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Technology gap in Teacher Education: an analysis from the perspective of reflective thinking

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Abstract
This paper presents partial results of a master's degree research which, in light of the concept of reflective education, investigated formative processes related to the appropriation and use of new information and communication technologies by students of a Teacher Education Course for child and early years of elementary school, in mid-level technical vocational at a state school in Paraná. We regarded a theoretical foundation from the epistemology of reflective thinking and from authors who problematize relationships between technology and education. This qualitative research applied intentional sampling. In focus groups, we interviewed students in the course's fourth year. We developed a Content Analysis of the obtained data, producing a categorization. The results point to the necessity of intensifying initial and continued training in education regarding new information and communication technologies.

Keywords
teacher training; vocational education; reflective education; formative processes; new information and communication technologies.

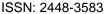## Lacuna de tecnologia na Formação Docente: uma análise na perspectiva do pensamento reflexivo

Resumo
Este artigo apresenta resultados parciais de pesquisa de mestrado que, à luz do conceito de educação reflexiva, investigou processos formativos relativos à apropriação e uso de novas tecnologias de informação e comunicação pelos estudantes de um Curso de Formação de Docentes da educação infantil e anos iniciais do ensino fundamental, em nível médio, na modalidade normal, de um colégio estadual do Paraná. Empregamos aporte teórico da epistemologia do pensamento reflexivo e de autores que problematizam relações entre tecnologia e educação. Esta pesquisa qualitativa empregou amostragem intencional. Os dados analisados especificamente neste artigo foram obtidos por meio de entrevista de grupo focal realizado com estudantes do quarto ano do referido curso. Os dados foram submetidos à Análise de Conteúdo para formação de categorias. Os resultados indicam que é necessário intensificar a formação inicial e continuada na educação em termos de Novas Tecnologias de Informação e Comunicação.

Palavras-chave
formação de professores; curso normal; educação reflexiva; processos formativos; novas tecnologias de informação e comunicação.

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Brecha de tecnologia en la Formación Docente: un análisis desde la perspectiva del pensamiento reflexivo

Resumen
Este artículo presenta resultados parciales de una investigación de maestría que, a la luz del concepto de educación reflexiva, investigó procesos de formación relacionados con la apropiación y uso de las nuevas tecnologías de la información y las comunicaciones por parte de estudiantes de un Curso de Formación Docentes de educación infantil y los primeros años, en el nivel de secundaria, en un colegio del estado de Paraná. Se consideró un fundamento teórico desde la epistemología del pensamiento reflexivo y de autores que problematizan las relaciones entre tecnología y educación. Esta investigación cualitativa aplicó muestreo intencional. En grupos focales, entrevistamos a estudiantes del cuarto año del curso. Desarrollamos un Análisis de Contenido de los datos obtenidos, obteniendo una categorización de los mismos. Los resultados apuntan a la necesidad de intensificar la formación inicial y continuada en educación sobre las nuevas tecnologías de la información y la comunicación.

Palabras clave
formación del professorado; educación técnico profesional de nivel médio; educación reflexiva; procesos formativos; nuevas tecnologías de la información y la comunicación.

1 Introduction

In the history of Brazilian education, the quality of teaching has long been discussed, especially in municipal and state systems. Frequently, new documents and public policies are created to qualify professionals aiming at the appropriation of knowledge by students.

Among the research that addresses New Information and Communication Technologies (NICT) in education, the teacher's training for the secondary school level is still practically an unexplored topic. Research on digital competence, teacher's literacy[1], and related, as a rule, addresses teacher training in higher education courses (FIGUEIRA; DOROTEA, 2022), as well as the inclusion of NICT through a continued formation (FONTOURA; GOMES, 2021).

Since 2006, working as a teacher in secondary technical professional education, it was possible to see a gap in NICT in teacher training, in opportunities that I had to interact with students and teachers, in the **Teacher Training Course** classes for early childhood education and the initial years of primary education, at the secondary level, in the normal

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[1] All the direct quotations made have been specifically translated solely for this article.

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modality. This action took the form of a multidisciplinary project, a concept that Morin (2003, p. 83) places it as one of the premises of the "thought reform".

Taking borrowed an expression from Schultz (1965, p. 47): "for years, have not experienced any significant change in the state of their knowledge", we can apply it to the curricular reformulations that have taken place in this course over the last twenty years, in which, although teachers have been protagonists, subjects related to NICT have never been included. The reformulation proposals took place in 2005, 2010, 2013, and 2014, officially originating the curricular guidelines for the Teacher Training Course (PARANÁ, 2014).

