

FROM TEACHER EDUCATION TO THE METAMORPHOSIS OF PEDAGOGICAL PRACTICE: CONTRIBUTIONS FROM STUDIES WITH INTERVENTION IN PROFESSIONAL MASTER'S DEGREE

DA FORMAÇÃO DOCENTE À METAMORFOSE DA PRÁTICA PEDAGÓGICA: CONTRIBUIÇÕES DE PESQUISAS COM INTERVENÇÃO DO MESTRADO PROFISSIONAL

DE LA FORMACIÓN DOCENTE A LA METAMORFOSIS DE LA PRÁCTICA PEDAGÓGICA: CONTRIBUCIONES DE INVESTIGACIONES CON INTERVENCIÓN DE LA MAESTRÍA PROFESIONAL



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ABSTRACT: The feeling of connection between and among different contexts on the planet, experienced during the pandemic, has delegated the educational area the task of self-transformation. Considering the relevance of initiatives proposed in the interface of Higher Education with Basic Education for this process, this paper has systematized the results of studies with an intervention that highlights the potential of teacher education towards the metamorphosis of pedagogical practice. Having chosen bibliographic research and qualitative approach, analyzed four studies with intervention associated with the Professional Master's Degree in Basic Education (PPGEB) of the University Alto Vale do Rio do Peixe (UNIARP). Among the results, the spotlight lies in the overall objectives of the four studies, which evince the relationship between teacher education and the metamorphosis of pedagogical practice, while the results provide examples of this process through the planning of instruction combined with local and global demands and the expansion of practical activities with a convergence between thinking and action.

KEYWORDS: Teacher education. Pedagogical practice. Research with intervention.

RESUMO: O sentimento de religação de diferentes contextos do planeta, vivenciado durante o período pandêmico, delegou à área educacional a tarefa de se autotransformar. Considerando a relevância de iniciativas propostas na interface do Ensino Superior com a Educação Básica para esse processo, este artigo sistematizou resultados de pesquisas com intervenção que evidenciam o potencial da formação docente para a metamorfose da prática pedagógica. Tendo como opção a pesquisa bibliográfica e a abordagem qualitativa, foram analisadas quatro pesquisas com intervenção vinculadas ao Mestrado Profissional em Educação Básica (PPGEB) da Universidade Alto Vale do Rio do Peixe (UNIARP). Entre os resultados, destaca-se que nos objetivos gerais das quatro pesquisas evidencia-se a relação entre formação docente e metamorfose da prática pedagógica, enquanto os resultados exemplificam esse processo com o planejamento do ensino articulado a demandas locais e globais e a ampliação de atividades práticas com convergência entre o pensamento e a ação.

PALAVRAS-CHAVE: Formação docente. Prática pedagógica. Pesquisa com intervenção

RESUMEN: El sentimiento de religación de diferentes contextos del planeta, vivido durante el período de pandemia, delegó al área educativa la tarea de autotransformación. Considerando la relevancia de las iniciativas propuestas en el ámbito de la Educación Superior en la Educación Básica para este proceso, este artículo pretende sistematizar los resultados de investigaciones con intervención-acción que evidencian el potencial de la formación docente para la metamorfosis de la práctica pedagógica. Utilizando como metodología la investigación bibliográfica y el enfoque cualitativo, se analizaron cuatro estudios de intervención-acción vinculados a la Maestría Profesional en Educación Básica (PPGEB) de la Universidad Alto Vale do Rio do Peixe (UNIARP). Entre los resultados, cabe destacar que en los objetivos generales de las cuatro investigaciones se evidencia la relación entre la formación docente y la metamorfosis de la práctica pedagógica. Así mismo, los resultados ejemplifican este proceso, destacando condiciones como la planificación articulada entre las demandas locales y globales y ampliación de actividades prácticas con convergencia en el pensamiento y la acción.

PALABRAS CLAVE: Formación docente. Práctica pedagógica. Intervención-acción.

Introduction

The 2020 and 2021 characterize, on the one hand, a unique moment to highlight the relevance of Morin's (2011) reflections on the uncertainties regarding the future of humanity. On the other hand, they elucidate the interdependence between the local and the global, between the different knowledge, and between the different areas of expertise.

