ARTICLE

The use of technologies as a tool for continued education and teacher self-formation

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ABSTRACT

Teacher education is a lifelong process, which includes professional learning experiences that contribute to the quality of education. The continued education of teachers, contemplating self-forming and collaborative processes, finds resources in technological tools that add possibilities, both in individual and collective aspects. This study aims to identify a teaching profile, with a focus on professionals who use digital devices to exercise their functions and improve pedagogical practices. For this end, a questionnaire was applied to teachers in the municipal education system of the metropolitan area of Porto Alegre. In this way, the use of technologies was found to be an effective possibility to break pedagogical loneliness through the creation of spaces for interaction. The study also points out the need for education strategies to compose teacher education policies, being monitored in a planned manner.

KEYWORDS

teacher continued education; self-formation; collaborative work; technology.

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O USO DAS TECNOLOGIAS COMO FERRAMENTA PARA A FORMAÇÃO CONTINUADA E AUTOFORMAÇÃO DOCENTE

RESUMO

A formação docente é um processo que ocorre durante toda a vida e inclui as experiências de aprendizagem profissional que contribuem para a qualidade da educação. A formação continuada de professores, contemplando processos autoformativos e colaborativos, encontra nos recursos tecnológicos meios que agregam possibilidades, tanto nos aspectos individuais quanto nos coletivos. Este estudo buscou identificar um perfil docente com foco na utilização de dispositivos digitais para o exercício de suas funções e aprimoramento das práticas pedagógicas. Para isso, foi aplicado um questionário para professores de uma rede municipal da região metropolitana de Porto Alegre. Dessa maneira, identificou-se o uso de tecnologias como possibilidade efetiva de romper com a solidão pedagógica por intermédio da criação de espaços de interação. O estudo aponta, ainda, a necessidade de estratégias formativas comporem políticas de formação docente, sendo acompanhadas de forma planejada.

PALAVRAS-CHAVE

formação continuada de professores; autoformação; trabalho colaborativo; tecnologias.

EL USO DE TECNOLOGÍAS COMO HERRAMIENTA PARA LA FORMACIÓN CONTINUA Y LA AUTO FORMACIÓN DE PROFESORES

RESUMEN

La formación del profesorado es un proceso que dura toda la vida e incluye experiencias de aprendizaje profesional que contribuyen a la calidad de la educación. La formación continua de los docentes, contemplando los procesos de autoformación y colaboración, encuentra en los recursos tecnológicos medios que suman posibilidades, tanto en el aspecto individual como colectivo. El presente estudio buscó identificar un perfil docente con enfoque en el uso de dispositivos digitales para ejercer sus funciones y mejorar las prácticas pedagógicas. Para ello, se aplicó un cuestionario a docentes de una red municipal de la región metropolitana de Porto Alegre. Como resultado, se encontró el uso de tecnologías como una posibilidad efectiva de romper con la soledad pedagógica a través de la creación de espacios de interacción. El estudio también señala la necesidad de estrategias de formación para componer políticas de formación docente, siendo monitoreadas de manera planificada.

PALABRAS CLAVE

formación continua del profesorado; auto formación; trabajo colaborativo; tecnología.

INITIAL CONSIDERATIONS

Considering the evident transformations that the contemporary world has been undergoing concerning several spheres, it is a fact that education must be redefined and contextualized in order to meet the challenges posed to it in a daily basis. In a recent study, Gatti (2017) notes that the current scenario has evidenced characteristics such as competitiveness, individualism, multiculturalism, new languages, and the emergence of demands for social justice and educational equity. This context in which the work of teachers and educational managers and, consequently, the learning of students, takes place is a space of tensions and impasses, where the initial education of teachers and the practices of the traditional school in which people are educated fail to correspond to the expectations of the subjects and society as a whole and, therefore, "demand[s] new understandings to guide interpersonal and educational actions and relationships [...] and, particularly, new didactic positions and diversified forms in pedagogical relationships" (Gatti, 2017, p. 722, free translation).

Teacher education is characterized as a process that occurs throughout the life of the teacher and encompasses all learning experiences and activities aimed at the benefit of individuals, groups, or schools, which contributes to the quality of education and can be individually or collectively carried out, involving the review, renewal, and expansion of teachers' commitment as agents of change (Ávalos, 2007). To Ávalos (2007), educational processes are underpinned by centers of tension, which concern both elements of personal nature, such as the teacher's individual commitment and willingness to learn, and external elements, such as the educational activities offered and their relationship with education systems.

