Acta Scientiarum

http://periodicos.uem.br/ojs
ISSN on-line: 2178-5201
https://doi.org/10.4025/actascieduc.v44i1.52706

Essay on pedagogical intentionality and tradition: tensioning as an educative principle

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ABSTRACT. In this reflection text I develop a discussion centered in the tensioning between pedagogical intentionality and tradition as an important task in teacher action. From theoretical and experiential teacher training sources, I point pedagogical intentionality as deeper educational tool then tradition when faced with a tensioning process. By argumentation process, based on facts statements, position taking, and theoretical articulation, I present qualitative methodology carried out in this text. In this sense, I made differentiations between pedagogical intentionality and tradition from others authors and the reflection specificities. Teachers' actions and school subjects are problematized in terms of pedagogical intentionality and tradition differentiations to direct the tensioning as educative principle to think about in teaching both in general education and specifically in science education. In the end, I assume in the reflection the tensioning process more productive then using pedagogical intentionality and tradition separately and reassert my intention to problematize and contribute with knowledge production in educational field, particularly in teacher training.

Keywords: teacher education; teacher formation content; didactic.

Ensaio sobre intencionalidade pedagógica e tradição: um tensionamento como princípio educativo

RESUMO. Proposto como uma reflexão, desenvolvida a partir da análise de fontes teóricas e da experiência em formação de professores, neste texto tenho por objetivo evidenciar o tensionamento necessário entre as ideias de 'intencionalidade pedagógica' e de 'tradição' como elementos potentes à ação docente. Por meio de uma metodologia qualitativa, baseio o texto no processo de argumentação, pautado na exposição de fatos, explicitação de posicionamentos e articulação teórica para tecer suas propostas. Argumentando em favor de um trabalho em direção à 'intencionalidade pedagógica', apresento, como resultado principal, a proposição de colocar essa 'intencionalidade pedagógica' acima da 'tradição' por meio de seu constante tensionamento. Para isso, na construção da reflexão assinalo as diferenciações que assumo entre 'intencionalidade pedagógica' e 'tradição', trazendo elementos de outros autores e delimitando as especificidades apontadas no trabalho. Na sequência, no processo de reflexão encaminho que o tensionamento entre 'intencionalidade pedagógica' e 'tradição' seja tido como um princípio educativo, dadas as potencialidades que ele assinala na educação em geral e, em específico, no recorte apontado na Educação em Ciências. Ao final, proponho que o processo de tensionamento é mais produtivo do que a implicação dessas ideias em separado, assim como reitero a expectativa da reflexão de problematizar e contribuir com a produção de conhecimentos no campo educacional, especialmente na formação de professores.

Palavras-chave: formação de professores; conteúdos da formação de professores; didática.

Ensayo sobre intencionalidad pedagógica y tradición: la tensión como princípio educativo

RESUMEN. En este texto, propuesto como una reflexión, desarrollo del análisis de fuentes teóricas y de la experiencia en la formación de profesores una discusión que busca evidenciar la tensión entre las ideas de intencionalidad pedagógica y tradición como elementos potentes para la acción docente. Con base en una metodología cualitativa, utilizo el proceso de argumentación, lo cual siegue la exposición de hechos, explicitación de posiciones y articulación teórica, para tejer su análisis. Desarrollo el texto para marcar un énfasis en términos de la intencionalidad pedagógica, y propongo esta sobre la tradición por medio de su tensión. Para eso, subrayo las diferenciaciones entre la intencionalidad pedagógica y la tradición, y trae

elementos de otros autores y esclarece las especificidades en el texto. A continuación, señalo la propuesta de que la tensión entre esas ideas sea comprendida como un principio educativo, dadas su potencialidad en términos de la educación (en general) y de la enseñanza de las ciencias (en particular). Finalizo mi argumentación proponiendo que el proceso de tensionamento es más productivo que la tomada de esas ideas en apartado. Por fin, reitero mi expectativa de problematizar y contribuir con la producción de conocimientos en el campo educacional, especialmente en la formación docente.

Palabras-clave: formación de docentes; contenidos de la formación de profesores; didáctica.

Received on March 19, 2020.
Accepted on June 2, 2020.
Published in December 16, 2021.

