

A comprehensive itinerary about the portfolio: dialogue between teachers in training

ABSTRACT

The incorporation of the Portfolio, as an evaluative tool, has proven to be a possibility with formative potential in educational practices in teacher training. Given this scenario, this work was developed by the teachers trainers, the authors of this text, based on their experiences with Portfolios in the context of the Chemistry Undergraduate course at the Federal University of Grande Dourados (UFGD). Through this writing exercise, we intended to build some understandings that structured our comprehensive journey from the concepts of experience: the principle of continuous training; the articulation between theory and practice anchored in the perspective of praxis; the epistemic function of writing and the inseparability between teaching practice and research on and in it. Our investigation assumed a qualitative character and was anchored in the assumptions of authors, such as Ludke and André (2015) and Moraes and Galiazzi (2016). The empirical material consisted of the experience reports of these teachers about their experiences over almost a decade of working with the Portfolio. Their analysis was carried out according to the theoretical/methodological assumptions of Textual Discourse Analysis (TDA), developed by Moraes and Galiazzi (2016). We conclude this comprehensive writing movement by arguing that the Portfolio has been configured as a very powerful formative tool, developing different teaching knowledge through reflection and problematization of writing. Furthermore, we understand the relevance of deepening debates about other formative possibilities in undergraduate courses, especially those in the Exact Sciences, which are mostly permeated by objectivist evaluations. We announce that the work with the Portfolio can glimpse new horizons committed to learning and teaching in the training of Chemistry teachers.

PALAVRAS-CHAVE: Portfolio. Comprehensive course. Chemistry teacher in training.

Vivian dos Santos Calixto
vivicalixto@ufgd.edu.br
orcid.org/0000-0002-1825-0097
Universidade Federal da Grande Dourados (UFGD), Dourados, Mato Grosso do Sul, Brasil

Adriana Marques de Oliveira
adrianamarques@ufgd.edu.br
orcid.org/0000-0002-1825-0097
Universidade Federal da Grande Dourados (UFGD), Dourados, Mato Grosso do Sul, Brasil

PORTS OF DEPARTURE...

The exercise and the movement that structure an itinerary of understanding are not based on determined spaces of beginning and end. Many times, what we understand and perceive as the beginning is already the middle, and the end, in fact, is only the prelude of what is to come. Given this conjecture, our understanding itinerary about the potentiality of the Portfolio and the reflexive writing exercise developed therein is anchored in the reflection written by Knobbe (2014) since our perception converges with hers. The comprehension movement is outlined as an endless journey, with points and ports of departure, stops for reflection, and supply towards new challenges, but without a point/port of arrival. We only develop movements to evaluate the route taken, refuel, and depart towards new horizons, glimpsing other landscapes and colors previously unperceived.

Having this understanding as a "map," philosophy, and horizon, we developed the writing exercise portrayed in this text, in which we intend to analyze and evaluate the experiences we are building throughout the experiences with the Portfolio during the Internships of the Chemistry Undergraduate course at the Federal University of Grande Dourados (UFGD), in which we are teachers. Finally, we could mention some principles that structure our comprehensive exercise; of these, we can highlight: the concept of experience; the principle of continuous training; the articulation between theory and practice anchored in the praxis perspective; the epistemic function of writing, and the inseparability between teaching practice and research on and in it.

In the meantime, we understand ourselves as teachers and students in the process, especially when we consider the reflections made by Freire (1996, p. 69), when he states, "I think I can say, at the time of these considerations, that all educational practice requires the existence of subjects, one who, teaching, learns, and another who, learning, teaches [...]". Through the experiences, we have built, and will still build, with our students, we learn and teach how to be teachers of Chemistry, about the epistemic potential of writing, about the articulation between School and University, about the inseparability between theory and practice, about research as an educational principle, in short about the humanization of the processes of teaching and learning.

Given this scenario, we will address some points of reference that help us in the construction of reflections for the organization of the trajectory, its evaluation, and reorientation. The teacher training courses have in their founding structure some guiding principles, which are determined via normative documents, of which we can mention the Resolution CNE/CP No. 02 of 2015 (BRASIL, 2015). In this document, there is a series of guidelines that intend to direct the process of developing the structure of the curricular matrix of these courses, especially in this text, we will focus on the discussion of Internships. The Resolution mentioned above determines that there must be, at a minimum, 400 hours of Internship in undergraduate courses, which can be distributed throughout the semesters.

This Resolution also determines as a requirement the incorporation of a minimum of 400 hours of Practice as a Curricular Component (PCC) distributed throughout the educational process. It is emphasized that the actions developed in these dimensions, Internship and PCC, should not overlap but rather develop a fruitful and progressive link in the course of their actions. Authors such as Barbosa and Cassiani (2014) claim that the documents focused on teacher education have incorporated discussions and understandings in the field of research on this area, such as the relevance of the inseparability between theory and practice, as well as the link between University and School.

However, at the end of 2019, more precisely on December 20, the Resolution CNE/CP No. 02 of 2019 was approved (BRASIL, 2019). This normative document presents the National Curricular Guidelines for the Initial Training of Teachers for Basic Education and institutes the Common National Base for the Initial Training of Basic Education Teachers (BNC-Formation), in which in its article thirty revokes Resolution CNE/CP No. 02/2015 (BRASIL, 2015), mentioned above.

Although our focus in this text is not centered on discussing and problematizing these normative documents, we understand that our political, social, and formative commitment is to highlight, even briefly, some perceptions and understandings. Resolution CNE/CP No. 02 of 2019 (BRASIL, 2019) presents a range of dimensions to be problematized. That sounds like a setback, especially if we consider the advances proposed in Resolution CNE/CP No. 02 of 2015 (BRASIL, 2015). The latter present in its structure a series of formative principles, defended by the academic community and researchers in the field of teacher training and curriculum, of which we can mention: the articulation, in the same document, between initial and continuous training, an aspect neglected in Resolution CNE/CP No. 02 of 2019, because it separates initial and continuous training; the complexification of the understanding of teaching practice; the determination of the incorporation of 400 h of PCC; the proposition that the 400 h of Internship may occur even before the second half of the course; the articulation between University and School; the inseparability between theory and practice, among others that we may not have mentioned at this moment.