This fact requires reflection, as we understand that education professionals should have in their practice the search for pedagogical alternatives, such as considering NICT as support tools for pedagogical work.

We consider that curricular components that include NICT are important, even if indirectly, so that teachers can indicate some use of NICT in their teaching planning, so that their students develop skills related to it in their education. Formalization is relevant to base a critical and systematic appropriation of the subject by the students, as once formalized, it must be fulfilled and evaluated.

Given this premise, together with limited personal observations, as Morin states (1977, p. 341) "every observer is limited by his situation *hic et nunc* in an uncertain and ambiguous universe", added to the educational adaptations observed during the Covid-19 pandemic, I began to investigate the concept and use of NICT by the teachers in training processes with their students in the Teacher Training Course.

The master's research aimed, in the light of reflective education, to investigate the training processes related to the appropriation and use of NICT by teachers and students in the Teacher Training Course from a state school in Paraná. In this article, we address this appropriation in training processes from the perspective of students of this Course (teachers in training).

The theoretical support to analyze the training processes of the Teacher Training Course was based on studies of Dewey (1979a; 1979b), Schön (2000), Nóvoa (2009), Shulman (1986, 2014) e Freire (1967).

To discuss training processes from a reflective perspective, we will start with the concept of reflective thinking. For this purpose, we resorted to the postulates of John Dewey's pedagogical philosophical thought, which had a significant influence on the history

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of Brazilian education, as in the *Manifesto of the Pioneers of New Education*. Reaffirming the relevance of education for national development, below is the transcription of the first lines of the Manifesto:

> In the hierarchy of national problems, none exceeds in importance and severity of education. Not even those of an economic nature can compete for primacy in national reconstruction plans (INEP, 1984, p. 407).

This was the first moment in Brazilian education that was influenced by John Dewey's contributions, who, throughout his life, "developed a philosophy that advocated the unity between theory and practice, a unity of which he gave an example in his own actions as an intellectual and political activist" (WESTBROOK, 2010, p. 11). The influence of the assumptions of the Philosophy of Education enunciated by Dewey "lands" in Brazil through the intellectual formation of Anísio Teixeira, identified by Dewey as the person who best knew his thinking (DEWEY, 1979b, p. IX). Teixeira was his student at Columbia University, in New York, and was his "fierce pupil" (DEWEY, 1979a, p. XI). As well as he would also collaborate in the translation into Portuguese of some of Dewey's works, for example, *Democracy and Education – An introduction to the Philosophy of Education* (1936) e *Experience and Education* (1938).

For Dewey, thinking can be interpreted in different ways of the mental processes: 1) a disordered flow of ideas, what he calls "mental currents"; 2) a mental representation of something that is not present indeed, that which is not perceived by the physical senses, the imaginary, may or may not occur; and as a third interpretation, the "meaning of thought corresponds to that of beliefs [...]"and in it, a statement is made about some fact, some principle, or a law (DEWEY, 1979a, p. 13-16).

Thus, summarizing the reflective thinking from Dewey's perspective:

> The reflection is not a simple sequence, but a consequence – an order so consecutive that each idea engenders the next engenders the next as its natural effect and, at the same time, relies on or refers to the predecessor. The successive parts of a reflective thought derive from each other and support each other; they don't come and go confusingly. Each phase is a step from one point to another; technically speaking, it's a term of the thought. Each term leaves a deposit from which the next term is used. The current, the flow, becomes a series, a chain. In any reflective thought, definite units are linked with each other in such art that the result is a continued movement toward a common end. [...] Reflective thinking makes an active, prolonged, and careful examination of every belief or hypothetical species of knowledge, an examination carried out in light of the arguments that support it and the conclusions reached (DEWEY, 1979a, p. 14-18).

In other words, reflective thinking in contrast to those other forms, is like an ordered chain of consistent thoughts, with a purpose, and a driving end, aspiring to reach some conclusion, mentally examining a certain subject with seriousness and investigation. This type of thinking, Dewey considered the "best way of thinking" (DEWEY, 1979a, p. 13), pointing out that there are two situations in it: 1) pre-reflective, being "a state of doubt, hesitation, perplexity, which originates the act of thinking", and 2) post-reflective "resulting in a direct experience of mastery" (DEWEY, 1979a, p. 111*), "an act of research, search, inquiry, to find material that resolves the doubt"* (DEWEY, 1979a, p. 22). The author considers that the need to resolve the doubt is the "basic and guiding factor in the entire mechanism of reflection" (DEWEY, 1979a, p. 24).