Introduction

Literature in the educational field has repeatedly highlighted the importance, in teachers' work, of the process of reflection about pedagogical practice (Garrido & Carvalho, 1999; Nunes, 2001; Hoffman-Kipp, Artiles, & López-Torres, 2003; Brito, 2006; Santos, Gauche, Mól, Silva, & Baptista, 2006; Zeichner, 2008; Carabetta Júnior, 2010; Beineke, 2012; Uhmann & Zanon, 2013; Körkkö, Kyro-Ämmälä, & Turunen, 2016; Loponte, 2017, among others). Recognizing the contributions of the process of reflection with regard to the qualification of classroom practices, research, and teacher and student education, this paper emerges as a reflection proposed by me and shared with the community that works in the field of Education in general and especially in Science Teaching, given the peculiarities and context of this writing.

Thus, in this essay I present a reflection on the constant friction that I have noticed both at the level of my practice and the level of the practice of other colleagues, based on conversations and reading of works produced in the field of Education and Science Teaching, related to the relationship – always tense, always present, and always producing effects on teaching and learning – between 'pedagogical intentionality' and 'tradition'. I understand that the teaching practice has a deeper commitment to the former, while the latter must always be pushed to the limit and be under a strain. Even though the prerogative of 'tradition' leading and marking the pace of what is given or governed in the teaching process is evident, I propose here that assuming a productive posture in the educational field and in teacher education implies working so that 'pedagogical intentionality' is above 'tradition', which in many cases acquires a more ontological feature than a historical and dated one.

To carry out this proposal, which ultimately intends to be hypercritical (Veiga-Neto, 1995; 2006; 2012) of the teaching process and of the school curriculum itself, I intend, throughout this text, to initially address the differences that I notice between 'pedagogical intentionality' and 'tradition' in order to, subsequently, outline a proposal in which the tensioning between them is seen as an educative principle. After discussing these topics, I will seek to reiterate the highlights of my argument in favor of the prevalence of one over the other, with the aim of problematizing and contributing to the production of knowledge in the educational field, especially in teacher education.

Necessary definitions, differentiations, and integrations between pedagogical intentionality and tradition

Not necessarily systematized by a specific field or author, but supported by research (Pastoriza & Loguercio, 2014; Pastoriza, Loguercio, & Mazzotti, 2014; Pastoriza & Del Pino, 2017a), I have consistently resorted to the notions of 'pedagogical intentionality' and 'tradition' and their tensioning in my Chemistry Didactics and Resources for Teaching Chemistry courses, which I have been teaching for some time.

Although it is possible to find numerous works that address the matter of 'tradition', its correlates, its historical position and discuss it from different theoretical perspectives (Cressman, 1930; Stabler, 1977; Freitas, 2000; Veiga, 2002; Sommer, 2002; 2007; Tezanos, 2012; Pietri, 2019; among others), as well as works referring to the idea of 'pedagogical intentionality' (Krawczyk, 2003; Sánchez & Muñoz, 2008; Vilar & Anjos, 2014; Salgueiro et al., 2015; Torres, 2015; Cerutti & Nogaro, 2017; Costa, Gomes-da-Silva, & Gonçalvez, 2017; and others), I realize that many of these discussions do not assign a clear delimitation or definition for the use of these terms. More than that, I understand that the proposals outlined in these works place the notions of 'pedagogical intentionality' and 'tradition' in a different sense from what I propose when I refer to them

both in class and here, in this textual reflection. Analyzing such materials, I discern that the biggest difference to what I have developed is that I acknowledge, in my practice, the necessary articulation between them in the teaching practice, not considering their potential when analyzed separately, and this implies in seeking to differentiate them in order to appropriately articulate them.

Aiming at the integration of such proposals, I usually start discussions in my courses by marking the presence and difference between a notion of 'pedagogical intentionality' and one of 'tradition'. With the latter, I start the discussion by acknowledging that in school education processes (as well as in many others) it is possible to perceive the presence of 'since always, already done, already consolidated' that has the function of 'limiting, organizing, restricting, directing, indicating' what will or will not be done in the classroom. And I mention that these understandings are not originally mine but have been pointed out in various works that analyzed different aspects of the constitution of the school and other systems, identifying the presence of historically consolidated determinations, guidelines, and practices (Freitas, 2000; Lopes, 2000; Veiga, 2002; Sommer, 2007; Carvalho, 2011; Silva, 2013). These functions, characteristics and marks highlighted by me here are circumscribed within the idea and the field of 'tradition'.