Research carried out in the last decade, including that of Gatti *et al.* (2019), indicates the relevance of continuing teacher education for a pedagogical work more in line with students' needs. However, it also shows that continuing education is not only a mechanism that is capable, primarily, of filling gaps in initial education, but also something inherent in teaching. Therefore, there is a self-education character in which the professional takes on a leading role in the process.

Warschauer (2005) points out that self-education concerns those who are trained and highlights the relevance of new technological instruments in this permanent education process, in which the main actor, the teacher, is responsible for the construction of knowledge and meanings produced. Moreover, the author mentions the difference between self-education and autodidacticism, as knowledge must be incorporated into actions and values and, therefore, linked to meanings for the subject. Thus, self-education would be a "work on oneself" (Warschauer, 2005, p. 2, free translation), i.e., a permanent construction of the power to act, in an emancipatory movement regarding the dependence on others, though related to them. The studies conducted by Canário (2006) corroborate such factor by stating that education is, mostly, a work done on oneself; how-

ever, the author also states that no one is educated alone, thus recognizing the importance of formal and informal interactions in the educational processes.

Considering the perspectives of Warschauer (2005) and Canário (2006), the refusal of individuality can be highlighted as another important aspect, through the search for the collaborative nature of education and self-education, essentially developed in the dialectic between the individual condition and the collective condition (Josso, 2010; Vaillant, 2016; Nóvoa, 2002, 2009, 2017).

Considering continuing education from the perspective of these two important aforementioned elements, i.e., self-education and collaborative learning, this study aimed at identifying a teacher profile focusing on the use of digital devices to exercise their functions and improve pedagogical practices. Based on this information, it is possible to reflect on how technology can consist in an important educational/self-educational instrument, as well as a movement that combines the collaborative character in the use of technologies for teacher education. Information and communications technologies (ICT) have took on an important role as pedagogical resources that can enhance the teaching and learning processes. Thus, the role of technology in the development of teachers can improve the process of continuing education, qualifying pedagogical practices in the current context (Meirinhos, 2006). Such elements allow us to think about a possibility to enhance the processes of continuing teacher education, thus qualifying their practices and those of school as a whole.

To address these issues, this study initially presents elements related to self-education; then, some reflections on collaborative work and the use of ICT are highlighted. In a complementary way, the authors used data collected via online questionnaire, in order to learn about the use of technologies by teachers who work in Elementary School in a municipality in the metropolitan region of Porto Alegre, state of Rio Grande do Sul, Brazil. Finally, we propose thinking about these elements in a correlated way, especially highlighting how continuing education can be enhanced through the teachers' use of technologies.

SELF-EDUCATION AS A POSSIBILITY OF CONTINUING EDUCATION

Nowadays, thinking about continuing education requires researchers to shift the gaze from the educational practices and initiatives developed regardless of the contexts of professional performance, and to focus on the actions taken and carried out since the school space, considering, therefore, the challenges posed to such. Gatti and Barreto (2009) state the need for greater adherence of continuing education to the reality of schools, in which the emphasis on concrete problems, which emerge from everyday life, constitute a factor of personal and professional valorization, with the implicit need for an integrated action of the group of educators in order to create new alternatives of pedagogical action.

Among other issues, Gatti and Barreto (2009) also state that continuing education is out of sync with the needs and difficulties of teachers and the school, where teachers do not participate in decisions concerning the educational

processes to which they are submitted. Likewise, the lack of monitoring and systematic support of the pedagogical practice of teachers makes it difficult to understand the relationship between the developed program and their actions in everyday school life.

In the same perspective, Nóvoa (2002) states that the capacity of reflective development on the part of the teacher should support the set of decisions that are presented in daily classroom and school life, once again highlighting the relevance of self-education and enabling both the focus on individual needs and the centrality of professional teaching trajectories. In this context, everyday work takes on a privileged space for education and, especially, self-education, either via processes of reflection on pedagogical practices or interaction with colleagues, works and authors (Oliveira, 2008), based on an autonomous movement and characterized by the initiative of individual or collective mobilization.