In this act of reflective thinking, Dewey (1979a) preconizes that it should constitute an "educational purpose" and, as an argument for this, lists its benefits: values arising from this thought, overcoming trends, customs in vigor, superstitions, idols, and erroneous convictions, through thorough verification – inquiry.

The prerogatives of Dewey's thought not only influenced but were also the basis of thinkers and authors, who dedicated themselves to educational reforms from the perspective of a reflective pedagogy. Thereby, these authors developed an epistemology of reflective practice and the concept of the reflective teacher as a methodological theory for the initial and continuing training of teachers.

Following Dewey, Donald Alan Schön developed the concept of reflective professional practice and contributed to the theory of organizational learning (MIT, 2022). In his doctoral thesis, entitled *Rationality in the practical Decision-Process* (1954), Schön highlights his relationship with Dewey's precepts when he references the investigation phase for problem-solving, as stated in the summary reproduced by Karel van der Waarde:

> If, following Dewey, we conceive the practical-decision process as an intermediate phase in the existential transformation of a problematic situation, i.e. as a series of operations performed by an **inquirer** and directed toward the resolution of that situation as their goal, then rationality consists of conformity to those procedural principles which tend to resolve problematic situations. (DEWEY, 1954, *apud* WAARDE, 2012, emphasis added).

Dewey's influence is also evident in other works by Schön, such as *The theory of inquiry: Dewey's legacy to education* (SCHÖN, 1992). At the workpiece *The Reflective Practitioner*, Schön (1983) addresses the relationship between action and knowledge by deconstructing the epistemological principles underlying professional knowledge, that is to

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say, he stated that there were no connections between technical rationality and everyday problem situations. In daily practice, professionals were faced with a range of problems that were not very well defined, and complex with instabilities, such as those arising from the economy or politics. And, faced with these adversities, these professionals were unable to resolve them solely based on the logic of the "applied science".

Consequently, from the legacy of these authors, others emerge who rethink and renew the meanings and ideas of thought and reflective practice, such as the category coined by Lee. S. Shulman: **the pedagogical content knowledge**. In an interview given by Shulman, the author emphasizes that "to teach you need to know more than the content" (BORN; PRADO; FELIPPE, 2019, p. 1). In this way, Shulman proposes a knowledge base for teaching, emphasizing that:

> If the teacher's knowledge were organized in a manual [...], what would the category titles be like? At minimum, they should include: **content knowledge; general pedagogical knowledge, [...] knowledge of the curriculum, [...] pedagogical knowledge of the content [...], knowledge of students and their characteristics; knowledge of educational contexts, [...] and knowledge of the ends, purposes, and values of education and its historical and philosophical basis** (SHULMAN, 2014, p. 206, emphasis added).

From these categories, Shulman (2014) highlights the pedagogical content knowledge, bringing to the teaching profession what is peculiar to it: knowing more than the specific content of a given curricular component, advancing to a better elaborated and with a deeper understanding.

With the presentation of the category of the pedagogical content knowledge, when rebutting George Bernard Shaw's criticism, Shulman affirms: "Those who know, do. Those who understand, teach" (SHULMAN, 1986, p. 14).

In addition to the pedagogical content knowledge, Shulman presents other categories: sources of knowledge; the processes of pedagogical action and reasoning, including here the process of reflection. Among the sources of knowledge, Shulman quotes "formal academic training" in education and the "practical wisdom" acquired by teachers. Understanding these concepts, according to the author, would make the emergence of teachers who represent a model of pedagogical excellence more likely.

Regarding professional teaching training, in an interview with Bruno Mazzoco, António Nóvoa addresses current education challenges, the role of technology in this

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scenario, initial and continuing training, public policies, and interdisciplinarity, among other topics, he states:

> If I had to say just one thing, the thing I would say is this: **we need to focus**, I will use the word that I really want to use, **in the professional training of teachers** (NÓVOA, 2017, 3' 12' - 3' 28', emphasis added).

In response to the paradox between the rhetoric of what is to be done and what has been achieved, Nóvoa (2009) presents three possibilities for measures to be taken: a) transfer teacher training into the profession; b) create new ways of organizing the teaching profession, autonomous spaces for sharing pedagogical practices that are "pedagogical movements" or "communities of practice", which "[...] are irreplaceable spaces in teaching learning and professional development. [...] a feeling of professional identity is reinforced" (p. 21-22); c) reinforce the personal dimension and public presence of teachers, emphasizing continuous or permanent training, through the construction of collective work networks, supporting sharing and professional dialogue.