It is true that what constitutes 'tradition', at a given moment, goes through assemblages, explicit intentions or not, motivations and determinations of various orders, especially when we acknowledge its role in terms of curriculum development, which is addressed, selected, and organized under a certain perspective, with its normative force (Silva, 1999; Sacristán, 2000; Macedo, 2006; Young, 2014). However, not with regard to its constitution, but to its recognition as an already consolidated element, which has already gone through these initial moments of organization, such elements (for reasons that are not easily explained, or due to processes that are not even the scope of this text) have the effect of constituting positions, guidelines, assumptions and rules that do not necessarily undergo a formal or explicit verification process, but that are produced in a mechanism of ontological claim of their legitimacy (Sommer, 2007; Pastoriza & Del Pino, 2017a). That is, when it comes to 'tradition', we notice a legitimation process based more on a reference to a custom, to a distant process that has always taken place and which, therefore, is legitimized by the unknown time of its existence than by account of a rationalized reason (Bachelard, 1977; 1996; 2004; Fonseca, 2008; Bachelard, 2009). These historical elements and their characterizations, often less logical than ontological, I have simply called 'tradition', which, even before it can be questioned, imposes itself (at different levels and intensities) on the contents and individuals that operate in the school field.

This definition manifests itself every time I notice some literature in the area of Education or Chemistry Education or whenever I witness teachers in training or already working say that 'you must teach this content because it must be taught', or they complement such legitimation by the categorical statement that 'it will be tested on the ____' (the blank space being filled in here by the usual words 'GED, SAT' or other assessment systems). Every time such justifications – less grounded in reason and more grounded in an ontological basis for the constitution of a discipline, its contents, and organization – emerge, the process of updating this 'tradition' and its intense effects on school subjects becomes clear.

By confronting, differentiating and articulating this notion in the courses I teach and in my teaching practice, I have worked and fought for a 'pedagogical intentionality'. When embracing it, I define it as an 'intentionally intentional, directly directed and consciously conscious process', as it is certain that the various activities carried out in the school field are intentional, have some direction or are thought of by a conscious and cognizant being. However, even if they are thought of, I understand that making the 'intention' of some task 'intentional' is something more profound; it requires a more elaborate level of discussion that, in a first approach, does not necessarily happen. As a counterpoint to 'tradition', while the latter acknowledges the 'since always' and the 'immutable' aspects of a given practice, 'pedagogical intentionality' always seeks space for questioning the validity, legitimacy, coherence, justification, and scope of something. While 'tradition' believes in its own value, as a creation to which time has given importance, 'pedagogical intentionality' always wears an ironic smile of doubt, as Bachelard (2008) would say.

This radicalism of seeking intentionality in the intention itself can be appreciated through an example. We teachers systematically choose to carry out an evaluation in our courses. Suppose this evaluation is of the 'test' type. It is undeniable that, among the multiple possibilities of evaluation methods, this model is the chosen one. However, when the topic of 'pedagogical intentionality' is debated, this 'intention' of testing is not enough. There needs to be an 'intentionality' in the choice itself, so that it is not justified by 'just because', 'because I like it', 'because I prefer it', 'because I have always done it this way', or other less directed

justifications, based largely on a 'custom' of inexplicable or immemorial origins – thus, on a 'tradition'.

In the line of 'pedagogical intentionality', it is necessary to 'pedagogically' work on the chosen option. For example, in this case, I could choose and justify the test-based evaluation model because I want to provide a time-space in which my students are required to mobilize their knowledge without other external material interference. Or I could opt for this proposal because I consider it interesting for analyzing students' ability to (re)organize the knowledge developed during classes in a situation that requires them to adapt to unexpected circumstances (questions), in a context of intellectual independence (individually) and under a certain level of pressure (with a fixed time, under the supervision of teachers, etc.). In this example, not only the choice of evaluation 'type' is contained in the 'pedagogical intentionality', but the 'content' or 'design' of the test itself and its questions. If I wish my students to exercise abstract thinking in the development of mathematical reasoning (since I can consider it to be, at that moment, something important for the understanding of those phenomena studied), I will certainly include questions with this feature. If, on the other hand, I appeal to the importance of descriptive reasoning, which, as in the case of a Chemistry course, even without calculations can show the understanding of phenomena and their representations, I will certainly opt for questions that are more discursive and require textual elaboration.