Regarding Resolution CNE/CP No. 02 of 2019, some entities and researchers have positioned themselves contrary to what is proposed and determined in this document. Zancan Rodrigues, Pereira, and Mohr (2020), when analyzing the "Proposal for the Common National Base for Basic Education Teacher Training" (BNCFP) forwarded by the Ministry of Education (MEC) to the National Education Council (CNE) in December 2018, outline ten reasons to fear and contest the proposal, of which we can highlight: 1) In the BNCFP, teachers are largely responsible for the supposed current failure and future success of Brazilian education; 2) Problems regarding the references used; 3) The BNCFP is filled with phrases and common sense ideas; 4) The BNCFP will require new Curricular Guidelines for the undergraduate courses; 5) Large-scale assessments will regulate everything? 6) The BNCFP: valorization or testing of the teacher? 7) The BNCFP even changes the purpose of education, the one that is in the Constitution; 8) The BNCFP seems unaware of the teacher's work; 9) Graduates in schools or the necessary ability to differentiate quality and quantity; 10) For the first time, teacher training will be based on competencies and skills (ZANCAN RODRIGUES, PEREIRA E MOHR, 2020).

When we observe the problematization topics proposed by the authors mentioned above, we can identify numerous areas that can be understood as setbacks when we compare Resolution CNE/CP No. 02 of 2019 with Resolution CNE/CP No. 02 of 2015. Anchored by the understanding that the failure of education lies in the teacher, the document proposes strategies for a supposed improvement in teacher training, as if this were the only movement necessary to enhance the functioning of the complex gears of the educational scenario. The State is, in this scenario, not held accountable as if the structure and development of incentive programs and policies for the teaching career would not interfere with the education indices. Besides this nuance, another one draws our attention, and in a way, it scares and causes fear, the use of terms and concepts that sound, when a superficial reading is made, as linked to the model of practical rationality, structuring concept of Resolution CNE/CP No. 02 of 2015, when in fact Resolution CNE/CP No. 02 of 2019 is based on a conception of technical rationality. The regression is so significant that it puts on the agenda, in teacher training, the model of skills and competencies, anchored in principles of technical rationality.

As we mentioned before, the problematization of these documents is not our central focus when we consider the space/time of this text. However, as teacher trainers, we cannot avoid expressing our position before this complex and retrograde scenario that we are entering and being forced to participate in. We understand that if we need a national basis, it is not the one that represents us as an area. The same is a normative document aimed at training teachers capable of designing and applying lessons according to the Common National Curricular Base (BNCC), and that have an impact on favorable results in large-scale assessment exams, through this process, a harmful design are made explicit, and fuel for the proposed engine: the verification that the proposed changes supposedly improved the educational context. However, what we notice, when we analyze beyond the superficial, is the precariousness of the teacher training process, making them mere technicians, applicators of the BNCC, without critical training to challenge policies such as these. Dimension that will have repercussions in the formation of alienated students and without the development of strategies and actions that promote critical thinking, which would enable the development of a critical and contesting view of the reality in which they are inserted.

Based on the understanding that these normative documents influence and are influenced by investigations in the field of teacher formation, we understand that the called model of training of practical rationality and the contributions of authors who have as the scope of discussion this proposal could be configured as a valid alternative to the curriculum propositions thought from the demand of these normative instruments. Emerging in the 1980s, the practical rationality model has, in its founding structure, the understanding of the importance of reflective culture. Therefore, emphasis investigated and focused on the theoretical line of authors such as Schön (2000). The author builds his theory based on reflective practice, consisting of three elements, of which we can mention the knowledge-in-action, reflection-in-action, and reflection-about-action and reflection-in-action (SCHÖN, 2000).

Given the above, the development of reflexive writing, anchored in the assumptions defended by authors such as Schön, is configured as a powerful formative strategy in the constitutive process of becoming a teacher. As a tool for this, the use of the Portfolio has proven to be very interesting and potentially formative. The investigations and understandings developed by Ambrósio (2013, 2015) are relevant when we think about the Portfolio. The author develops a line of argument in which she attributes to the Portfolio the potentiality of allowing the teacher to monitor the progress of his student continuously and longitudinally, intervening during the formative process, intensifying and problematizing the learning process (AMBRÓSIO, 2013; 2015).

Given this scenario, in this text, we share some of our experiences with the use of the Portfolio as an evaluative and formative tool in the training of Chemistry teachers, especially in the context of the Internship of the Chemistry Undergraduate course at UFGD. To this end, we organized our text in four moments, respectively named: lenses for navigation, the moment in which we present the authors and theoretical proposals that anchor our practices; methodological itinerary, in which we outline the options adopted in the design and structuring of this comprehensive movement; reflections on the process, space in which we outline and develop the exercise of sketching some of our understandings about the adoption of the Portfolio in teacher training in Chemistry and; reflections on the journey, space/time in which we challenge ourselves to synthesize our perceptions, understandings, and learnings built through this itinerary of understanding, always unfinished.

Lenses for navigation

Every journey requires instruments that allow the traveler to follow the route, of these, we can mention an itinerary, maps, equipment, and supplies, among others. In our journey of understanding, we carry experiences that make our journey less insecure and subsidize our decisions. Some theoretical foundations are present as lenses that provide the opportunity for an exercise of understanding the horizons we glimpse on our journey. The authors and their reflections allow us to develop perceptions and understandings that enhance the challenge that moves us, that is, the development and strengthening of reflection through writing in Portfolios.

