We Have Unrealistic Beliefs Until We Deconstruct Our Thinking: The Relationship Between Reflection and Epistemological Beliefs in Teacher Education Programs

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Abstract

Preservice teachers (PTs) can develop a deeper understanding of their epistemological beliefs (EB) when enrolled in a curriculum that provides opportunities for reflection. Therefore, this study investigated the relationship between PTs' reflection practices and their EB during the first year of a Teacher Education Program in Physical Education in Basic and Secondary Education. Eleven PTs were intentionally chosen for this study. The data collection took place between 2021 and 2022 using three focus group moments, participant observation, and document analysis. Data analysis was carried out through the procedure presented by Charmaz (2006) based on theoretical and deep coding, where emerging themes were identified. The study has shown that individual and group reflection moments guided PTs in acknowledging their EB. Additionally, these reflective practices led PTs to understand learning as changeable, evolutionary, and achieved through interacting their ideas with others and contexts, suggesting a synergy between reflection and EB sophistication. Since EB assume—a relevant position in PTs' techniques and teaching methods, exploring, and developing them can benefit learning environments. Understanding reflection as a tool to develop more sophisticated EB can contribute to teacher educators' knowledge, curricular reconfiguration, and teacher training policies.

Keywords: EpistemoLogical Beliefs, Reflection Practices, Teacher Education, Physical Education

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Introduction

Epistemological beliefs (EB) are individuals' beliefs about the nature of knowledge and the processes of knowing (Perry, 1970). Several conceptions about EB have been theorized over the years, such as development models (King & Kitchener, 1994; Kuhn et al., 2000), EB system (Schommer-Aikins, 2004), and personal epistemology (Hofer & Pintrich, 1997, 2002). Due to domain specificity, development nature, and the research context, the personal epistemology model (Hofer & Pintrich, 1997, 2002) stands as the theoretical lens for this work. Two general areas represent the core structure of individuals' epistemological theories, and they are generally categorized in a spectrum from simple to sophisticated. The areas are the nature of knowledge and the nature of knowing. Within the nature of knowledge, there are two dimensions: certainty of knowledge and simplicity of knowledge, and under the area of nature of knowing, there are two other dimensions: source of knowledge and justification for knowing (Hofer & Pintrich, 1997).

Many studies on epistemological beliefs have aimed to categorize these beliefs in students and teachers and identify factors that may be related to these beliefs (Güven et al., 2014). However, in the last few years, there has been a growing interest in what and how EB can be improved (Brownlee et al., 2011; Brownlee et al., 2001) since EB has a significant impact on how teachers think about teaching and learning.

EB acts as a filter for new understanding, and research shows that sophisticated EB has been more successful in education (Neber & Schommer-Aikins, 2002). In this context, little attention has been given to the relevance that initial teacher education (ITE) can have in developing a reflective and critical attitude that enhances the necessary reconfigurations of EB. Despite the lack of relevant research on this topic, ITE often includes opportunities for reflection, as they are seen as an important way to help preservice teachers develop their EBs and become more reflective practitioners. Understanding preservice teachers' (PSTs) EB and acknowledging contexts to develop them should be considered in ITE in reflection processes that allow individuals to examine their own thinking and behavior.

By helping individuals become more aware of their own beliefs and consider alternative perspectives, reflectivity practices are one factor affecting EB development. A permanent record of experiences and ideas helps the PSTs learn and their professional development by allowing their development of critical thinking, a conscious look at learning, and improved communication between peers and teacher educators (Griffith & Frieden, 2000; Towndrow & Tan, 2008).

These processes allow individuals to examine their own thinking and behavior. Therefore, through them, PSTs might grow aware of their views about knowledge and learning and consequently improve their EB (Guven et al., 2014).

The predicted success of research on EB will not be achieved if it is limited to correlations between the phenomenon and other constructs. The evidence highlights the difficulty and inconsistencies of research on this topic. However, it is also known that to undertake this impasse, more ambitious and sophisticated work in a natural context ITE is needed (Ashton, 2014). This premise and reflection can promote a climate of renewal in teaching where PSTs get involved and critically evaluate their ideas and knowledge so that they develop simultaneously as teachers and agents of change (Feucht et al., 2017).

The relationship between EB and reflection might bring insight into epistemic development during ITE (Guven et al., 2014). Therefore, this work aims to explore and understand the relationship between PSTs' reflection practices and their EB during the first year of a Teacher Education Program in Physical Education.

Context of the Study

Teacher education programs should provide PSTs with opportunities to reflect on their teaching practices and understand how they relate to their beliefs about knowledge. This strategy is present all along the ITE program analyzed in this study. PSTs are encouraged to reflect on their own learning processes and teaching practices, prioritizing deep comprehension rather than superficial matters.