> Acknowledging the teacher as a subject of experience and an adult that is being educated implies admitting learning as an internal process that corresponds to the process of self-construction as a person. Continuing education, in particular, is aimed at teachers who accumulate experience in the exercise of their profession and who create and recreate practices and theories.
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> It should be considered, therefore, that teachers have a life story and a professional experience that guide their perspectives and justify certain interests and needs. Thus, educating adults implies promoting collaborative education, mobilizing theoretical and practical resources. Education is no longer seen as a way of teaching certain content and consuming knowledge, but is rather assumed as a possibility for growth, a prospect of change, and a way of solving problems. (Cunha and Prado, 2010, p. 103, free translation)

When considering the contexts of work and professional performance as the *locus* of continuing education (Nóvoa, 2009, 2019), teachers are increasingly provided with a leading role, highlighting the value of meaningful educational experiences and enabling a movement that articulates know-how and knowledge, with functionality and meaning. Thus, self-education gains special prominence considering that, from the perspective of learning, experience symbolizes attitudes, behaviors, thoughts, know-how, and feelings that characterize subjectivity and identities (Josso, 2010). Therefore, self-education, as part of the subject, reveals itself as an important instrument for the qualification of practices, as it enables contemplation of the specific demands and needs of the subject in training. Self-education refers to the processes intentionally sought by the teacher, which collaborate to expand both theoretical and practical knowledge, and is related to collective learning (Marcelo, 1999; Marcelo *et al.*, 2016), i.e., collaboration consists in an important form of effectiveness.

From this perspective, self-education concerns the technical, pedagogical, didactic and methodological aspects of the profession, and sets up a process of self-construction that is established in all dimensions of the subject. Teachers, as

intellectual workers, are educated as they work on improving their functions, "to fulfill their own potential, and any opportunities that come their way, they [teachers] form a character that has as its core the qualities of a good worker" (Mills, 2009, p. 22, free translation).

COLLABORATIVE WORK AS THE POSSIBILITY OF TEACHER SELF-EDUCATION

Teaching work has historically been characterized by individuality (Diniz-Pereira, 2015), whether due to structural or cultural issues, which have established the teaching identity from a fragmented and segmented conception of work, in contrast to the emerging understanding of collectivity, increasingly present in contemporary discussions on education. Continuing education, as a fundamental and inseparable element of any educational change and inherent in the teaching work, can no longer be conceived from the perspective of the isolated teacher, but rather of a professional who is inserted in a teaching staff and in a school organization (Nóvoa, 2002), considering that professional development involves interaction and collaboration between peers (Vaillant, 2016).

Considering the necessary overcoming of the individualized form of teaching work, which results from the isolation mainly caused by the excessive workload and the lack of time-spaces (Machado, 2013) for the development of a teaching work guided by the collective perspective, collaborative initiatives have gained more and more space, in a movement of refusal and resistance to the constituted traditional-historical concept regarding what a school consists in and what it means to be a teacher. This movement takes place considering the understanding that the isolation to which the teaching work is historically linked does not contribute to facing latent situations at school, which challenge teachers in their everyday lives. The transformation of this scenario necessarily undergoes ruptures, which result from the organized action of people and institutions deeply linked to the desire to radically change the aforementioned situations (Silva Júnior, 2015). Thus, the commitment of the subjects involved with new forms of work, research, and cooperation is a key element for creating a model of collaborative work and education (Mizukami *et al*., 2002).

Collaborative work, hence, is shown to be a fundamental strategy for professional teaching development based on actions, such as studying, sharing experiences, collaborative analysis and research in pedagogical practices, whether in an institutional context, linked to a network or school, or in a social one (Vaillant, 2016).

INFORMATION AND COMMUNICATIONS TECHNOLOGIES FROM THE TEACHING COLLABORATIVE LEARNING PERSPECTIVE

The rise of ICT has been connecting the world in global networks, generating huge amounts of virtual communities (Castells, 1999). Information is not

a rare commodity (Fayard, 2008), but it does require efficient ways of creating knowledge based on it. In recent decades, access to information has assumed a more democratic character, leading to changes in the behavior of the current society, as, nowadays, digital resources allow interaction and the creation of new languages that lead to reflection and critical positioning in the process of knowledge construction.