Given this scenario, we need to focus on building some understandings that structure our comprehensive journey. For this, some questions may subsidize us, among which we highlight: why propose to undergraduates to reflect on their training? Why insert the exercise of writing in the process of constitution of becoming a Chemistry teacher? What is configured as a Portfolio? What are the limits and potentialities of working with the Portfolio in the training of Chemistry teachers?

In these searches for understanding in/and for the formation of Chemistry teachers, we refer to the importance of the concept of praxis from the Freirean perspective. From this perspective, critical reflection is transfigured as a necessity of the theory/practice relationship because, as Freire (1996, p. 22) points out, if only theory is prioritized, "it can become blah blah blah." If only practice is prioritized, it becomes "activism."

In this conception, the Portfolio can provide moments of critical reflection about the activities experienced in the Internship since it may address through writing real classroom situations. Thus, we emphasize the epistemic function of writing in this process. Finally, in the attempt to delve into the theoretical studies of the Portfolio, we highlight some researchers, among them: Villas-Boas (2004), Sá-chaves (2005), Ambrósio (2013, 2015).

Initially, the origin of the Portfolio occurred in the world of fashion and visual arts and was configured as a file folder made to collect materials. Nevertheless, this tool has been expanded and has become the object of research about its potentialities and limitations in educational practice. In this perspective, Villas-Boas (2004, p. 39) points out that:

"One realizes, then, that the portfolio is more than a collection of the student's work. It is not a folder where texts are filed. The selection of work to be included is made through critical and careful self-assessment that involves judging the quality of production and the learning strategies used. Individual understanding of what constitutes quality in a given context and of the learning processes involved is developed by students from the beginning of their school experiences. This understanding can be facilitated by interaction with classmates and teachers and by reflection at various moments: a) of individual and teamwork; b) during the presentation of portfolios by classmates; c) by confronting the production with the descriptive goals of the evaluation."

In other words, the Portfolio is configured as an evaluative tool, and in this sense, it can be included in lesson planning in a way that meets the objectives intended by the teacher. In our case, the insertion occurs gradually in the Undergraduate Chemistry course, specifically in the Internships. We also agree with Villas-Boas about the possibilities for reflection: the individual and collective work of writing — a moment of discussion with the supervising teachers of the internship and the undergraduates about the activities carried out at school.

The highlighted reflection, promoted through this dialogue about the activities experienced during the Internship, can be understood from the conception of Freirean praxis, which means that these are moments that allow the articulation between theory and practice. It is worth emphasizing the formative potentiality of the Portfolio both in the context of the teacher in training and the trainer, in this case, the trainers, as Freire (1996, p. 23) points out: "it is necessary [...] since the beginning of the process, to become increasingly clear that, although different among themselves, those who train form and re-shape themselves while training and those who are trained form and shape themselves while being trained". In the meantime, we understand the importance of this author's statement "there is no teaching without the student," that is, both are in a permanent process of/in training.

In this context, we highlight Sá-Chaves' (2005) argument about the humanization enhanced by the use of the Portfolio because as the writings are developed/mediated by the teacher, they favor this interaction. We have defended, anchored in the theoretical assumptions described here, that this mediation in writing can promote critical reflection on the nuances experienced in the Internship field, providing the development of a more humanized professional, "as a strictly human practice, I could never understand education as a cold, soulless experience [...]" (FREIRE, 1996, p. 145).

Ambrósio (2013, 2015) also addresses the Portfolio as a composition that can contribute to teacher training. In this aspect, this author reveals the formative essentiality of this approach of writing materialized in the Portfolio. In addition, it allows breaking with traditional teaching because it unveils possibilities of didactic strategies such as alternating the way of evaluating the undergraduate, evaluating the teacher's action, and developing the ability to solve problems.

Another point highlighted by the previously mentioned author refers to the records. In her view, these can originate from different sources, of which we emphasize: "books, magazines, newspapers, internet, testimonies of students, parents, teachers, employees and others involved in the work among others, based on records (notes) of the daily school experience, that is, of the learning moments" (AMBRÓSIO, 2013, p. 25-26). Summarizing our thoughts about the theoretical concept of the Portfolio, we understand it as a possibility of collective work focused on writing within the initial and continuous training of teachers that can raise critical reflection about the teaching and learning processes.

In this movement of reflecting about/in teacher training, specifically in Chemistry, Carvalho and Gil-Pérez (2011, p. 29-30) justify that it is necessary to "know and question the "common sense" teaching thinking." In other words, there is an impregnation of a simplistic vision of what it is to be a teacher and how to teach Science. Once in a while, there are classifications of biological determinism into "smart students" and "mediocre students," and in this context (re)thinking about the objectivity of evaluations is fundamental. Thus, the Portfolio can be a formative assessment tool that values the procedural aspect and the potential of students, and it is not merely a classifying tool.

Through the Portfolio, the formative aspect of self-training and mediation are inherent to the educational practice. In this aspect, the evaluation becomes more transparent since the evaluative work is performed in partnership between teacher and student, valuing the dialogue. Indeed, it allows us to understand the difficulties and act during the teaching and learning process (AMBRÓSIO, 2013; 2015).

Although we outline formative possibilities about the Portfolio, it is essential to highlight that it can present limitations, which we highlight: overload of the teacher's work, lack of student engagement, and change in the conception of assessment (VILLAS-BOAS, 2004). However, we believe that the publication of works in the area addressed in our experience with the use of Portfolios can support pedagogical practices in the training of Chemistry teachers and provide an opportunity to change the scenario concerning the conception of a summative assessment, especially objectivist.

Furthermore, we understand that action-reflection-action constitutes praxis. From this angle, the Portfolio can be a powerful strategy for the promotion of writing and dialogue with this praxis in mind, "[...] to do science is to discover, unveil truths about the world, living beings, things, which were waiting to be revealed, it is to give objective meaning to something that new needs emerging from social practice pose to women and men" (FREIRE, 2017, p. 17). In other words, Chemistry is a Science that presents a dialectical relationship with society, therefore, historical.