I chose the example of a test as evaluation model because it is the most common and most widely adopted one (Gatti, 2003; Bonamino & Sousa, 2012). It should be noted that either for this evaluation model or others, as well as for any school practice, classroom dynamics, field trip, etc., I understand that it is essential to make the 'pedagogical intentionality' explicit. And yes, it is complex! When mentioning, for example, the intentional process of choosing an evaluation method, it is important to highlight its contributions to the evaluation process, as well as the negative aspects it may have. I refer here mainly to the models that are already more consolidated and, therefore, are in need of being discussed more intensively in terms of 'pedagogical intentionality'. For example, when talking about the test evaluation model, it is clear that "[...] negative feelings towards tests develop over the schooling years and, undoubtedly, if you want to change them, it takes some time [...]" (Gatti, 2003, p. 103), and 'the permanence of a strong predominance of a conception of evaluation as a measure' is also revealed (Marinho, Fernandes, & Leite, 2014). Thus, I believe that the crossing of 'pedagogical intentionality' to this model can motivate and catalyze change, since the 'intentional' emphasis to the 'intention' of this evaluation passes through a complex scenario, which ranges from the model choice, its association with an educational goal, its construction consistent with this goal, the recognition of its purpose, until the model implementation and the reflection on its effectiveness in face of the goals and purposes initially proposed (assessment of the evaluation). It is due to this recursive characteristic of 'pedagogical intentionality', being mobilized both in the initial development of the educational process and in the mobilization of a new beginning based on what it was able to extract and produce in the previous process, that I associate to it the notion of hypercriticism, because it sees itself as radically radical, even in relation to itself (Veiga-Neto, 2006).

Talking about the 'intentionality' of an 'intention' defined in the educational process means working towards doubting the return to origin (Pastoriza & Del Pino, 2017b), problematizing the classic dualistic view of evaluation (Marinho, Fernandes, & Leite, 2014), questioning what comes to us so stable and so clear as the practice of 'administering a test'. In this reductionist viewpoint, nothing is as 'usual', nothing is as 'simple', nothing is as 'obvious' as a resource like this. However, from the perspective of 'pedagogical intentionality, the obvious is not obvious'. Not making the options and choices explicit does not mean knowing them from the beginning, but, quite possibly, it 'implies not distinguishing them'. And that is why 'pedagogical intentionality' must go to the basements (Veiga-Neto, 2012) of what constitutes our teaching practices and actions, whether referring to content, strategies, evaluation methods, or others.

Based on such elements, every time I have worked with the systematization of this discussion between the presence and the action, beyond the teacher figure, of a 'tradition' and its needed problematization in a process that, more than guided by an intention, intentionally guides the intentions and choices themselves, I have highlighted the possible contributions that the tensioning between 'pedagogical intentionality' and 'tradition' can bring to teaching practices. Thus, I have been increasingly working to make the tensioning between these two ideas an educative principle, which can help both in the autonomy and in the qualification of teaching practice, and it is aiming at understanding more elements of this principle that I propose the next

section.

Tensioning and pedagogical practice: perspectives from a context of action

It is in this context of remarks and discussions that, throughout my practice, I have been interested in researching the contents and the ways they are taught in the Chemistry area – the field in which I work and train teachers. In particular, I have developed a special taste for thinking, analyzing and problematizing one of the most central elements of school subjects themselves: their concepts. By asking questions in this regard, I was able to detect a series of recurrences that were/are aroused by the tensioning between 'pedagogical intentionality' and 'tradition', so I believe it is valid to insert this proposal of educative principle in the context of my practice. It is worth pointing out that, by defining this circumscription, I am not denying other aspects and research interests, whether in the field of Chemistry Education or the broader field of Education, in the same way that I do not limit the potential of this discussion nor the situations in which I mobilize it only towards this investigative focus on concepts. If I seek to present what has driven my investigations and reflections on teaching based on an excerpt of my actions and the setting in motion of the tensioning between 'tradition' and 'pedagogical intentionality', it is because I identify, through some contextual examples, a great discussion potential in this tensioning.

