and actions. *Stud. High. Educ.* **2012**, *37*, 33–50. [\[CrossRef\]](#)
9. Yosief, A.; Sulieman, M.S.; Biede, T. Improving the practices of teacher educators through collaborative action research: Challenges and hopes. *Educ. Action Res.* **2022**, 1–18. [\[CrossRef\]](#)
10. Santos, D.; Soler, S. Pedagogical practice as 'feeling-thinking' praxis in higher education: A case study in Colombia. *Teach. High. Educ.* **2021**, *28*, 1349–1363. [\[CrossRef\]](#)
11. Cochran-Smith, M.; Carney, M.; Keefe, E.S.; Burton, S.; Chang, W.C.; Fernández, M.B.; Miller, A.F.; Sánchez, J.G.; Baker, M. *Reclaiming Accountability in Teacher Education*; Teachers College Press: New York, NY, USA, 2018; ISBN 9780807759318.
12. Cochran-Smith, M. Rethinking teacher education: The trouble with accountability. *Oxf. Rev. Educ.* **2021**, *47*, 8–24. [\[CrossRef\]](#)
13. Hadar, L.L.; Brody, D.L. *Teacher Educators' Professional Learning in Communities*, 1st ed.; Routledge: Oxon, UK, 2017; ISBN 9781138602588.
14. DuFour, R. What is a professional learning community. In *On Common Ground: The Power of Professional Learning Communities*, 1st ed.; DuFour, R., Eaker, R., DuFour, R., Eds.; Solution Tree Press: Bloomington, IN, USA, 2005; ISBN 978-1-932127-42-3.
15. DuFour, R.; Eaker, R.; DuFour, R. (Eds.) Introduction. In *On Common Ground: The Power of Professional Learning Communities*, 1st ed.; Solution Tree Press: Bloomington, IN, USA, 2005; ISBN 978-1-932127-42-3.
16. DuFour, R.; Eaker, R.; DuFour, R. (Eds.) Recurring themes of professional learning communities and the assumptions they challenge. In *On Common Ground: The Power of Professional Learning Communities*, 1st ed.; Solution Tree Press: Bloomington, IN, USA, 2005; ISBN 978-1-932127-42-3.
17. Hord, S.M. *Professional Learning Communities: Communities of Continuous Inquiry and Improvement*; Southwest Educational Development Laboratory: Austin, TX, USA, 1997.
18. Scott, J.; Pryce, J.; Reinke, N.B.; Li, D.; Shuker, M.-A.; Singleton, R.; Tsai, A.; Parkinson, A.L. Towards a 'Community for Practice'—A Narrative Analysis of the Evolution of Higher Education Scholars. *Educ. Sci.* **2023**, *13*, 1239. [\[CrossRef\]](#)
19. Spronken-Smith, R.; Harland, T. Learning to teach with problem-based learning. *Act. Learn. High. Educ.* **2009**, *10*, 138–153. [\[CrossRef\]](#)
20. Fernandes, S.; Araújo, A.M.; Miguel, I.; Abelha, M. Teacher Professional Development in Higher Education: The Impact of Pedagogical Training Perceived by Teachers. *Educ. Sci.* **2023**, *13*, 309. [\[CrossRef\]](#)
21. Simmons, M.; McDermott, M.; Eaton, S.E.; Brown, B.; Jacobsen, M. Reflection as pedagogy in action research. *Educ. Action Res.* **2021**, *29*, 245–258. [\[CrossRef\]](#)
22. Zeichner, K.M.; Liston, D.P. *Reflective Teaching: An Introduction*, 2nd ed.; Routledge: New York, NY, USA, 2014; ISBN 9780415826600.
23. Mertler, C.A. *Action Research: Improving Schools and Empowering Educators*, 4th ed.; Sage: Thousand Oaks, CA, USA, 2014; ISBN 9781452244426.
24. Brookfield, S. *Becoming a Critically Reflective Teacher*, 1st ed.; Jossey-Bass: San Francisco, CA, USA, 1995; pp. 20–48, ISBN 978-0787901318.