In a pandemically connected planet, the field of education, in particular, was faced with challenges that, although discussed by authors such as Morin (2011, 2015, 2018, 2019) for many years, have led to abrupt decisions and accelerated changes in the teaching and learning processes. In the meantime, what was experienced in schools confirmed Morin's (2011, p. 69) statement, "We have not yet incorporated the message of Euripides, which is to be ready for the unexpected".

How to work at a distance with students in the literacy process? How to explore technological resources to promote remote teaching? How to connect systematically with students if some of them don't even have access to the Internet? The possible answers to these and many other questions surrounding the teachers' dialogues indicated the ineffectiveness of traditional pedagogical practices guided by the positivist paradigm. It was necessary to skip steps and allow what, at first, could only happen in the future in case 2019 did not end with the prediction of a catastrophe that affected the entire planet in a few months.

Teacher training was among the demands that required advances, as it is a determining condition for the metamorphosis of pedagogical practice. On the other hand, "Research shows that teacher education is strongly influenced by the conception that underlies the conservative paradigm" (LUPPI; BEHRENS; SÁ, 2021, p. 5, our translation).

This occurs because "The encyclopedic approach in teaching [...]", which accompanies teachers for centuries, carrying "[...] as its greatest legacy the distance between theory and practice and the reproduction of knowledge" (BEHRENS, 2007, p. 441, our translation), still prevails in many schools, despite showing itself unable to provide answers to the dilemmas of teaching in the passage from the second to the third decade of the 21st century. This condition is reinforced by what Gatti (2014) defines as a lack of training proposals capable of adapting the curriculum to the needs of the teaching and learning processes, increasing the challenges teachers face during the pandemic period.

However, as Morin (2015, p. 5, our translation) states, "[...] solutions exist, new propositions arise in the four corners of the planet, often on a small scale, but always to start a real movement for the transformation of societies". Because of the possibilities, this article

systematizes the experiences of the Professional Master's Degree in Basic Education (PPGEB) of the Alto do Vale do Rio do Peixe University (UNIARP) that links teacher education to the metamorphosis of pedagogical practice.

These are two types of research with intervention developed in the pandemic period - Dal'Bó (2021) and Horn (2021) - and two previous experiences that inspired the new initiatives - Almeida (2018) and Zielinski (2019). The referred researches have in common, besides the commitment to intervention, the approximation with the Program of Formation-Action in Creative Schools, an initiative that has been intensified by the RIEC UNIARP Nucleus (nucleus linked to the *Red Internacional de Escuelas Creativas* (RIEC) - <https://www.escuelascreativas.es>), which systematically develops activities in partnership with the PPGEB/UNIARP.

Based on the bibliographical research and the qualitative approach, the article goes through the epistemological bases supporting the four pieces of research. It also places reference concepts of the general objectives of the respective studies and systematizes fragments of the results achieved, especially those that denote the interdependence between teacher education and the metamorphosis in pedagogical practice.

From atomized teacher training to transdisciplinary and eco-training perspectives

The continuing education of teachers is an issue that has shown its relevance during the pandemic period. Closing schools, working remotely, and evaluating at a distance were some of the challenges faced by teachers who, even though they had participated in continuing education, did not master - and also did not have access to - all the conditions to mobilize themselves in the face of a new educational moment that abruptly installed.

Moreover, a logic of atomization persists in teacher training, perpetuating the distance between theory and practice and favoring individualism instead of collaborative work. This atomization accompanies teachers in their training and, as a result, has repercussions on their pedagogical practice.

This is an approach that Behrens (2007) defines as encyclopedic, whose persistence made it even more difficult for teachers to act during the pandemic and reinforced the relevance of previous reflections, including that of Nóvoa, when he states that

[...] in recent years, a feeling of dissatisfaction has been growing, which results from the existence of a deep distance between our theoretical ambitions and the concrete reality of schools and teachers, as if there were an unbridgeable

gap between the university and schools as if our academic elaboration had contributed little to transform the socio-professional condition of teachers (NÓVOA, 2017, p. 1108-1109, our translation).