Systematically, when reading works produced by the academic community and when having contact with teachers in initial training and continuing education, I notice that, with regard to the conceptual contents of Chemistry and its articulations within the school, very little of them is discussed in terms of an effective 'pedagogical intentionality' when the choice of the 'conceptual contents' at work and their development are questioned. Few studies present a discussion that intentionally acknowledges the validity, legitimacy, or effective intentional choice to work with any content in the Chemistry field (and I venture to say that this statement can be expanded to other areas). Usually, the literature addresses much more the will to improve the learning about a certain chemical concept than effectively discussing its usefulness, validity, application, context, etc. For example, see the works of Bertalli (2008), Oliveira, Silva and Ferreira (2010), Campos, Silva, Ferreira, Ribeiro and Felício (2017), and Souza, Loja and Pires (2018). In these and many other texts, although reaching their goals, there is no clear evidence, in the discussion, of the intentions and justifications for choosing such strategies, excerpts, processes, etc. From this perspective, it is not strange to find the importance of working with a theme or concept being referred to the endless and immemorial space-time of the ontological constitution of a discipline such as Chemistry[1], mainly due to the fact that, frequently, it is not necessary to discuss the validity of these concepts, accepted a priori (Pastoriza & Del Pino, 2017a).

At this juncture, my criticism centers on the fact that these justifications attributed to the teaching of one or another subject or content repeatedly appear coated with a legitimation that takes the entire process of choice, delimitation, and action 'beyond the teaching intention'. In this system, these circumstances make the decision about which elements to teach 'out' of the classroom and, worryingly, 'away' from the teacher. Assuming that we are professionals in a certain field and considering our training, practice, and qualification processes, which indicate our expertise in teaching (Nóvoa, 1992; 2017), I believe that we should be diametrically 'opposed' to such a scenario.

As I seek to apply more and more my 'pedagogical intentionality' on my practices, I assign myself, a teacher, who knows my students, my institution, and its community, the task of 'choosing', 'selecting' and 'opting' for the teaching methods, contents, approach, and strategies. Obviously, when talking about this choice, I also assign us, teachers, a level of 'responsibility' in the pedagogical action. This responsibility is (or should be) inherent to the teaching practices, since there is not (or there should not be) anyone more qualified, capable, and knowledgeable of what is necessary, ideal, preferable to be developed in the real classroom context (Roldão, 2007). From this perspective, as pointed out in the discussion and criticism by Fávero and Tauchen (2013, p. 237):

> This is why the teacher, in addition to understanding the content to be taught, needs to be able to analyze and solve problems; to know how to transform scientific knowledge into teachable knowledge; to select appropriate methodological strategies that facilitate learning; to organize the knowledge that enables the students' understanding; to regulate learning processes through evaluation, among other knowledge. These are intellectual requirements that go beyond the mere mastery of conceptual contents or specific scientific knowledge.

[1] Criticisms can still be made when analyzing the relative novelty of the constitution of this Chemistry Education in terms of its organization as a discipline in Brazil. On the subject, I suggest the works by Schnetzler (2002), Lopes (2005) and Beltran (2013).

If, on the one hand, I support and seek to defend teaching autonomy and the various nuances of schools, decisions and positions on what to teach, how to teach and in what direction to teach, I am careful to point out that, with the idea of 'pedagogical intentionality', I do not deny the existence of basic curricular structures, such as the National Common Curricular Base (*Base Nacional Comum Curricular* – BNCC) (Brasil, 2018) in Brazil, or other local proposals, whether from states (Paraná, 2018), municipalities (Itatiba, 2016) or school systems. In the context of my propositions, actions and reflection, what I have denied is the assignment to these curricular structures of decision-making and intentional elements that go 'beyond what such structures themselves propose'.