For Castells (1999), information networks have significantly expanded economic, social, and cultural relationships. However, in the school environment, teachers tend to use them as resources for teaching and learning processes in such a way as to socialize their "knowledge" with the students (Ferreira *et al.*, 2016), using them little for the continuing education process among themselves.

The constant flow of information present in everyday life has transformed the means of communication between human beings, constituting new relationships and social structures in an open, dynamic, innovative, and balanced way (Castells, 1999). Thus, "the emergence of innovative and purposeful mechanisms is, therefore, necessary for collaborative work in networks, in order to enhance their action and expand their reach from the different actors and sectors involved" (Gomes, Barbosa and Ferla, 2016, p. 201, free translation).

The insertion of ICT in the school environment can contribute to expand access to information and promote the creation of a collaborative movement that privileges the construction of knowledge, communication, and continuing education (Almeida, 2001), thus becoming an innovative and purposeful mechanism.

The use of technologies, from the perspective of continuing education, considering the premises of self-education and collaborative learning, can be understood as an important tool that enables and expands the conditions of interaction and cooperation between teachers, favoring educational processes. Nevertheless, more evidence is needed to support this interdependence between ICT, self-education, and collaborative learning.

The theoretical concepts presented so far support the elaboration of a research strategy that seeks to obtain relevant data to identify a teaching profile, focusing on the use of digital devices for the exercise of their functions and improvement of pedagogical practices. In the next section, the methodological procedures that aim to allow the achievement of this objective will be outlined.

METHODOLOGY

The strategy used for this study was survey research, as it allows the researcher to obtain primary data in order to present a numerical description of trends, attitudes, and opinions of a certain population (Hair *et al.*, 2005; Creswell, 2010).

Survey research is very appropriate when researchers must quantify and map a large number of elements of a population, in an objective and direct way (Gil, 2010; Yin, 2010; Klein *et al.*, 2015).

This study is descriptive, with the goal of describing situations, facts, opinions and behaviors in the context of the studied population (Lakatos and Marconi, 2009; Gil, 2010; Klein *et al.*, 2015).

A structured questionnaire composed of 31 questions was applied via the Google Forms tool[1], containing multiple-choice, mixed, and 5-point Likert-type scales. Of the questions applied, 11 were used to characterize the sample, which is extremely important in identifying the profile of teachers. The remaining questions seek to measure their knowledge, preferences, and opinions in relation to the use of computers and digital devices for practicing their profession.

According to Creswell (2010), the questionnaire is a numerical representation of trends, opinions or attitudes of a certain population, which is studied using a sample that can lead to a generalization of results.

The development of the research instrument was based on the Technology Acceptance Model (TAM) (Davis, 1989). This model can explain the determinants of individuals' acceptance of computers. Another important feature of this model is the possibility of mapping the behavior of individuals concerning any type of technology, explaining their reasons for accepting this technology or not.

The studied population was composed of teachers from a municipal elementary school in the metropolitan region of Porto Alegre, state of Rio Grande do Sul, Brazil. A statistical formula proposed by Nique and Ladeira (2017) was used to determine a minimum sample for generalization of the studied population, as shown in Equation 1.

$$n = \frac{Z^2 * p * q * N}{e^2(N-1) + Z^2 * p * q} \tag{1}$$

In which:

N = the total population, which, in this case, is the total number of teachers in the surveyed school system;

Z = the confidence interval, which will be 95% with a standard deviation of 1.96, which is widely used in survey research (Nique and Ladeira, 2017);

e = the sampling error, which will be 5%;

p = the probability of the event taking place, i.e., in the population of 2,000 teachers[2] of the network, it corresponds to the chance of the questionnaire being effectively answered by teachers of the network.

Although unlikely, the questionnaire might be fulfilled by an individual who is not a teacher from the network. In this case, a probability percentage linked to the margin of error will be used. The value of p, set at 95%, represents the proba-

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1   Google tool that allows the creation of questionnaires and online surveys that can be shared with people who have access to the internet.

2   The Municipal Teaching Network accounts for over 1,950 active teachers. For sample calculation purposes, the value was rounded to 2,000.

bility of the event happening, i.e., it is expected that 95% of the respondents are teachers from the network; the value of "q", set at 5%, represents the probability that the event will not happen, i.e., it is expected that 5% of the respondents are not teachers from the network.