In the same year as Nóvoa's publication, Gatti (2017, p. 733, our translation) recorded that "[...] the curricular dynamics in teacher training [...] need to reinvent themselves. It is necessary to know that the training offered is not sufficient." As a suggestion, the author points to a training that considers the situational conditions, having clarity of its purposes, that is, "[...] the whys, what for and whom this training is carried out, assuming ethical and social commitments" (GATTI, 2017, p. 722, our translation). To this end,

[...] besides being necessary to discuss and modify the referential of the training offered in the undergraduate courses, it is urgent to reflect on continuing education so that alternatives that consider the complexity of the fields of teaching performance are identified (ZWIEREWICZ; ZANOL; HORN, 2020, p. 236, our translation).

It is assumed that "[...] conscious actions are required, based on a more objective reflection on the reality experienced, lived" (GATTI, 2014, p. 378, our translation). It is optioned with this focus that, for the author, drives "[...] innovative attitudes and actions that translate into effective practices of change.

This perspective is in line with the ideas of Nóvoa (2019, p. 3, our translation) when he addresses the continuing education of teachers in the current scenario as an object of the metamorphosis of the school environment. For him, metamorphosis occurs when "[...] teachers come together as a collective to think about their work, to build different pedagogical practices, to respond to the challenges posed by the end of the traditionally adopted school model".

Among the alternatives, Imbernón (2016) argues that continuing education should rely on teachers' reflection on their practice. More than updating and teaching, training needs to collaborate to create conditions, planning, and environments where teachers can learn (IMBERNÓN, 2016) collaboratively and connect to the local and global context.

This kind of perspective reverberates the relevance of training that value contextualized work and mobilize teachers in "[...] research around educational phenomena or educational problems, that is, to investigate the possibility of offering transformations" (LUPPI; BEHRENS; SÁ, 2021, p. 5, our translation).

Meanwhile, it is necessary to remember that the educational agenda for the coming years will have to be directed not only to the processes of knowledge construction and learning but

also to issues of ecological sustainability (TORRE, 2008). Therefore, the teacher education initiatives analyzed in this study are based on transdisciplinarity and eco-training.

Transdisciplinarity strengthens "[...] the construction of a new epistemology capable of rescuing the multidimensionality of the subject, understood from a complex ontology" (RIBEIRO; MORAES, 2014, p. 244, our translation). This is because it considers what, for Nicolescu (2018), is between disciplines, beyond and through them. On the other hand, eco-training favors that "[...] the formative contact with things, with objects, and with nature [...] can be formative of other connections, especially human connections" (SILVA, 2008, p. 102, our translation).

In addition to meeting local demands and connecting with global emergencies, the training initiatives based on these concepts tend to meet the conditions set out in the professional master's degrees. Among the requirements, Petarnella and Silveira (2015) highlight the need to propose training students who are researchers of their practice, in addition to the fact that the training should be research-oriented and the final paper should be the result of the respective research. Moreover, in professional master's degrees, there is an indication of the elaboration of an educational product resulting from the research process.

Regarding the PPGEB/UNIARP in Caçador, Santa Catarina, research with intervention is prioritized precisely to meet the conditions presented by Petarnella and Silveira (2015), as well as to meet the mission of the course, to "Promote the training of professionals committed to research with intervention and the development of educational products that meet the demands of Basic Education in an innovative, humanized and sustainable way" (UNIARP, 2019).

To this end, part of the research, whose focus is teacher training, has been inspired by the Training-Action Program in Creative Schools. This program, based on the conceptual triad "complexity-transdisciplinarity-eco-training", was elaborated during the beginning of RIEC's constitution.

RIEC is based in Barcelona and is currently made up of different nuclei formed by researchers from other Higher Education Institutions (IES) from Brazil, Bolivia, Spain, Mexico, and Portugal. One of them is the RIEC-UNIARP Core, which aims to stimulate training, research, and extension articulated to the initiatives of the PPGEB/UNIARP.

However, the first experience using a format close to the current Formation-Action Program in Creative Schools was carried out in the municipality of Gravatal, Santa Catarina, in 2009 (ZWIEREWICZ *et al.*, 2017). The record of this experience in the book *Teacher training*

and transdisciplinary research: create and innovate with another consciousness by Torre, Zwierewicz, and Furlanetto (2011) served as an impulse for the proposal to move from the south of Santa Catarina to the north of the state and, subsequently, to other regions, among them, the West of Santa Catarina, where the PPGEB/UNIARP and the RIEC Nucleus - UNIARP are located.