For example, based on my work and research, I have detected that in the current structure of the BNCC there is no indication that concepts such as isobars, isotones, and isoelectronics should be taught, nor of enthalpy or entropy. The interpretation of these curricular guidelines, allied to our 'intentionalities' and 'traditions', is what makes us comprehend that the existence, in the BNCC text, of excerpts such as

> To analyze socio-environmental, political, and economic issues related to the current world's dependence on non-renewable resources and to discuss the need to introduce alternatives and new energy and materials technologies comparing different types of engines and production processes of new materials [...] (Brazil, 2018, p. 560),

means that 'this is' or 'requires' addressing 'enthalpy'. In this sense, it should be noted that the text does not address 'which' concept should be taught, nor 'how', but, 'intentionally' or not, someone 'sees/wants/wishes' to approach 'energy technologies' or the idea of 'quantification' via 'enthalpy', for example. And this is not recent. The same reasoning applies to other documents, such as the National Curricular Parameters (*Parâmetros Curriculares Nacionais* – PCN). In them, a passage such as

> The physical principle of conservation of energy, essential in the interpretation of natural and technological phenomena, can be observed in biological processes, such as fermentation, or in chemical processes, such as combustion, relying in any case on the mathematical instruments for its equation and for its quantification [...] (Brasil, 1999, p. 8),

tends to have its reading directed the same way as when constituting 'enthalpic' work, as in the case of the BNCC.

About documents such as those cited, they

> [...] constitute one of the forms of expression of the role of the State in the search for cohesion and order, acting towards achieving uniformity in the national curriculum, by defining a minimum content list to be taught in primary and secondary education [...] (Galian, 2014, p. 651),

but it should be observed that the documents per se do not lay out many details, which tend to be filled out by a 'consolidation' of what contents an area should teach. Although the focus here is not to be a study on the curriculum itself, even because there are a number of works that look more closely at the topic (Macedo, 2017; Silva, 2018; Lima & Hypolito, 2019; among others), to bring such documents and their relationship with a position widely accepted by Chemistry teachers makes it evident that discussions regarding 'pedagogical intentionality' and 'tradition' can contribute to the establishment of what will be the object of study in the classroom dynamics and, therefore, will constitute the curriculum (in the broad sense).

Inspired by Bachelard, I believe that scientific knowledge is distinguished in terms of problems – a notion that I take to the issue of teaching and education. More than that, I understand that "[...] it is necessary to know how to formulate problems. And whatever they may say, in scientific life [and I also include teaching here] problems are not formulated spontaneously [...]" (Bachelard, 1996, p. 18), and thus, my criticism of 'tradition' comes from taking it as spontaneous in the act of producing insights and knowledge in an educational context. It is necessary to establish tensioning, that is, to produce tensions that dislodge or destabilize stabilities in order to modify a given scenario. However, this must also be intended, which means bringing the notion of planning and intentionality, of confronting this spontaneity, so that it is possible to formulate problems that are not spontaneous in that context. In this sense, it is necessary to query the understanding, in Chemistry, that 'energy technologies' or 'quantification' 'must' be conceived as 'enthalpy'. In this direction, Bachelard's scientific pedagogy (Fonseca, 2008) can be a powerful tool (among many others) for this endeavor, given its perspective of education as a social and historical practice.

Given such confrontation and articulation, I fight for a greater emphasis on the matter of 'pedagogical intentionality' than of 'tradition'. This is because I believe that delineating our teaching practices mediated by 'tradition' implies both the 'teacher's invisibility' and an 'impoverishment' of our field of performance itself. For example, to this day I see colleagues working in schools and discussing issues such as double

replacement reactions, single replacement reactions, synthesis, and analysis. Systematically, when talking to these colleagues, the reasoning falls on those ontological approaches already mentioned. By bringing such approaches, they do not appropriate existing discussions in the field of Chemistry Education that criticize and especially present arguments that can guide and help teachers in choosing and defending their choice for not working on these themes, such as, for example, the work of Lopes (1995). It is necessary that as many chemical subjects and concepts as possible be discussed and confronted, in order to seek a radically radical critique of such concepts, subjects, and choices, as well as a critique that falls on and problematizes this critique itself.

In general, I show that there are still few publicized investigations that focus on this aspect of hypercriticism to the area of constitution, organization, and teaching of a discipline itself. For example, in Chemistry Education, I could particularly highlight three works that, in a way, although not being the only ones, refer this questioning of choices to the Chemistry discipline itself: Campos e Silva (1999), Silva (2005), and Scerri (2019). This hypercriticism, which in the context of my discussion necessarily leads to the confrontation and tensioning between 'tradition' and 'pedagogical intentionality', is still little explored in our area. I acknowledge that this is due to its complexity and the discussions that it ends up mobilizing and including in its problematization. For example, when discussing the 'intentionalities of choices' that constitute our actions, some elements necessarily arise, ranging from the questioning of the philosophical basis of our epistemological model and aspects of our own subjectivity, to the questioning of the teacher training models themselves, of the proposition of elements established in curricular guidelines or characteristics of teaching systems, among others.