This ITE invites reflection through the writing of individual reflections and reflective diaries on pedagogical practices, group reflection, and class discussions that involve perspectives from colleagues and teacher educators. These practices are developed in a cooperative learning environment that encourages PSTs to organize their thinking and constantly confront their ideas with new knowledge, which leads to reconstructing their ideas and professional practices.

Methodology

Participants

The participants were 11 preservice PSTs (6 males and 5 females) in their first year of the ITE program explored in this work. The intentional choice of participants was privileged for a deeper understanding of the analyzed cases and considering the research questions (Patton, 2002). For this reason, preservice teachers were selected for convenience and criteria from previous research on epistemic beliefs, such as gender (Adamakis, 2018; Kulinna et al., 2010) and sports experience (Yildizer, 2020).

All the participants are enrolling in this ITE program as full-time students (school year 2021/2022), and all completed the first year.

Data Collection

Focus group interviews were carried out at 3 different times and in groups of 3 or 4 participants, totaling 9 focus group interviews lasting approximately 90 minutes. These moments were defined considering critical moments of the ITE program: the beginning, middle, and end of the school year. Semi-structured scripts allowed the discussion to stimulate relevant thoughts and questions to access EB. During the focus group interview sessions, the interviewer created an environment to share experiences and opinions that generated reflection and discussion on the thoughts and practices of the participants (Jones et al., 2012).

Documental analysis of the reflections made during the first year of the PETE program was carried out. This method constitutes a source through which the researcher can extract evidence that substantiates the participants' statements and monitors the evolution of their thoughts. In addition, it is a data source that reflects the participants' thoughts in a context without interference from the formal moment of collection. The individual reflections of each

participant were analyzed: i) at the end of the first semester in the curricular unit of Pedagogical Professionality with the theme "learning to be teachers," discussing changes (or not) in understandings and positions regarding the teaching profession and ii) in the pre-and post-practice periods of micro-teaching in a school context in the curricular units of Sports Specific Didactics – handball and basketball, in the analyzes carried out about the classmates' classes and in the self-assessment of their classes.

Data Analysis

The data analysis process involved the verbatim transcription of focus groups and multiple readings of the transcripts and documents following the six-phase process of thematic analysis (Braun & Clarke, 2006). By following the systematic process of familiarizing with the data, generating initial codes, searching for themes, reviewing, and refining the themes, and producing the final report, the thematic analysis unfolded.

The analysis process employed a deductive approach, allowing themes to emerge from the data. An interpretive stance meant the possibility of developing ideas about what the documents could describe and considering the relationships between these experiences, giving them meaning alongside the existing literature (Braun & Clarke, 2006). Themes were subsequently analyzed through the lens of Hofer & Pintrich's (1997) theoretical framework and provided insights into participants' EB concerning the dimension of the source of knowledge.

Trustworthiness was guaranteed through data triangulation, participants check, and peer debriefing (Creswell, 2013).

Findings and Discussion

The study has shown that individual and group reflection moments guided PSTs in acknowledging their EB. Additionally, those reflective practices led PSTs to understand learning as changeable, evolutionary, and achieved through interacting their ideas with others and other contexts, suggesting a synergy between reflection and EB sophistication.

Awareness of EB Through Reflection

> "Reflection helps us to understand our actions, whether we are doing well or doing it badly, and this helps us to evolve." - RT (2nd focus group)

> "Reflection is always important because it is up to us to know what we have done and be aware of what we can correct, improve, and adapt and find strategies to solve the problems we encountered in class." - GF (2nd focus group)

> "The questions presented, and all the reflective moments provided by the teacher, which took place throughout the semester, served to develop critical thinking and the ability to introspect. This development influenced me as a student." – RG (2nd focus group)

As Bento (2003, p.177) states, "The teacher must always also control and evaluate his own pedagogical results," and in the case of MEEFEBS, reflective practice has led to this "personal inspection" that maintains the future teacher attentive to his practice and aware of

his convictions. It was noted that reflection played a relevant role in raising awareness of the actions and thoughts of the PSTs. Additionally, it was possible to understand that in addition to awareness, the PSTs could have a critical look at their actions and thoughts and understand that these are changeable and subject to improvement. Our data corroborate the existing literature and reinforce the role of individual reflection in the awareness about EB, as Guo et al. (2022) had already concluded that reflective writing instruction can facilitate the exploration and formation of professional roles and values.

ITE's curriculum plan and pedagogical practices also guided the PSTs toward deconstructing their preconceptions, making them aware of the process of reconfiguring their beliefs together with the new understanding of the profession.