In this regard, bringing to a recent context, the Department of Education of the State of Paraná has developed programs to strengthen continuing education in which teachers can participate free of charge. The following programs stand out: Educational Development Program (PDE), in line with the Network Working Groups (GTR), started in 2007; National Pact for Strengthening Secondary Education, in 2014; Training in Action, from 2013 to 2018 (PARANÁ, 2007, 2014, 2018, 2023a).

In 2020, the Department of Distance Education (SEED) of the Ministry of Education implemented the Trainers in Action program, whose vision is "To provide teachers in the state of Paraná with continued training, involving technologies, active methodologies integrated into the curriculum" (PARANÁ, 2023b).

In 2022, the PDE was resumed, which had been suspended in 2016, however, with a very reduced number of places per curricular component, in addition to more demanding rules, for example: "The Professor who joins the PDE must continue to carry out his teaching activities at the educational institution", as well as "There will be no time off from work to carry out PDE activities" (PARANÁ, 2022c, p. 1-2), in other words, without reducing the workload. These normative are in line with what the author affirmed:

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> But nothing will be achieved if the existing conditions in schools and public policies, concerning teachers, are not changed. It is useless to call for reflection if no school organization facilitates it. It is useless to claim mutual, peer-to-peer, collaborative training if the definition of teaching careers is not consistent with this purpose. It is useless to propose a qualification based on research and partnerships between schools and university institutions **if legal regulations persist in making this approach difficult** (NÓVOA, 2009, p. 22, emphasis added).

Despite the availability of teaching professional sharing spaces, Nóvoa makes the following observation:

> Training places can reinforce the public presence of teachers. Public interest in educational matters has expanded. **But, paradoxically, here it is also the lack of teachers has been noticed.** There is a lot of talk about schools and teachers. Journalists, columnists, university students, and experts speak. Teachers don't talk. Teachers are absent, a kind of silence in a profession that has lost visibility in the public space (NÓVOA, 2009, p. 24, emphasis added).

This statement is corroborated, among other factors, by the completion rate of the Trainers in Action program (PARANÁ, 2022b). On that occasion, in the last quarter of 2022, of the more than twenty thousand teachers from the Paraná state network who started The Journey III, around two-thirds completed the training. An indication of a lack of commitment like what Nóvoa points out as:

> [...]a personality theory that is part of a of a professionality theory. [...] build personal knowledge (self-knowledge) within in the professional knowledge, [...] but which is at the heart of the teaching professional identity (NÓVOA, 2009, p. 23).

We found a similar index in the PDE period from 2007 to 2016. In ten years of the program, around 223 thousand teachers enrolled, of which less than 154 thousand completed the training (PARANÁ, 2018).

On account of that, there is an urgent need for greater participation by teaching staff in continuing education, as this is one of the spaces or "organization mode" in which we will be recognized as producers of knowledge, with the possibility of sharing our experiences, being able to increase our "visibility or public space", since: "In contemporary societies, the strength of a profession is defined, to a large extent, by its ability to communicate with the public" (NÓVOA, 2009, p. 25).

2 Methodology

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This article analyzes partial results of the master's research entitled *New Information and Communication Technologies in the Training Processes of the Teacher Training Course at the State School of Pato Branco (PR)*. This investigation was carried out within the scope of the Pedagogical Practices and Sustainable Development project, linked to the Education and Development research line, of the Postgraduate Program in Regional Development, at UTFPR *Campus* Pato Branco.

Specifically, the data collected through focus group interviews carried out with fourth-year students of the aforementioned Teacher Training Course, are presented and discussed. The thematic focus of this stage was the formative processes of professional teacher training, related to NICT, according to the understanding of the students (teachers in initial training).

The research involving the school community was authorized by the Regional Education Center (NRE) to which the school is subordinate. According to current legislation, we initially provide the authorization procedures and required documentation (PARANÁ, 2022a), for example, NRE's Term of Agreement for the Transferor Unit, Term of Agreement for the Co-participating Institution, and a substantiated opinion of approval of the research by the Ethics Committee for Research Involving Human Beings, at UTFPR.

Students of legal age were invited to participate in the research and signed a Free and Informed Consent Form and Consent for the Use of Image and Voice Sound (TCLE/TCUISV). Meanwhile, for underage students, a Free and Informed Assent Form was used (TALE), together with the Consent Form for the Use of Image and Voice Sound (TCUISV) of the legal guardian of the minor student.