Therefore, as teacher educators of the undergraduate Chemistry course, we understand, based on these theoretical assumptions, the importance of our permanent training and the search for epistemological curiosity, that is, "to think the practice and it is by thinking the practice that I learn to think and practice better" (FREIRE, 2017, p. 108). Given all this, we sought to study and investigate our practice with the instrument we have been dedicating ourselves to in recent years, namely the Portfolio.

Methodological itinerary

Every trip is constituted by an itinerary, a kind of roadmap that gives travelers the opportunity to outline possibilities and plan the spaces that will be traveled, how they will be traveled, and for how long. However, not everything happens as planned, the unexpected always happens. In our text, especially in our methodological itinerary, some points were structured before the journey. Nevertheless, the vast majority of the steps were modified as we walked in search of understanding the adoption of the Portfolio, as a formative and evaluative tool, in the constitution of becoming a Chemistry teacher.

Given this conjecture, we developed in this text a reflexive writing exercise to revisit, problematize and understand the experiences we are building when using the Portfolio in the initial training of Chemistry teachers. To this end, we anchored ourselves on the principles of qualitative research and the arguments made by authors such as Lüdke and André (2015) and Moraes and Galiuzzi (2016).

When discussing qualitative research, Moraes and Galiuzzi (2016) claim that, unlike investigations with a quantitative focus, in which defenses occur predominantly via numbers, those that incorporate the qualitative aspect assume as a process of validation and preparation of theses the construction of good arguments. In this scenario, our text is anchored in the principles of qualitative research, and it intends to build a comprehensive exercise about the adoption of the Portfolio in the constitution of Chemistry teachers, in the space of the Internship, through the analysis of the experience reports of the teacher trainers, authors of the text.

The methodology used to analyze the discursive information, namely the two teacher trainers' experience reports, was the Textual Discourse Analysis, developed by Moraes and Galiuzzi (2016). This methodological proposal is structured, essentially, from four movements, which we can highlight: disassembling the texts (unitarization), establishing relationships (categorization), capturing the new emerging (metatext tessitura), and a self-organized process. Emerging categories guided the categorization process, and as a tool for organizing the units of meaning, Excel was used.

The analysis process as a whole was structured based on eight dimensions, described in the following: a) Reading of the reports of the teacher trainers and selection of points that would constitute the meaning units; b) For each meaning unit, three keywords were elaborated; c) Subsequently, observing only the keywords, a title was elaborated for each meaning unit; d) Next, observing only the title, the initial categories were elaborated, through approximation by

emerging themes; e) After this movement, for each initial category, an agglutinating argument was elaborated, in the intent of representing the essence of what was addressed in the category; f) In the intentionality of approaching the initial categories, only the arguments were observed and, given the possibility of agglutination via converging themes, the intermediate categories emerged; g) For each intermediate category, an argument was developed in an attempt to trace the converging elements of the initial categories that constitute the intermediate category; h) The same process was carried out for the emergence of the final category, that is, observing only the arguments of the intermediate categories, it was possible to approach the themes and structure the final category. For this category, an agglutinating argument was also prepared, which synthesizes the arguments of the intermediate categories that constitutes the final category.

It should be noted that dimensions a, b, and c are linked to what Moraes and Galiuzzi (2016) call disassembling the texts (unitarization), while the steps d, e, f, g, and h refer to the establishment of relations (categorization). The process entitled capturing the new emerging (metatext tessitura) is expressed in the next topic of the article, called "Reflections along the way: horizons of understanding about the portfolio." Through the analysis of the experience reports of the teacher trainers, twenty-one (21) meaning units emerged, which were organized into twelve (12) initial categories, four (4) intermediary ones, and one (1) final category. The categorization exercise can be observed in the sequence through the Table 1:

Table 1 – Categorization process of the experience reports. Source: Prepared by the authors

Initial Category	Category Initial/Argument	Category Intermediate/Argument	Category Final/Argument
A - Contact with the portfolio (4) ¹	The initial contact with the portfolio provides opportunities for different ways of understanding	First contacts with the portfolio [A=4] "First contact with the portfolio strongly influences its incorporation and methodological decisions"	
B - Strategies for portfolio composition (1)	The work with the portfolio demands the development of strategies for its composition	The adoption and implementation of the portfolio demands the selection of strategies for its production [B(1)+C(2)=3]	Horizons of understanding about the portfolio "Working with the portfolio, opting for its adoption, involves a series of challenges, learning, reflections
C - The reports need to be discussed (2)	In the work with the portfolio there is a need for discussion dynamics	"As the work with the portfolio progresses the delineation of strategies for its constitution emerge as a primary need"	
D - Working with the portfolio provides the	Working with the portfolio provides an opportunity to	Potentialities of the portfolio as a teaching and learning tool	

Initial Category	Category Initial/Argument	Category Intermediate/Argument	Category Final/Argument
opportunity for a complexification of understandings (1)	add complexification on the undergraduates' understandings	[D(1)+F(1) +G(1)=3] "The use of the portfolio carries with it a set of potentialities with regard to undergraduates' learning"	and problematizations about the processes of teaching and learning, own practice and teacher training".
F - The adoption of the portfolio enables the undergraduates to develop autonomy and multiple languages (1)	The work with the portfolio enables the undergraduates to develop autonomy and appropriation of multiple languages		
G - The portfolio and the discussion of the reports provide an opportunity for theoretical appropriation (1)	Through the discussion of the portfolio reports, theoretical appropriation is provided		
H - Defenses about the use of the portfolio (1)	The use of the portfolio has favored the construction of arguments for its defense		
I - Portfolio as an option to replace the report (3)	The portfolio has been outlined as a powerful tool to replace the traditional report	Perceptions about the portfolio	
J - Working with the portfolio demands investigation on the practice (3)	Working with the portfolio demands investigation about the trainer's own practice	[H(1)+I(3)+J(3)+K(2)+L(1)+E(1)=11] "As the work with the portfolio progresses a set of perceptions, understandings and comprehensions emerge"	
K - Challenges in portfolio use (2)	Together with the potentialities, the adoption of the portfolio carries a set of challenges		
L - The portfolio as a potency in the formation of chemistry teachers (1)	The portfolio has been configured as a potency in teacher training		
E - The portfolio enables the	As a potentiality of the portfolio, it		

Initial Category	Category Initial/Argument	Category Intermediate/Argument	Category Final/Argument
articulation between theory and practice (1)	can be mentioned the articulation between theory and practice		

Source: Developed by the authors (2021).