An effort must be made, both intellectual and conjunctural, in relation to the teachers' practice and training that we currently have and its possibilities for change. For example, investing more in collective work (Pastoriza et al., 2017c) and better analyzing the historical aspects of our training to design future actions (Null, 2009) can be ways to improve actions to better focus on our choices. In addition, I think that a movement in terms of valuing and recognizing our performance as professionals (Nóvoa, 1992; 2017) is another way of qualifying not only the problematization process, but also the very organization of this universe and other problematizations that arise together with the matter of 'pedagogical intentionality' in order to, from this organization, highlight possible ways of working, dividing and specifying this problematization.

I think that, given its complexity, taking 'pedagogical intentionality' as an educative principle involves, at first, the organization of the space for action and the 'intentional choice' (once again) of 'where' to start the discussions, as well as the level of immersion in the discussion and each of the points it may raise. Although broad and complex, I believe that it is necessary for us, in this discussion, to start with an excerpt, so that we can gradually expand our problematization.

And this is how I believe that conditions arise for a tensioning whose motto is to point out what has already been studied, what has already been secured in the field ('tradition'), and to problematize it in its 'intentionalities'. I think that it is in this process that spaces are created for the expansion, dynamization, and contribution of teaching to the disciplines related to it and to teaching itself. I believe that, systematically and repeatedly, after the usual contents of school Chemistry (and of other areas) go through constant questioning about their (theoretical and contextual) validity, suitability (to the individuals and level of education), and contributions (explanatory and predictive limit), etc., we will increasingly be able to speak of an educational process that was 'intentionally' organized to contribute to developing those individuals that integrate it, implying the idea of forming individuals who are active, informed and capable to make decisions (Schnetzler & Santos, 2010).

This does not mean 'denying' 'tradition' or rendering it 'useless'. In many cases it works as an element instigating the problematization process and, moreover, nothing prevents the confrontation between 'pedagogical intentionality' and 'tradition' to signal that both come together and collaborate in what is discussed. Based on Young (2014) it is possible to say that the 'traditions' (of disciplines, of study types and focuses, etc.) are of fundamental importance in the constitution of areas and their development trajectories. For example, from this perspective, Chemistry Education also has its traditions, which we cannot live without, but nothing prevents us from transforming them, tensioning them, and establishing new relationships based on them. However, adapting Bachelard's speech (1996) to this proposal, if 'tradition' and 'intentionality' are legitimized at a particular point, it is for reasons other than those that initiate 'tradition'.

For example, I understand that the 'traditional' proposal of teaching certain models of chemical bonds and

the 'intentional' proposal of teaching that chemical processes are characterized by atomic reorganization (which implies changing chemical bonds) are strongly articulated. In this context, I recognize, as a teacher, that both the traditional indication of teaching chemical bonds and my intentional choice to address these models are, in the current context of Chemistry Education, something desirable and to a certain extent necessary. Obviously, as an unfolding of this thought, analyses of which bonding theories and models to favor arise and, again, I believe that 'intentionality' should select, in each case, the best study frame, recognizing the needs, characteristics, problems that it wishes to explain, etc. As pointed out by Barreto and Bejarano (2016), this process can also lead us to a philosophical discussion of its appropriation.

Less problematic than problematizing, making movements towards intentionality tends to contribute to the organization, knowledge, structuring, and development of the discipline itself, which, instead of being proposed by others, allows us, teachers, to mobilize a professional protagonism. This way, I believe that assuming 'pedagogical intentionality' as a principle of tension tends to contribute greatly to this scenario of qualification of our teaching actions.

Final remarks: prospects for pedagogical intentionality

"To put scientific culture in a state of permanent mobilization, to replace closed and static knowledge with open and dynamic knowledge, to dialectize all experimental variables, finally offering reason reasons to evolve" (Bachelard, 1996, p. 24). This is one of Bachelard's proposals to think about the development of the scientific spirit. Although presenting differences in focus, historical moment, conjuncture, etc., I believe that his words are capable of making us reflect on our teaching practices, and this was a task on which this text was based.