The focus group interviews took place in person. The students were distributed into groups of eight participants, as recommended (GOMES, 2005), with each group participating in only one session.

The interview sections followed a semi-structured script, dealing with the possibilities and challenges of integrating NICT into teacher training. Seeking to clarify students' understanding within the scope of their initial professional teaching training throughout the Teacher Training Course, he focus group interview considered the following axes: expectations when starting the course; challenges faced; learning to teach; appropriation of computer technologies as students; use of NICT by Course subjects; learning to use NICT as a teaching methodology in the Teacher Training Course and

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Internship; NICT for the Course and for the teaching profession; importance of mediating the use of NICT.

The objective was to explore how technological tools were used in pedagogical practice by educators (during the training course) to support and enrich teaching and learning, as well as discuss how students can be trained to use these technologies in an effective and accessible way.

The focus group interview was carried out on April 17, 2023, and was recorded in video and audio. For a second simultaneous recording of the audio, we used the digital recorder. Each session was conducted according to the assumptions of Gomes (2005), regarding the moderator.

Subsequently, the audio content was transcribed into a text file, first using the platform *online Rechape*[2] and, in sequence, the transcription was refined, listening to the audio in search of possible details not identified by the *software*. The recordings and respective transcriptions were recorded *online* (digital media) with exclusive access by the researchers.

To analyze the data collected through a focus group, Content Analysis was used, which, according to Bardin's definition (2016, p 43): "consists of classifying different elements in different 'drawers' according to criteria capable of giving rise to meaning within an initial 'confusion'". By analogy, the "drawers" refer to the "significant categories or headings" that allow classifying the elements that carry meaning and that are contained in the message (oral or written). For our research, the oral message comes from the focus group.

This Content Analysis technique, Bardin (2016) calls Analysis by Categories or Categorical Analysis, that is, the text is fragmented into units, into categories according to analogical regroupings, which can be defined in advance, through pre-established objectives or of the hypotheses and/or, later, when the categories are defined during the analysis process and the category system is developed throughout the material analysis process (BARDIN, 2016).

Through indicators or elements of localized meanings (signifiers), the intention of Content Analysis is derived, to make deductions or logical statements of knowledge, which

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[2] Reshape is a Brazilian online platform that offers automatic transcription services: the process of converting audio into text using voice recognition tools.

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Bardin calls inferences: "logical operation, by which a proposition is admitted due to its connection with other propositions already accepted as true" (BARDIN, 2016, p. 44-48). Indicators can be of a semantic order (frequency of terms related to the category), of a linguistic order (succession of significant elements, length of sentences), or a paralinguistic order (intonation and pauses) (BARDIN, 2016).

This method, according to Bardin (2016), can be organized into three phases: pre-analysis, exploration of the material, and treatment of results. The second phase is an exploration of the material, by delimiting the elements contained therein. For Bardin (2016), "Treating the material is codifying it". When counting the recording units, coding was necessary, following the principle of objectivity and fidelity: "The organizer of the analysis must clearly define the variables he treats, as well as specify the indicators that determine the entry of an element into a category" (BARDIN, 2016, p. 147).

3 Results and Dicussion

To count the relevant recording units of the focus group transcriptions, the letter R (record) was used, followed by the numerical sequence according to the chronological order of the focus group interview for each chosen unit. After this number, there is a period, followed by the theme number (Chart 1). Exemplifying: R4.4, refers to the fourth temporal record of theme 4 and, according to Chart 2, we will have the following Record unit: "O *PowerPoint*, there is the *Educatron* there, which sometimes doesn't work [...] And the TV, which is now in the rooms".

Chart 01. Categorization of the thematic unit Appropriation of NICT as students of the Teacher Training Course

Register Unity	Quantity
R2.4 R3.4 R12.4 R13.4 R14.4 R15.4 R16.4	7
R1.4 R4.4 R5.4 R6.4 R7.4 R8.4 R9.4 R10.4 R11.4	9
Total	16

Source: Organized by the authors (2023).

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Chart 1. *Corpus* of the thematic unit – Training Process with NICT

4. Understanding the appropriation of computer technologies as students in the Teacher Training Course	
Register Unity	**Code**
GROUP 1	
And as soon as we entered, we already had the pandemic, so we didn't have any experience, we were just stuck to theory, and in theory, we didn't have any practice.	R1.4
It was very little I think, because there was a lot of things. Until this year we are learning a lot of things, for example, how to use Word, that sort of thing. There are a lot of girls who don't know how to use it.	R2.4
The context of the technology we have is the slide, which the teacher brings, or when it also works.	R3.4
The PowerPoint, there is the *Educatron*[3], which sometimes doesn't work [...] And the TV, which is now in the rooms.	R4.4

Source: Organized by the authors (2023).