In PPGEB/UNIARP, the first two experiences involving the proposal were those of Almeida (2018) and Zielinski (2019). Subsequently, it was also the object of study of Horn's (2021) and Zanol's (2021) research, also contributing to the elaboration of the intervention developed in Dal'Bó's (2021) research. As the research of Almeida (2018), Zielinski (2019), Horn (2021), and Dal'Bó (2021) have the methodological option the research-action, therefore, research with the intervention was opted, in this study, to analyze them.

Regarding the structure, the Training-Action Program in Creative Schools consists of five stages (Chart 1) being adjusted according to the demands of the contexts in which the proposal is developed. Although they are punctual moments, it is in the interaction of the stages that the proposal gains meaning.

Chart 1 – Stages of the Training-Action Program in Creative Schools

Stages	Description
Connection Stage	It constitutes the beginning of the program and aims to impact the participants, using strategies so that managers and teachers can situate their practices, identifying and valuing the innovations made before the beginning of the training, as well as the challenges to be faced. The theoretical bases that guide the program and the methodological and evaluative possibilities are also worked on.
Projection Stage	It includes planning moments to reduce the distance between what has been done and what is desired. At this stage, the Creative Eco-training Projects (PCE) are defined, whose practice collaborates to expand creativity and stimulate the overcoming of linear, fragmented, and decontextualized teaching, favoring that the teacher training causes metamorphosis in pedagogical approach.
Empowerment Stage	It aims at the participation of managers and teachers in study meetings and workshops to deepen theoretical and practical knowledge, driving the necessary changes. Professionals from different areas and institutions also collaborate to help on issues suggested by the managers and teachers who participate in the program.
Interaction Stage	It favors the socialization of the actions developed from the training. Therefore, enhancing the team's creativity by exchanging ideas shared by professionals from all institutions participating in the proposal is essential.
Pollination Stage	It encourages the disclosure of the results of the PCEs, presenting them in municipal seminars, publications in books, scientific journals, and events. It is a stage to value the schools, professionals, students, communities, and their initiatives, also contributing so that other contexts can re-signify their practices based on what was shared.

Source: Zwierewicz *et al.* (2017)

Almeida (2018) reminds us that the stages are close to the conceptual organizers of the Creative Eco-training Projects (PCE), a methodology created by Torre and Zwierewicz (2009, 2022). Based on this methodology, the teachers who participate in the program development initiatives in the classroom that are proposed during the training meetings mature through the participation of students and other members of the schools to which the respective professionals are linked. This collaborative process based on co-creation promotes metamorphosis in pedagogical practice based on the teacher's training.

Among its objectives, this program aims to contribute to an education that is attentive to the current reality's demands and the uncertainties concerning the future of humanity. In this sense, it aims to consider Gatti's ideas (2017) regarding the need to think and do teacher training, considering the situational conditions and becoming aware of the purposes of this training.

Research Methodology

To conduct this study, we opted for bibliographic research, whose sources are results "[...] of previous studies, published, especially in books, scientific articles, course work, dissertations, and theses" (ZWIEREWICZ, 2014, p. 34, our translation). Gil (2017, p. 65, our translation) warns, "Although in almost all studies some type of work of this nature is required, there is the research developed exclusively from bibliographic sources," as in the present study.

Regarding the approach, qualitative was used. This differs from the quantitative "[...] in that it does not employ a statistical instrument as the basis of analyzing a problem. Therefore, "It does not attempt to number or measure units, or homogeneous categories" (RICHARDSON, 2017, p. 79, our translation).

Regarding selecting the dissertations, two criteria were used: having teacher training as one of the central themes; constituting research with intervention in Basic Education aligned with the Training-Action in Creative Schools Program. Of the research defended from 2017, when the first dissertation of PPGEB/UNIARP was defended, to 2021, four meet the referred criteria.