Based on the presented data, we have the Equation 2:

$$n = \frac{1,96^2 * 0,95*0,05*2000}{0,05^2(2000-1)+ 1,96^2*0,95*0,05} \qquad (2)$$

n = 70 individuals

Based on this data, the result of the sample calculation indicated a minimum necessity of 70 individuals so that the sample can be considered generalizable, significantly representing the studied population.

The questionnaires were sent via the Google Forms tool, in the second half of May 2018. A sample of 143 respondents was obtained, well above the condition imposed by the sample calculation, which guarantees greater reliability and the possibility of generalizing the results for the entire surveyed population.

In order to test the reliability of the questionnaire, Cronbach's Alpha test was performed, obtaining a result of 0.811. This value is above that recommended by the literature, which is 0.7 (Hair Jr. *et al.*, 2009), thus proving the statistical significance of the scale created for the questionnaire. The normality of data was verified by analyzing the values of kurtosis and asymmetry (Hair Jr. *et al.*, 2009). According to Kline (1998), the values indicated for kurtosis must be below 10, and the corresponding asymmetry values must remain below 3. Values obtained from the formulated questions were within the recommended by the literature.

DATA ANALYSIS AND DISCUSSION

TEACHERS AND THE USE OF TECHNOLOGIES

Advances in technology have significantly changed people's everyday lives. This change can be extremely positive; but, at the same time, it can become harmful in some situations. One of the proposed questions concerns the frequency in the use of computers and/or digital devices. As a result, 75% of respondents indicated they always use it; 15% frequently used it; 8%, occasionally; and 3%, rarely, as shown in Graph 1.

This result demonstrates strong adherence of the surveyed teachers to the available technology to perform their daily activities. Nowadays, human activity cannot be described, neither analyzed, without considering the element of technology as an essential part of relationships. In this same context, at times, people become
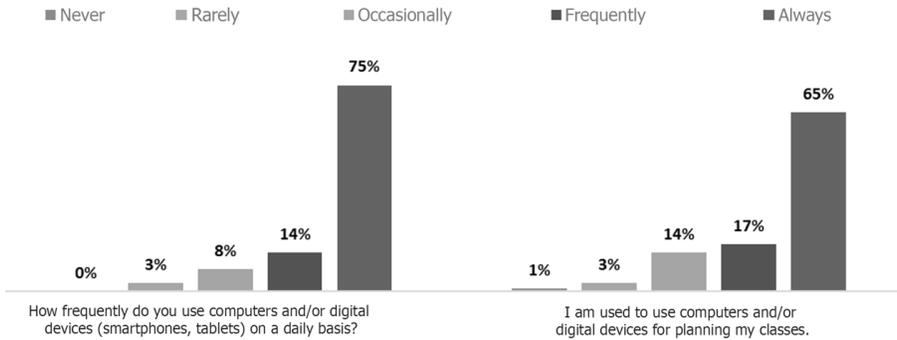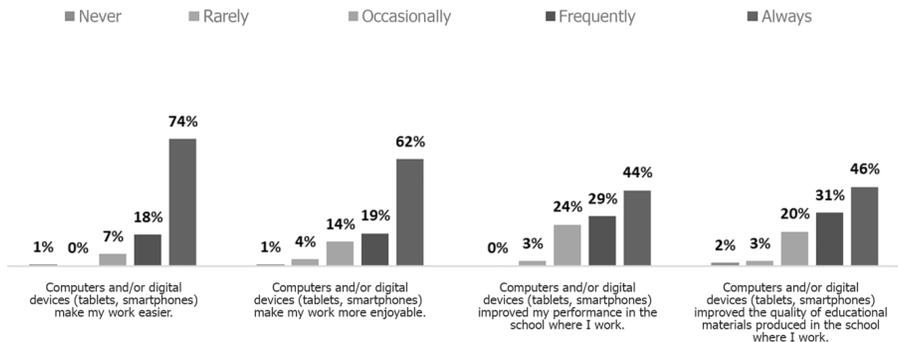
Graph 1 – Use of computers and digital devices on a daily basis and art work.

hostages to technological artifacts, which use is a fundamental component of daily life. At the same time that society has evolved from a new technological paradigm, it has also become dependent on modernization that constantly and unequivocally reshapes individuals' relations with the world around them. Therefore, it is necessary to innovate in order to respond to the new demands of the modern world, requiring advances in the relationships between subjects and knowledge (Canário, 2006; Sacristán, 2007; Porcheddu, Rezende and Bulgarelli, 2009), enabling new ways of integrating people, facilitating work, and considering technology as an important tool and not as an end.