Given the categorization process mentioned above, and through the fabric of the meaning units, organized into initial, intermediate, and final categories, the metatext emerged, presented in the following topic. This metatext presents the final category and is structured through the intermediate categories and by a sequence of the initial categories that constitute these intermediate categories. It is outlined as an exercise of texture between the units of meaning, of emerging theoretical reflections and understandings of the researchers.

Reflections along the way: horizons of understanding the portfolio

"Therefore, walking through these discussions requires continuous self-reflection and (re)interpretations of our looks and the other's looks. And, this journey is made and remakes itself day by day [PF1.12]²".

The Portfolio, even though it is not a recent tool, especially when we consider the context of teacher training, carries with it a polysemic characteristic regarding its meaning and a multiplicity of structuring formats and organization possibilities. Meanwhile, the initial contact with the Portfolio provokes a range of perceptions, understandings, and experiences.

This dimension is narrated by PF1 in her report, when reflecting on her first contact with the Portfolio, she mentions some of her doubts and reflections, enhanced through the problematization of her practice and the challenge of using this tool. In her words:

"At the beginning of my insertion with the first portfolios, I had many doubts about their use because it seemed to me a very broad resource, with many possibilities, but without a delineated, defined procedure. Maybe this need for this "defined procedure" is due to the fear of "making mistakes," or maybe it is still positivist traces that I bring along my path, the fact is that this universe of possibilities through the use of portfolios made me enter in a constant exercise of reflection on my "formation" [PF1.1]".

Permeated by a similar movement of recalling her first contact with the Portfolio, PF2 reports having experienced practices involving this tool since her initial training in the Undergraduate Chemistry course. When narrating her experience with the Portfolio, she points out that it was used as an assessment tool throughout the course's Internship curricular components. She mentions that structuring the Portfolio's reports occurred via themes often proposed by the Internship teachers and explains some of the proposed work dynamics.

"When we started our first internship, of the five we had in the course, in the fourth semester, we were introduced to the Portfolio. In it, we had to narrate our internship experiences, whether in classes at the University or at School. In addition, our agreement between undergraduate students and

Internship teachers was that this same Portfolio would be used in all the Internships. In the meantime, this tool would permeate and register our constitutive process of being a teacher of Chemistry in the space of the Internships. Every week, we should produce writings, which were sometimes mobilized through themes proposed by the Internship teachers, such as being a chemistry teacher, evaluation, planning, and textbooks, in addition to the records coming from the observations of the school space and the regencies [PF2.2]".

Through the meaning units derived from the reports of the teacher trainers, one can understand that the first contact with the Portfolio provided the same reflections and experiences that may have influenced the way they incorporated it into their teaching practice.

Given this scenario, Villas-Boas (2004, p. 116), when discussing the relevance of the insertion of the Portfolio in teacher training, mentions that it "is one of the knowledge to be incorporated by future education professionals, who, through it, not only "study about assessment," as it is usually done, but experience practices that they can adopt in the schools where they will work."

As expressed in the meaning unit mentioned above, the work with the Portfolio carries with it some needs, among them, we can mention the demand for the establishment of strategies for its production and organization. Furthermore, by choosing to incorporate the Portfolio into their teaching practice, the teacher needs to establish, preferably with their students, some dimensions, of which we can mention: how to organize it, frequency of writing, the structure of these writings, discursive genres, reading dynamics, and evaluation.

When discussing the strategies she has adopted for the development and composition of the portfolio, PF1 reflects:

"As a strategy for composing the portfolio, right at the beginning of the semester, I asked the undergraduates for a diary of records of all the activities performed throughout the Internship, either in the discussions of the classes at the university or school. I explained about the notes in this journal and how they could develop this writing. I usually oriented them to write their impressions of the activity and their doubts and to write this writing in the form of reports [PF1.2].

When PF1 proposed the use of the Portfolio to her undergraduates, she challenged them to write diaries, in which they should report their impressions of the activities developed in the Internship, both at the University and at the School, as well as their doubts. The option of calling the written reports in the form of a diary was configured as a strategy for the undergraduates to develop a reflective and critical writing style. However, at this point, we believe it is relevant to mention that both diary and portfolio tools are not synonyms, even though they focus on a convergent element, the writing, they present some nuances of distinction.

From its genesis, the Portfolio and the diary differ. While the diary emerges as a tool for the production of writings without the requirement of presenting them to other people, the Portfolio is already constituted by the goal of making explicit to other people, other than the author himself, the reflections and perceptions of the author. Furthermore, in the course of its use in teacher

training, the diary assumed the configuration of a tool for constituting empirical material for research on teaching practice, while the Portfolio was an assessment tool (AMBRÓSIO, 2013; 2015). However, they are not restricted to these contexts and objectives; they can and should be adapted to multiple possibilities and realities.

In understanding the adoption of the Portfolio as a tool in teacher training, one can mention the relevance of establishing strategies and dynamics to monitor the writings produced in it. In this sense, PF2 reports some of the options incorporated in her practice, in light of the experiences with it in her initial training, among them reading, in the intentionality of enhancing the teaching and learning process via Portfolio. In her words:

"As a dynamic for monitoring the writing, it was proposed to read the Portfolios not only by the Internship teachers but also among the colleagues themselves. Every week the portfolios were exchanged and read among classmates and teachers. As a task, there was the challenge of reading the colleague's writing, making observations, questioning, and at the end, writing a kind of opinion, a message pointing out the main perceptions provided by the reading [PF2.3]".