> "I built an idealization for the future in this profession, and with the beginning of the training process in this master's degree, I was deconstructing some ideas and corroborating others." – JR (written reflection)

> "Being a teacher manifests itself in our heads through an adulterated prism – the one we have as students. In this way, we produce unrealistic beliefs that are often maintained until our thinking is deconstructed, at which point we are able to put the profession in perspective and base it with the appropriate knowledge coming from training." – MC (written reflection)

In this field, the literature values a context of ITE guided by reflective practice since self-reflection is seen as a critical component in the creation of relevant teaching practices (Schmeichel, 2012), where PSTs become more attentive to the meaning and impact of beliefs on their practices (Farrell & Ives, 2014).

Once again, reflection gains a prominent role in the personal and professional awareness of the future teacher. It became clear that this first year of ITE was essential for PSTs to access and accept reflection as an undeniable tool. Reflection helped future teachers be aware of their epistemological beliefs and how these might intervene in their professional training process. Soleimani (2020) has already noted that developing thinking and reflection skills during ITE is important to understanding the connections between the teachers' belief systems.

Development of EB Through Reflection

It was understood that individual reflection was perceived as a necessary condition for the whole exercise of the profession. The PSTs emphasized the need to privilege reflection as a means for the evolution of what the PSTs think to be knowledge and how this knowledge is learned. The confrontation of ideas with new understandings and practice creates the necessary reflective environment for developing these understandings.

> "So, without reflection, we cannot be better, obviously. Reflection is so important for my own process of evolution, which will then be transferred to the student's learning." - IB (3rd focus group)

> "I think everyone rethinks their actions, whether teaching classes or in other circumstances, but what happened was that we thought, rethought, and resolved, that

is, found justifications and results and solutions for what happened, and this did not happen before, we thought and moved forward." – SC (2nd focus group)

"The impact that reflective habits have on the teacher's ability to improve and perfect their practice constantly was a concept that was not present in my ideology of "being a teacher." - AM (written reflection)

This appreciation of reflection highlights a counterargument to decision-making devoid of intentionality and rationality. The concept of a reflective teacher emerges. Corroborating this appreciation of the reflective teacher in the teaching profession, Larrivee (2000) argues that when teachers become reflective and critical, they tend to go beyond the basic knowledge of discrete skills and rise to a different level in which they integrate skills considering the context. Also, Feucht et al. (2017) found that reflection on the nature of one's own personal epistemologies can serve as a mechanism for change. This is in line with the results presented, where it was possible to understand that the reflection potentiated the development of EB and might, consequently, their practices.

The individual reflection was visible with the reported benefits. However, there was also an appreciation of collaborative work, joint reflection, sharing, and experiences that became fundamental in favor of more significant opportunities for learning and development. In addition, it was noticeable that there is an appreciation of the knowledge developed by individual critical thinking together with the opinions of colleagues and experts in the area (teacher educators), revealing sophisticated EB in relation to how knowledge is learned.

"The exchange of experiences between professionals can, many times, accelerate this process of reflection-action... the practices of other teachers can be added to our backpack so that when we find ourselves in a situation of doubt, we have more options for solving that problem." – PA (3rd focus group)

"In addition, I am able to value even more the conversation with my more experienced colleagues, and it is useful for me as well as for them, as there is an exchange of knowledge..." – SG (3rd focus group)

"The moments of reflection in which we really manage to learn something are when we are talking with our colleagues when we are discussing things with each other, about what we feel, what we have done, and I think that this is much more beneficial for my development." – JS (3rd focus group)

The results presented support the perspective of Attard and Armor (2005), stating the need for a community where it would be possible to share the teaching experience, mainly from the teachers' perspective at the beginning of their careers. According to Wenger (1998), learning is mediated through social participation; that is, interactions that trigger the involvement that each human being adopts in the process of being an active agent in the community are privileged.

Conclusion

The PSTs enrolling in this ITE program evidenced both individual and peer reflection processes. EB assumes a relevant position in PSTs' ideas, professional identity, and teaching practice; exploring and developing them can benefit learning environments. Understanding

reflection as a tool to develop more sophisticated EB can contribute to teacher educators' knowledge, curricular reconfiguration, and teacher training policies.

Specifically, peer reflection was also highlighted in the EB development process. Sharing ideas and reflecting on the opinions of others led to an awareness of one's understanding and the ability to be self-critical. This stance triggered the development of epistemic thoughts more congruent with the prevailing education paradigm.

This work supports a compelling argument in the teaching field and sheds light on the critical issue of EB in teacher education. If we consistently find that reflection processes can effectively enrich EB, it becomes crucial to understand the perspectives of PSTs about this connection and reevaluate ITE designs.

Acknowledgements

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