Regarding the use of computers and/or digital devices for planning classes, 65% of the surveyed teachers said they always use technological resources for this purpose; 18% indicated they frequently use it; 14%, occasionally; 3%, rarely; and only 1% reported to not use these resources. The fact that most teachers indicate the use of technology to plan their classes may display different biases. It is a fact that, over time, individuals incorporate into their daily life everything that is imposed on them or that facilitates their activities. These two questions might be listed in these answer patterns.

As for the perception of teachers regarding the use of computers and digital devices (Graph 2), it was observed that 92% consider that computers or digital devices always facilitate their work; 7% consider that they occasionally facilitate their work; and only 1% mention that computers or mobile devices never make their work easier. Teachers were also asked whether the use of computers or mobile devices makes the work more enjoyable (Graph 2).

When asked about the relationship between the use of computers and/or digital devices and the increase in performance at work, 44% consider that this always occurs; for 29%, it frequently occurs; 24%, occasionally; and 3% report that they rarely perceive this increase in productivity. Regarding the quality of educational materials produced with the use of computers and/or digital devices, 77% of

■ Never   ■ Rarely   ■ Occasionally   ■ Frequently   ■ Always

Graph 2 – Teachers' perception of the use of computers and digital devices.

teachers consider that these materials are always or frequently qualified; 20% say they are occasionally qualified; and 5% consider that the quality of these materials is rarely or never improved.
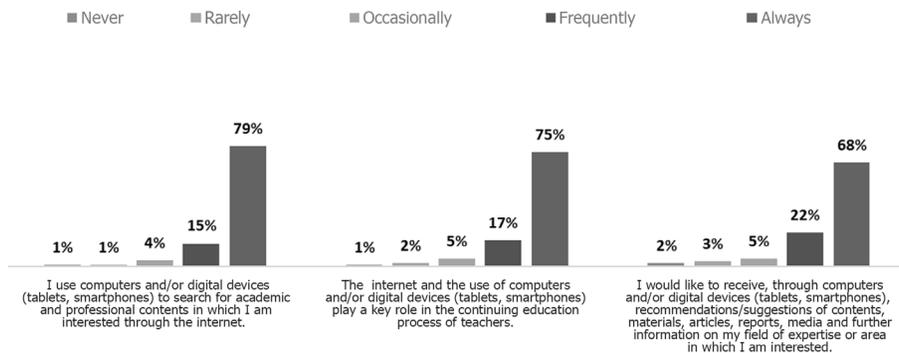
USE OF TECHNOLOGIES FOR CONTINUING EDUCATION

The next question concerns the use of computers and digital devices for continuing education (Graph 3). Teachers were asked about the use of these resources to search for academic or professional contents of interest. Most teachers (94%) pointed out that they recurrently (always/frequently) use such resources for this purpose; 4%, occasionally; and 2%, never or rarely.

Furthermore, teachers were questioned about the importance of the internet and the use of computers for the teachers' process of continuing education. 92% of teachers consider that these resources always or frequently play an important role in teachers' continuing education; 5%, occasionally; and 5%, rarely or never. When questioned about the interest in receiving materials on the field of expertise and professional activity, 90% of the respondents point out that they always or frequently have this interest; 5%, occasionally; and 5% would never or rarely like to receive materials through computers or digital devices.

Consistent with the current context, most teachers mention great familiarity with the daily use of technologies, and also express an openness to greater interaction with these tools, valuing the "potential present in opportunities for continuing education, not only from the perspective of professional development, but also with more immediate objectives of improving performance in the classroom" (Gatti and Barreto, 2009, p. 221, free translation).

The obtained data demonstrate teachers' adherence to technological resources and devices, corroborating how much these resources have already become recurrent and familiar to the daily practice of teaching. The potential

Graph 3 – Use of computers and digital devices for continuing education.

of these resources is evident in the presented data. Nevertheless, the question that must be asked in order to advance the reflection concerns how to make use of this potential and of this familiarity for continuing education from a self-education perspective.