Results and Discussion

Considering that the purpose of this study was to systematize the results of research with intervention, highlighting the potential of teacher education for the metamorphosis of pedagogical practice, the results are organized in two stages: in the first one, the general goals of the four types of research analyzed are retrieved (Chart 2) and the most frequent concepts are located (Figure 1); in the second one, fragments of the studies that confirm the influence of teacher education on the metamorphosis of pedagogical practice are compiled.

Chart 2 – Dissertations analyzed

Dissertation	Researcher	Defense	General objective
Influence of the Formation-Action Program in Creative Schools on the transformation of pedagogical practices in a rural school	Aline Lima da Rocha Almeida	2018	To evaluate the potential of a training program, guided by the transdisciplinary and eco-training perspective, to transform pedagogical practice and fulfill the teachers' training needs at the Rodolfo Nickel Municipal School of Basic Education, located in the rural area of Caçador, Santa Catarina, Brazil.
Indicators of transdisciplinary practices of reading, production, and textual interpretation detected in the Formation-Action Program in Creative Schools	Helena Castilho Zielinski	2019	To analyze the contributions of the Formation-Action Program in Creative Schools for resignifying the pedagogical practices of school teachers linked to the Municipal Network of Timbó Grande in Santa Catarina, systematizing the indicators of transdisciplinary approaches of reading, production, and textual interpretation observed in its development.
Teacher training woven collaboratively for the co-creation of inclusive pedagogical practices	Rafaela Geschonke Dal'Bó	2021	To develop a proposal for in-service pedagogical training with a repertoire of inclusive teaching strategies that can be used by teachers of Elementary Schools in a private school in União da Vitória, Paraná.
Training-Action Program in Creative Schools with transdisciplinary and eco-training pedagogical practices in Basic Education in União da Vitória (PR)	Marli Horn	2021	To develop a transdisciplinary and eco-training proposal based on the Formation-Action Program in Creative Schools, adjusted to the reality of the teachers of União da Vitória, Paraná, verifying its contributions to pedagogical practice, to the planning of teaching, and the transformation of the school environment.

Source: Almeida (2018), Zielinski (2019), Dal'Bó (2021) e Horn (2021)

For content analysis, the most frequent concepts in the results of the four dissertations were identified with the support of NVivo software. Systematized in Figure 1, part of the respective concepts guided the analysis of the research results, especially in checking the influence of the formative proposals in the metamorphosis of pedagogical practice.

Figure 1 – Core concepts of the analyzed research results



Source: Prepared by the authors (2022)

As observed in Figure 1, the most frequent concepts are project, training, form, students, teachers, participants, practices, knowledge, and activities. There is, therefore, a multidimensionality of conditions that involve the pedagogical practices highlighted in the results of the four surveys analyzed.

Of the most frequent concepts, part integrates the general objectives of the four surveys analyzed. They are: i) Almeida (2018): training, teachers, and practice; ii) Zielinski (2019): training, teachers, and practice; iii) Dal'Bó (2021): training and teachers; iv) Horn (2021): training, teachers and practice.

There is, therefore, a link between teacher training and pedagogical practice, confirmed by the presence of the concepts "training", "teachers," and "practice" in the objectives of three of the four types of research: Almeida (2018), Zielinski (2019), and Horn (2021). And although "practice" is not a concept that integrates the research objective of Dal'Bó (2021), its link to teacher training is implicit in the general objective when inclusive teaching strategies can be used by the teachers participating in the study are foreseen.

The link observed in the general objectives converges with the needs indicated by Luppi, Behrens, and Sá (2021) to overcome training initiatives marked by the influence of the conservative paradigm. In other words, it is about what Behrens (2007) defines as a comprehensive approach whose heritage lies in the distance between theory and practice and the reproduction of knowledge.

Moreover, the impacts of teacher training on the metamorphosis of pedagogical practice are confirmed in the results of the four studies analyzed. Finally, the excerpts from the studies compiled in the sequence characterize this relationship.

Among the intervention results conducted in her research involving teachers from a rural school in Caçador, Santa Catarina, Almeida (2018) recorded that the training contributed to changes in the planning of teaching and to the broadening of student interest and pedagogical practice in general. For the verification, she collected data with the students of the school locus of the research, in addition to visitors and participating teachers, and, in interpreting the data of the latter, the researcher stated thus:

In the overall analysis, several points were highlighted, among which the theoretical-practical articulation, bringing the contents closer to the reality in which the students are inserted, the opportunity for dialogue grounded in theory, stimulating a new vision of the teaching and learning processes, the stimulation of student protagonism and collaborative work (ALMEIDA, 2018, p. 122-122, our translation).