25. Sengers, P.; Boehner, K.; David, S.; Kaye, J. Reflective design. In Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility, Aarhus, Denmark, 20–24 August 2005.
26. Harvey, M.; Coulson, D.; Mc Maugh, A. Towards a Theory of the Ecology of Reflection: Reflective Practice for Experiential Learning in Higher Education. *J. Univ. Teach. Learn. Pract.* **2016**, *13*, 2. [\[CrossRef\]](#)
27. Jaramillo Cherez, N.; Jin, Y. Cultivating instructor's reflection: Leveraging partnerships and team efforts. *Coll. Teach.* **2020**, *68*, 62–70. [\[CrossRef\]](#)

28. Tian, W.; Louw, S. It's a win-win situation: Implementing Appreciative Advising in a pre-service teacher training programme. *Reflective Pract.* **2020**, *21*, 384–399. [[CrossRef](#)]
29. Chawla, D.; Rodriguez, A. New imaginations of difference: On teaching, writing, and culturing. *Teach. High. Educ.* **2007**, *12*, 697–708. [[CrossRef](#)]
30. Greaves, M. The reflexive self; adapting to academic life in a time of social turmoil. *Teach. High. Educ.* **2023**, *28*, 2028–2043. [[CrossRef](#)]
31. van den Bos, P.; Brouwer, J. Learning to teach in higher education: How to link theory and practice. *Teach. High. Educ.* **2014**, *19*, 772–786. [[CrossRef](#)]
32. Pickering, A.M. Learning about university teaching: Reflections on a research study investigating influences for change. *Teach. High. Educ.* **2006**, *11*, 319–335. [[CrossRef](#)]
33. Avgitidou, S.; Hatzoglou, V. The Design and Evaluation of an Instrument for Supporting Pre-Service Teachers' Reflection. *Action Res. Educ.* **2012**, *3*, 21–43. Available online: <https://www.researchgate.net/publication/378103272> (accessed on 9 February 2024). (In Greek)
34. Bain, J.D.; Mills, C.; Ballantyne, R.; Packer, J. Developing Reflection on Practice through Journal Writing: Impacts of variations in the focus and level of feedback. *Teach. Teach.* **2002**, *8*, 171–196. [[CrossRef](#)]
35. Biggs, J. *Teaching for Quality Learning at University*, 2nd ed.; Society for Research into Higher Education and Open University Press: Buckingham, UK, 2003; ISBN 0335211682.
36. Sparks-Langer, G.M. In the eye of the beholder: Cognitive, critical and narrative approaches to teacher reflection. In *Reflective Teacher Education: Cases and Critiques*; Valli, L., Ed.; State University of New York Press: New York, NY, USA, 1992; pp. 147–159, ISBN 9780791411315.
37. Miles, M.B.; Huberman, A.M. *Qualitative Data Analysis: An Expanded Sourcebook*, 2nd ed.; Sage Publications: Thousand Oaks, CA, USA, 1994; ISBN 0803955405.
38. Shier, H. Pathways to Participation: Openings, Opportunities and Obligations. *Child Soc.* **2001**, *15*, 107–111. [[CrossRef](#)]
39. Selkrig, M.; Wright, S.; Hannigan, S.; Burke, G.; Grenfell, J. Art educators' professional learning: Reflecting together to consider ontologies of quality in our praxis. *Teach. High. Educ.* **2022**, *27*, 663–677. [[CrossRef](#)]
40. Furco, A.; Moely, B.E. Using Learning Communities to Build Faculty Support for Pedagogical Innovation: A Multi-Campus Study. *J. High. Educ.* **2012**, *83*, 128–153. [[CrossRef](#)]
41. Bell, A.; Mladenovic, R.; Segara, R. Supporting the reflective practice of tutors: What do tutors reflect on? *Teach. High. Educ.* **2010**, *15*, 57–70. [[CrossRef](#)]

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