Given the above, we can present an argument, at this point, about the relevance and necessity, considering the work with the Portfolio, of outlining strategies for its constitution. We can mention the most recurrent actions and activities: the teacher's mediating action, the reading of the writings, and the elaboration of critical opinions in an attempt to make the reports more complex.

Permeated by a similar understanding of the strategies for the organization of the Portfolio and its appropriation by the students, Villas-Boas (2004, p. 39) argues that:

"This understanding can be facilitated by interaction with classmates and teachers and by reflection in various moments: a) of individual and teamwork; b) during the presentation of portfolios by classmates; c) by confronting the production with the descriptive objectives of the evaluation."

Through the experiences that both instructors have built when working with the Portfolio in the Internship curricular components, some potentialities regarding the teaching and learning processes have emerged more explicitly. Among them, they mention the potential of the Portfolio as a tool to make the undergraduates' understandings more complex, that is, through discussion and problematization of the reports produced in the Portfolio, simplistic views can be redefined. Dimension portrayed in the excerpt of PF1's report in the sequence:

"Sometimes the undergraduates reported common sense views that they witnessed at school, for example, "student X never learns," "being a teacher at school is different from the theories that you see at university," "here the practice is different," "students do not want to learn," in short, these sayings were being reproduced in the writing and speech of these undergraduates and as we discussed these views, they re-elaborated this speech and writing [PF1.4]".

In addition to the complexification and problematization of mistaken or even simplistic understandings, the work with the Portfolio allows students to develop

autonomy and the appropriation of multiple languages. Understanding that can be observed through the report of PF1:

"Another point that I considered essential in the use of the portfolio is that it allowed autonomy for the student, sometimes I requested that they could select images to represent some situation that they considered "significant" experienced at school, or they could take pictures of the school spaces to represent some problematization, clearly always taking care not to take pictures of the students' faces that could allow their identification. These possibilities brought about by the use of portfolios allowed an appropriation of multiple languages by the undergraduates [PF1.6]"

Another dimension, in terms of learning, provided by the work with the Portfolio and through the discussion of the reports refers to theoretical appropriation. PF1 mentions that the dialog about the Portfolio reports provides the reading and discussion of theorists and claims that "[...] we always dialogued with these records of the undergraduates in class, intensified the discussions by reading theorists who could contribute to the theme in question [PF1.7]"

These perceptions, in terms of learning opportunities via the adoption of the Portfolio as an evaluation tool, are also mentioned by authors such as Vilas-Boas (2004), Ambrósio (2013; 2015), and Vasselai and Morais (2021). For Villas-Boas (2004, p. 117):

"The portfolio makes it possible to assess critical thinking skills, articulate and solve complex problems, work collaboratively, conduct research, develop projects, and also enables the student to formulate their own goals for learning."

The use of the Portfolio carries with it a set of potentialities regarding the learning of the students, of which we can mention, based on the reports of the teacher trainers, the complexification of simplistic understandings, the development of autonomy, the appropriation of different discursive genres and theoretical concepts that support their reflections.

As perceptions of the work with the Portfolio, in the Internship curricular components, they highlight its potentiality as a powerful tool to replace the traditional report. However, the transition process between the report and the Portfolio is not simple but complex. Aspect portrayed by PF1 in her statement:

"In this transition from "report" to "portfolio," a permanent dialogue is important because it is not only the exchange of nomenclature, it is the conception of one over the other. The portfolio option implies a procedural, formative assessment in which small advances are valued, that is, it is not a result, a ready and finished product [PF1.11]"

When reflecting on the adoption of the Portfolio instead of the report, both teacher trainers mention its potentiality in its configuration since its format is less rigid when compared to the traditional report. Anchored by this perception, PF2 mentions that:

"In view of this context, even though I called it "Reports" in the teaching plans, I started to challenge my Internship students to elaborate writings that assume less rigid formats and constituted by a more reflective writing format, and that would hold other discursive genres beyond the writing itself. Poems, songs, pictures, and drawings began to emerge. Gradually, the changes were incorporated, and the proposal was taken up by other

colleagues. Currently, the Portfolio is being adopted not only in the Internship curricular components but also in other spaces, although it is still restricted to those focused on Chemical Education [PF2.6]".

Besides its potentiality, in terms of structure and writing format, its relevance as a tool in the process of articulation between theory and practice in teacher training is highlighted. Nevertheless, this articulation will occur more intensely when the mediating action of the teacher trainer is intensified. This understanding is emphasized by PF1 when she expresses that "this possibility of articulation between theory and practice proved to be inherent to the process because the mediation of the portfolio made it possible [PF1.5]".

Calixto (2019, p. 234) builds a series of understandings about the use of the Portfolio as a tool in the constitution of Chemistry teachers and claims:

"[...] the use of different discursive genres, throughout the portfolios, such as the letter and the narrative, together with the catalyst questioning, provided opportunities for undergraduates to develop the exercise of writing in its reflexive emphasis. It allows movements of reflection about the teaching and learning processes, which progressively aimed to promote the migration of the undergraduates' writing from a descriptive nuance to one characterized primarily by reflection.

However, it is necessary to consider that the adoption of the Portfolio carries with it, along with its potentialities, a range of challenges. In the meantime, PF2 mentions that working with the Portfolio is also an exercise and challenge to break through resistance. In her words:

"However, the challenge of working with Portfolio is not only about wonders, there are many resistances, especially in the first contacts of undergraduates to this tool. I understand this resistance does not occur simply because of the Portfolio but because of the writing exercise that constitutes it. Writing is not something simple, it requires commitment and determination. Sometimes the blank computer screen or the notebook sheet "blocks" us and prevents us from moving forward. But this barrier can only be overcome by the effort to break it. Learning to write involves a daily exercise of writing, reading, rewriting, dialoguing with our peers, and returning to the text [PF2.8]".