The impacts of teacher training on pedagogical practice in Almeida's (2018) research were also observed externally. The researcher pointed out in the dissertation itself that the intervention received two awards: the recognition in the Food and Nutrition Education Journey of the National Fund for Education Development (FNDE), when the school was awarded a seal of participation and a certificate of honorable mention for participating and completing all the stages provided for in the award and for meeting criteria such as innovation, creativity, continuity in the progress of activities, family involvement, the connection between two or more subjects; the second was the EPAGRI Outstanding Award in Socio-Environmental Education Márcia Mortari, granted due to the actions of the PCE developed by teachers during continuing education.

The results of Almeida's (2018) research are examples of the existence of solutions that, for Morin (2015, p. 5, our translation), arise on a small scale but with the "[...] objective of starting a true movement of transformation of societies." They are also examples of what Gatti (2014, p. 378, our translation) defines as "[...] conscious actions, based on a more objective reflection on the experienced, lived reality".

Zielinski's (2019) research also evidenced the relationship between teacher training and the metamorphosis of pedagogical practice. Focusing on the analysis of the impacts of training on the reading, production, and textual interpretation strategies used by participating teachers in the classroom, the researcher recorded that metamorphosis remained:

[...] It was noticeable in the position of the teachers when they mentioned that during the training, it was evident that the themes involved in the practices of reading, production, and interpretation of texts had changed, as they involved the local reality, stimulating the inclusion of life stories and daily life activities and their articulation with the curricular knowledge. It also transpired when they were unanimous in answering that as they participated in the training and complementary discussions, the themes started considering the students' interests, being selected based on their studies, research, and family interventions (ZIELINSKI, 2019, p. 59, our translation).

The researcher further highlighted the transdisciplinary teaching perspective encouraged by teacher training. As an example, she registered that the texts produced by the students linked to the classes of responsibility of the participating teachers valued knowledge from different areas and attached them to demands of local and global realities, characterizing precisely that which is between disciplines, beyond and through them, that is, the transdisciplinary perspective announced by Nicolescu (2018).

Likewise, it highlighted the relevance of practices that expanded the repertoire of knowledge and favored the relationship between text and context and the exploration of different points of view. These are conditions that reverberate the presence of a new epistemology, that which, for Ribeiro and Morais (2014, our translation), is determinant to "[...] rescue the multidimensionality of the subject, understood from a complex ontology".

Dal'Bó's research (2021) involved teachers from a private school in União da Vitória, Paraná. When analyzing whether the training proposal contributed to the development of inclusive pedagogical practices, the researcher pointed out, in the results, that the participants noticed, in their answers, the understanding of the importance of collaborative work stimulated during the training through activities that valued "[...] the sharing of experiences, the exchange of knowledge and the opportunity for reflections that demand more assertive, conscious and inclusive actions" (DAL'BÓ, 2021, p. 139, our translation)

As examples of metamorphosis in pedagogical practice driven by training, Dal'Bó (2021) recorded that participants indicated, among other aspects, the expansion of knowledge about students' specificities and the importance of developing strategies to meet them, in addition to the improvement of pedagogical practice, combined with changes in the ways of perception about the inclusion process. In this sense, "The learning built throughout the meetings highlighted the need to rethink the daily practice, connecting with the reality of students, respecting their particularities" (DAL'BÓ, 2021, p. 143, our translation).

It was possible to infer from the observations left by the participants that in addition to finding the training relevant and necessary, it rescued memories and was essential to motivate; them to make them think and rethink teaching practice; to renegotiate professional identities, which are and should remain in constant construction (DAL'BÓ, 2021, p. 143, our translation).

The results reinforce the position of Imbernón (2016) when he argues that training should involve more than updating and teaching knowledge. It needs to collaborate to create conditions, planning, and environments where teachers can learn, and this is accentuated when working collaboratively and connected to the local and global context.