In this process, I sought to highlight the necessary mobilization of our experiences (Bondía, 2002), of our insights and knowledge (Veiga-Neto & Nogueira, 2010) in order to dedicate, with them, to the analysis of our pedagogical practice. This is what was intended here. There are naturally numerous paths for this process, so throughout this text, I sought to problematize a possible one at the same time I pointed out others. Not so much at the level of didactics, not so much at the level of pedagogy; not so much at the level of epistemology, not so much at the level of Science Teaching, but articulating these fields, I believe that it is possible to find the (mobile, but initially sufficient) bases for a hypercritical work with the topic of 'pedagogical intentionality' and its tensioning of the 'tradition' that reaches our teaching practice.

It should also be noted that my focus is indeed on the teaching actions, although I see them articulated with student actions, with management, with political issues, and other levels. With regards to 'pedagogical intentionality', we have to embrace our position as specialists, professionals in our areas, experts in the best ways to promote qualified teaching processes that tend to support and produce more and better learning processes.

Finally, I cannot fail to point out that the focus of my discussion in this reflection is undoubtedly partial and self-interested, so other discussions were left aside. Although talking about a tensioning between 'pedagogical intentionality' and 'tradition' implies a positive emphasis on teachers in terms of responsibilities and rights, I did not address here the fragile and deficient context that has generated so many demands on us, education professionals. At this juncture, I did not make here any comment regarding the precariousness of working conditions, the commodification of education, or the teaching overload and its associated problems.

I chose not to address broader aspects, although strongly related to the topic of my analysis in this text, for two main reasons. The first is that discussions regarding these deficient aspects of the educational context, which I also consider relevant, are discussed more and better by other researchers than I could do here (Borba, Diehl, Santos, Monteiro, & Marin, 2015; Jacomini & Penna, 2016; Dessbesell, Fabricio, & Kelm, 2018; Moura, Ribeiro, Castro Neta, & Nunes, 2019; Barros, Silva, Zamboni, Martins, & Cardoso, 2019). The second motivation is to acknowledge that, although relevant and constituting conditions for the proposed problematization itself, these questions about fragility, deficiencies, etc. cannot overshadow the other discussions, because, if we allow it, we will be 'dangerously' creating a legitimation for possible stagnation and involutions. This, re-updating the critique of ontology, could lead to the irresolution of the (inadequate and inefficient) matter that: 'first improving general and infrastructural conditions is a way to improve the educational process, or a better educational process is a means to improving general and infrastructural issues?'. This question is inappropriate because it is simplistic; it is inefficient because it does not lead to any

action. Questions such as these are more dangerous than helpful, so I thought it more appropriate to detach from it and to propose a discussion in the direction of what I have here set forth.

I believe that, in terms of the unfolding of this text, an approach to thinking about 'pedagogical intentionality' is established, having implications that unravel beyond itself, such as the reinforcement of teaching responsibility, qualified training, autonomy, and in-depth knowledge of the field of action. In this sense, through the exercise of 'pedagogical intentionality', I think that its basis allows us to mobilize it according to our conditions. In small steps, in an initial movement, or even in larger steps, in a process that is already more complex and understood by the specificities of each teacher, the central and biggest contribution of it is to call us to action. And, even if we do not have the ideal conditions, the 'pedagogical intentionality' asserts our duty to constantly think and rethink the different aspects of our action and professionalization. As a final comment, I see in the tensioning between 'pedagogical intentionality' and 'tradition' a viable and adequate educative principle in the catalysis of changes in our teaching action and practice and, therefore, in the educational system itself. For these reasons, I considered it appropriate and potent, to encourage further discussion, to share the reflections and propositions in this text.

Acknowledgment

I thank the Research Support Foundation of the State of Rio Grande do Sul (FAPERGS) and the Brazilian Council for Scientific and Technological Development (CNPq) for the financial support to the research and projects that supported this text.

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NOTE:
The author was responsible for the design, analysis, and interpretation of the data; writing and critically reviewing the content of the manuscript, and also approving the final version to be published.