This discussion about the difficulties related to the work with the Portfolio is also addressed by Villas-Boas (2004); the author mentions as obstacles: the workload imposed on the teacher due to the range of readings he/she has to do during the assessment process and the engagement of students before the writing challenge inherent in the production of the Portfolio.

In this scenario, working with the Portfolio demands an investigation into the trainer's practice, making this tool an object of study with the intention of re-elaborating it. Aspect mentioned by PF1 as can be seen in the following:

"Obviously, the portfolio is still being conceptually re-elaborated and is the object of study of my practice, I do not have it in a finished form, ready to be reproduced in any components or courses, however, it is a possibility that provides an opportunity to value the path of each subject involved in this process [PF1.10]".

Through this process of problematization and investigation of the practice, in the face of adopting the Portfolio as a tool in teacher training, the construction and expansion of reflections on the same are opportunities. PF2 mentions that:

"From my work with the Portfolio, I have built some understandings and comprehensions, of which I can mention: its potential as a formative assessment tool; the relevance of its development as an exercise to improve the undergraduates' writing; its power in promoting deeper and more complex reflection of the actions performed in the internship; moreover, it gives undergraduates the opportunity to learn about how to incorporate the theoretical framework in their reflection [PF2.7]."

Given this conjecture, the Portfolio has been outlined as a power in the constitutive process of becoming a Chemistry teacher, a dimension portrayed by PF2 in her report, as can be seen below:

"Based on the above, I have progressively built arguments that allow a better construction of the argument about the power of writing and the Portfolio as tools in the constitutive process of becoming a chemistry teacher. One of the learnings that I have built stands out, the relevance of performing, as teachers, as a mediating action to enhance the writing of our undergraduates. I have incorporated, especially in the first movements of inserting the Portfolio with the students, some questions that I call "catalysts." I propose some questions with the intention of giving my students a possible writing itinerary so that those who are more lost can have a little guidance on "where to go." Nothing prescriptive or rigid, but small provocations that potentialize the writing process [PF2.9]."

In convergence with what is expressed by the teacher trainers in their reports, especially about the defense of the use of the Portfolio in teacher training, Villas-Boas (2004, p. 116) elaborates some areas that justify its use, in his words: "1) the construction and mastery of teaching knowledge; 2) the unity between theory and practice; 3) autonomy". Given this conjecture, the incorporation of this tool has been outlined as a valid, pertinent, and powerful evaluative and formative tool for becoming a Chemistry teacher in the Internship space, but it should not be restricted to this context and should be adopted in the different spaces and times of the teacher's formative journey.

As the work with the Portfolio progresses, a set of perceptions, understandings, and comprehensions emerge. Since we joined the Undergraduate Chemistry course, a concern has always been constant in our reflections about the constitution of being a teacher: how to potentialize the exercise of critical and reflexive analysis of the pedagogical practice developed in the context of the Internships? In this scenario, our path of understanding began to assume some decision-making points, the first of which centered on the option of progressively ceasing to adopt evaluative instruments such as the "traditional report" and migrating towards the development and use of other formative strategies that had in their scope and fundamental structure the reflexive writing. In this sense, the Portfolio has been configured as a valid tool, and its implementation has been progressively done in other curricular components of the course, such as those that contain the PCC workload.

We understand the potential that writing assumes in the teacher constitution, especially when we consider its epistemic function. Different authors have tried to understand its limits and potentialities and repeatedly

argued about its power in the teacher constitution (GALIAZZI, 2011; WENZEL, 2014; FLÔR, 2015). In this conjecture, the Portfolio has been outlined as a valid tool in the process of constitution of becoming a Chemistry teacher, developing different teaching knowledge through the reflection process exercised and enhanced through writing.

Moreover, when getting to know and working with the Portfolio, teachers, and undergraduates have the opportunity to experience a differentiated assessment format, especially when considering the options most implemented in the course, such as tests and lists of exercises. The evaluative nuance adopted in the Portfolio intends to break with merely summative perspectives and aims to develop a formative evaluation exercise characterized by continuity and recursiveness (VILLAS-BOAS, 2004).

However, working with the Portfolio has also presented some challenges, among them, we can mention the teacher's work overload since he/she needs to periodically read and guide the undergraduates about the points to be improved. Moreover, the obstacle, even if only initially, with the writing exercise, on the part of the undergraduates, can also be highlighted as one of the challenges to be faced. In a recurrent way, undergraduate students present many obstacles when they are challenged to write and end up developing much more descriptive than reflexive writing. In this sense, the reading and guidance performed by the teacher provide an opportunity for the complexification of writing, enabling the transition from one format to another, that is, from descriptive to reflexive.

Authors such as Villas-Boas (2004) and Ambrósio (2013, 2015) also mention the nuances. However, we understand, through the experiences we are building, that the potential of the Portfolio outweighs the limitations, especially when we consider its use as a tool to intensify the reflection process in the Internship. Thus, it provides opportunities for the development of different knowledge, such as: questioning spontaneous teaching thinking, making consistent criticism to the traditional teaching, and planning and evaluating proposals for teaching Science/Chemistry (CARVALHO; GIL-PEREZ, 2011).

Reflections on the journey

"From my work with the Portfolio, I have built some understanding and comprehension of these I can mention: its potentiality as a formative assessment tool; the relevance of its development as an exercise to improve the undergraduates' writing; its power in promoting deeper and more complex reflection of the actions carried out in the internship; in addition, it gives the undergraduates the opportunity to learn about how to incorporate the theoretical foundation in their reflection [PF2.7]".

The experiences we are building from the process of using the Portfolio as a powerful tool in the process of constitution of becoming a Chemistry teacher allow us to elaborate on some areas of clarification, outlining colors and nuances about this horizon. Initially, we can mention the relevance of the delimitation of some guidelines, by the teacher trainer, in the writing process. This movement provides an opportunity to add complexification to the writing exercise of the undergraduates, which, recurrently, in the initial writings, is more focused on description than reflection. In view of the above, the use of different discursive

genres and catalyzing questions can facilitate the transition from descriptive to reflexive writing.