For the focus group, the recording units, called (R), belonging to each of the eight thematic units were categorized, from which twelve categories were derived, distributed as follows: The Absence from Practice category stands out as the dominant factor, presenting 17, 1%. Given this evidence of the Absence of Practice category, we corroborate the statements prepared by the reflective authors, as they are unanimous regarding the importance of practice combined with theory.

Among them: "[...] develop the idea of reflective practice, in the spirit of Deweyean inquiry that seeks to integrate thought and action, **theory and practice,** [...]" (SCHÖN, 1992, p.123, emphasis added); "[...] a fundamental solidarity between **theory and practice**" (FREIRE, 1967, p. 15, emphasis added); "sharing of **pedagogical practices**, [...] practice communities [...]" (NÓVOA, 2009, p. 21-22, emphasis added).

In theme 4, labeled *as Understanding the Appropriation of IT Technologies as students on the Teacher Training Course*, the highest rate in this category occurred, 8.1% or nine registration units out of a total of nineteen. In themes 5 and 6, respectively, *Understanding the Use of NICT by the subjects in the Teacher Training Course*, and *Understanding the Learning of the use of NICT as a tool of Teaching Methodology in the*

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[3] Educatron kits consist of a computer which screen is a 43'' smart TV, with a webcam, microphones, keyboard, mouse pad, and adjustable pedestal. The equipment can be used, for example, to present multimedia content in the classroom and for video calls (PARANÁ, 2022d).

Teacher Training Course/Internship, the Absence of Practice category occurs in three (2.7%) registration units in each, totaling 5.4%. As you can see, the students interviewed in the focus group emphatically express the lack of practices involving NTIC, both in the Internship (classroom conducting) and in most subjects of the Teacher Training Course.

5 Final Considerations

This article aimed to present and discuss some research results on training processes in the appropriation and use of New Information and Communication Technologies within the scope of the Teacher Training Course.

Some reflections were presented based on official documents, as well as partial results regarding the data found through focus group interviews carried out with fourth-year students of the aforementioned Course.

In the focus group sessions, 111 recording units were collected, to which Content Analysis was applied, generating a set of categories for identifying training processes. Reflections and inferences were guided both by the epistemology of Reflective Thinking and by authors who reflect on NICT in education.

Because of this, regarding official documents, we can infer that, in the three curricular matrices, referring to the years 2006, 2010, and 2015, as well as in the legal processes involving their construction, through the participation of students, there was not even a glimpse of reflection on the possibility of including a discipline involving NICT. As a consequence, in the curriculums included in the Curricular Pedagogical Proposals, despite the importance of technologies for education being indicated, their use with students is considered optional, in addition to not being clear about the procedure to be carried out.

Given the analysis of normative documents of the Teacher Training Course, regarding the use of NICT and its relationship with reflective thinking, opportunities for teacher participation existed in the stages of curricular reformulation, but the effective inclusion of NICT has not (yet) occurred.

However, questions arose. What are the reasons that led the class of teachers not to demand the presence in the curriculum of specific subjects related to NICT, during the moments of review and reconstruction of the course? This question brings us to reflective thinkers, as education professionals would have consistent theoretical-philosophical and at

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the same time financial conditions to propose changes that could make their work possibilities even more difficult, as new disciplines require other professionals, who would be, literally, competing with the number of classes to be offered, respecting the maximum course load over four years. Perhaps this mentality of professional survival lies between the lines of the slow and inconsistent process of the demand for technology in education.

Regarding the deductions from the analysis of the focus group carried out with students, it was evident that the appropriation of NICT was superficial and inconsistent, as well as the "call" for the urgency of a discipline related to NICT included in the Teacher Training Course. The gratitude made by the students stands out for the fact that someone was willing to "listen to" them.

In brief, we hope that this research can contribute to the educational environment and the development of education, opening paths for new discussions about pedagogical actions and practices related to the use of NICT and public policies in this area, as well as bringing a reflection on our actions as education professionals, in the sense that decisions can contribute to or hinder the educational processes of future generations, such as those taken in the discussions on changes to the curriculum matrices in 2005, 2009 and 2014.

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