Horn (2021), in turn, observed that the intervention conducted in his research involving teachers from different schools linked to the Municipal Education Network of União da Vitória, Paraná, mobilized possibilities of sharing and mutual growth, with the intention that, by attending training meetings, the participants would develop in "[...] their contexts of action practices guided by the epistemological bias of the training proposal" (HORN, 2021, p. 105, our translation). Therefore, it is about fostering the transdisciplinary and eco-training perspective.

Among the training results, the broadening of the understanding of project methodology increased, noting the concern to linking teaching planning to real demands. According to the researcher, the involvement of emerging issues, such as the pandemic, health, and the school environment, characterized planning connected to life and experiences from the training.

Specifically, about the pedagogical practice, Horn (2021) emphasized that the training favored, among other issues, the responsibility for the environment, collaborative work, zeal with the choice of material used in the classroom, technological insertion, and the expansion of practical activities with convergence in thinking and acting. Moreover, the researcher:

The fact that one participant recorded that the formative intervention also contributed to his improvement as a human being needs to be highlighted, especially for what this represents regarding an eco-formative perspective. Likewise, the contributions to facing challenges and feeling valued (HORN, 2021, p. 106, our translation).

It was also observed that the effective participation of students in the elaboration of teaching projects developed from the formative meetings of teachers. It is "[...] a flexible planning that is gradually built between thinking, understanding and acting" (HORN, 2021, p. 107, our translation).

In systematizing the main results of the research, Horn concludes:

In broader aspects, the main contributions of the Training-Action Program in Creative Schools for transdisciplinary and eco-training pedagogical practices are due, among other conditions: the flexibility in planning, enabling participation in the elaboration of the PCE, including while it was already in progress; the collaborative work that involved teachers, managers, students, and the community; the expansion of knowledge to conceptual and methodological issues, as well as about reality itself; the interconnection between the contents of the different curricular components and of these about the fact; the expansion of interaction between the school and the community; and belonging, appreciation, and care (HORN, 2021, p. 108, our translation).

The results of Horn's research (2021) reiterate the position of Nóvoa (2019) on the relevance of training involving the collective to provide answers to what the context of teaching demands. It also reaffirms Imbernón's (2016) defense that continuing education must rely on teachers' reflection on their practice.

Final considerations

The relevance of teacher training for the metamorphosis of pedagogical practice has been a point of defense for researchers investigating the training initiatives developed, especially in the Brazilian context. The identification of methods rooted in the traditional paradigm, valuing the dissociation between theory and practice, and decontextualized teaching, mobilize their studies to highlight the need to overcome what can be considered outdated initiatives in teacher training.

Among the possibilities to overcome this condition, linking the training to the teachers' field of action is observed as a determining factor. Moreover, the relevance of collaborative work and other conditions that value the role of the teacher is emphasized, among them being an investigator of their practice.

By proposing to analyze research developed at PPGEB/UNIARP that contributes to this transition, this study examined research developed in three municipalities, Santa Catarina and Paraná. The selection of research based on criteria evidencing formative interventions aligned to the Formation-Action Program in Creative Schools allowed the verification of other approximations, among which the higher frequency of concepts that denote a triad that characterizes the relationship between formation and pedagogical practice: formation-teachers-practice.

However, it was intended to go beyond identifying common concepts close to the study's focus. Therefore, we confirmed the relationship between teacher training and metamorphosis by compiling fragments of the results of the four types of research.

In this process, it was observed that this relationship could manifest itself in a multidimensional way. That is, the metamorphosis can occur in different aspects of pedagogical practice.

In the case of the four studies analyzed, the multidimensionality implied from the elaboration of plans articulated to local and global demands to the approximation between text and context in student production activities. Therefore, it contributed to the teaching work and what the students do while their teachers participate in the training.

Moreover, observing practice improvement allied to changes in the teachers' perception of the inclusion process denotes the relationship between thinking and doing. Therein lies the importance of training programs that value the deepening of knowledge but that, at the same time, favor collaborative planning.

Despite the limitations of the pandemic period, the two kinds of research developed during 2021 enabled changes in pedagogical practice. The initiatives can serve as a reference, along with those developed when the pandemic was not yet part of the teaching reality, for new initiatives that value teacher training as an essential condition for the metamorphosis of teaching practice.

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