Thus, we understand that the discussions and writings arising from the Portfolios can problematize simplistic visions in the training of Chemistry teachers, especially in the field of Internships, since they can be re-elaborate from the mediating action of the teacher. In the meantime, we emphasize the importance of establishing strategic dimensions in the use of the Portfolio, among which the following were configured as possibilities in this work: the frequency of writing, discursive genres, reading dynamics, and evaluation.

We also understand, through the analysis of the experience reports, that from the complexification of these writings provided by the Portfolio, it is possible to develop fundamental principles in the field of Chemistry teacher training. Among which we highlight: autonomy, the appropriation of different discursive genres, studies of different theorists that support the reflections and the reduction of the gap between theory and practice.

Another aspect to be highlighted, evidenced, refers to the potency of the Portfolio as an evaluative tool. In convergence with the authors discussed throughout these writings who defend the use of the Portfolio as an evaluative tool, we understand this power as being a "formative assessment" that values continuity, recursion, and the evolution process of student learning. It allows us, teachers, to observe the points that need improvement, to resize the pedagogical strategies, so that we can understand the nuances concerning this process.

Furthermore, the use of the Portfolio has proven to be a powerful tool in the self-training process, now presented through this reflective writing by us, teacher trainers. It is worth mentioning that this process was outlined throughout our experiences in the formation of Chemistry teachers and materialized in these reflective writings, whose epistemic function reverberates the importance of continuing in this movement of writings and reflections. Thus, the Portfolio composes this possibility of understanding ourselves as teachers in constant learning, that is, students in training, as Freire (1996, p. 58) points out: "It is in the inconclusion of being, which knows itself as such, that education is founded as a permanent process [...] It is also in the inconclusion of which we become aware, and that inserts us in the permanent movement of search that is based on hope".

In this context, therefore, approaching the concept of hope is essential to face the evils imposed in our current scenario, which were exposed primarily in Resolution CNE/CP No. 02 of 2019, based on a conception of technical rationality. This hope, imbued in the Freirean perspective, is mobilized by a critical hope, which needs to be anchored in practice, "without a minimum of hope we cannot even begin the struggle, but, without the debate, hope, as an ontological necessity, it becomes disarranged, unaddressed and becomes hopelessness, which sometimes extends into tragic despair" (FREIRE, 2020, p. 15). So, facing this sometimes dark scenario, we need to hope in order to engage in a universe of possibilities, challenges, and historical concreteness. Thus, we argue that this endless search for continuous training can corroborate a critical, pertinent, coherent, hopeful, and above all, more human formation of Chemistry teachers.

Therefore, we argue that the work with the Portfolio can glimpse new horizons committed to learning and teaching. Therefore, it is necessary to discuss

these new formative possibilities in undergraduate courses allocated to the Exact Sciences area and permeated mainly by objectivist evaluations. However, it is worth remembering that these undergraduate courses are training teachers, in our case, Chemistry teachers. Therefore, we intend that these reflections here can raise new perspectives with regard to personal, social, and professional aspects of the training of Chemistry teachers.

Um itinerário compreensivo acerca do portfólio: diálogo entre professoras em formação

RESUMO

A incorporação do Portfólio, como ferramenta avaliativa, tem se demonstrado como uma possibilidade com potencial formativo em práticas educativas da/na formação de professores. Diante desse cenário, este trabalho foi desenvolvido pelas professoras formadoras, autoras deste texto, a partir das experiências com Portfólios no contexto dos Estágios do curso de Licenciatura em Química da Universidade Federal da Grande Dourados (UFGD). Por meio desse exercício de escrita tencionamos construir alguns entendimentos que estruturaram nosso percurso compreensivo a partir dos conceitos de experiência: o princípio da formação contínua; a articulação entre teoria e prática ancorada na perspectiva da práxis; a função epistêmica da escrita e a indissociabilidade entre a prática docente e a pesquisa sobre e na mesma. Nossa investigação assumiu um caráter qualitativo e ancorou-se nos pressupostos de autores como Ludke e André (2015) e Moraes e Galiazzi (2016). O material empírico constituiu-se pelos relatos de experiência, dessas professoras formadoras, sobre suas experiências vividas ao longo de quase uma década de trabalho com o Portfólio. A análise dos mesmos ocorreu diante dos pressupostos teórico/metodológicos da Análise Textual Discursiva (ATD), desenvolvida por Moraes e Galiazzi (2016). Concluímos esse movimento de escrita compreensiva argumentando que o Portfólio vem se configurando como uma ferramenta formativa muito potente, desenvolvendo distintos saberes docentes, por meio da reflexão e problematização da escrita. Além disso, compreendemos a relevância do adensamento de debates acerca de outras possibilidades formativas em cursos de licenciaturas, especialmente os que estão alocados na área de Ciências Exatas, os quais são majoritariamente permeados por avaliações objetivistas. Anunciamos que o trabalho com Portfólio pode vislumbrar novos horizontes comprometidos com o aprender e ensinar da/na formação de professores de Química.

PALAVRAS-CHAVE: Portfólio. Percurso compreensivo. Formação de professores de Química.

NOTES

1. The number in parentheses refers to the number of meaning units that comprise the category mentioned.
2. In order to preserve the identity of the teacher trainers, we used the following coding system: [PF1.12]. The code is organized from the acronym PF, teacher trainer, and a numeral, which represents which of the two PF refers to the report. Finally, we also add the numeral a dot and another numeral, representing which meaning unit the excerpt belongs to. Thus, the following code (PF1.12) represents that the meaning unit corresponds to the twelfth meaning unit of PF1.

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Correspondence:

Vivian dos Santos Calixto

Rodovia Dourados - Itahum, Km 12 - Caixa Postal 533, Dourados, MS, Brasil.

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