Hence, two elements enter the picture: on the one hand, that which literature in the field of teacher education has already established as a point of reference: conceiving continuing education as a continuum in teachers' professional development, with initial education as its starting point and advancing the profession practice *a posteriori*. Thus, this continuum is marked by both individual and collective professional learning. It is precisely this collective character of education that is pointed out as the second element and that has been emphasized in the literature as an inherent requirement for the improvement of professional activity (Silva and Machado, 2018; Gatti *et al.*, 2019).

It is in this second direction that the authors of the present study understand the need to pedagogize the use of technologies, in such a way that they can contribute with their potentiality to educational processes. If educators are already familiarized and making use of such devices to meet their daily needs for supporting teaching practice (92%), therefore, contributing to a self-educational process, with emphasis on the individual aspect, the question that is raised is thinking how to use proposals that also aggregate the work of collective interactions. This is one of the limitations of the present survey, which provokes the continuity of the research work.

One way to broaden this discussion, at this point, would be to resort to what researchers have pinpointed as a result in their works. Gabini and Diniz (2009), when developing an educational work with a group of chemistry teachers in the state of São Paulo, maximizing the use of technologies in continuing education, verified that technologies, when planned and intentionally used, end up aggregating and strengthening elements — both new ones and those that are already part of the conventional practices of educators, i.e., "the resources of remote education have become elements of connection between face-to-face

meetings, maintaining a link in the group and allowing discussions not to be restricted to these meetings that took place monthly" (Gabini and Diniz, 2009, p. 7369, free translation).

Another aspect highlighted by the researchers was the emergence of opportunities for participation, stimulated by the virtual format, for teachers who were commonly more limited due to the production of oral discourse. In addition, the research showed that "it was possible to establish a space for the exchange of experiences, for the enhancement of readings and studies, and for critical reflection on teaching practice in this face-to-face and virtual set" (Gabini and Diniz, 2009, p. 7369, free translation). Finally, they understand that the study enabled entering a universe of understandings about how teachers can be mobilized, through the use of technological resources, to maximize their educational and self-educational process.

> The present study, due to the addressed aspects, defends continuing education as a space for dialogue and sharing among teachers, collaborating so that they are able to critically analyze their practices and seek the most appropriate ways to work based on of this collective experience. (Gabini and Diniz, 2009, p. 7370, free translation)

Such verified elements, both in the research carried out on education professionals in a municipality in the metropolitan region of Porto Alegre and in the results obtained by Gabini and Diniz (2009), indicate the potential of technological resources to favor an educational and self-educational movement of teachers, constituting spaces where exchanges and sharing take place, by making spaces for interaction possible.

FINAL CONSIDERATIONS

In this study, the potential of continuing education as a self-educational and collaborative process mediated by technological resources was highlighted for analysis and reflection. Based on the consulted literature, it was assumed that these resources have a potential, which can be consolidated into useful elements in teacher training, stimulating the work of continuing education, both regarding the individual aspects of professional development and that which values the knowledge generated by social interactions and sharing between peers.

The proposed study aimed to identify the teaching profile, focusing on the use of digital devices for execution of functions and improvement of pedagogical practices. The analyzed data demonstrated the familiarity of most of the teachers with technological resources, which are widely used in everyday life. However, the challenge remains when it comes to enhancing the use of these resources for educational and self-educational purposes, broadening the possibilities of interaction and professional development for teachers.

Thinking about education and educational processes based on current contexts is urgent and necessary. Establishing strategies that favor this dynamic

consists in one of the possibilities to qualify education through concrete actions, which enable the educational and self-educational movement to be intrinsically constituted with teaching. This study confirms, through the educators' familiarity (92%), the creative and mediating potential of technological resources; nevertheless, the creation of educational and self-educational devices constitutes a material, institutional, and symbolic challenge, providing, particularly to education managers, a central role in this process, which involves the definition of an education policy, planning, and clear theoretical-pedagogical assumptions in the implementation of educational initiatives.

One of the challenges pointed out by the production in the area concerns the overcoming of individualism in teaching practice and in the professional career itself. Technological resources and virtual interactive spaces have the potential to mobilize the rupture of teachers' professional loneliness, which impels us to invest in the continuity of studies, exercising the creation of operational modes on how to take advantage of what is already part of the daily life of teaching.

If until recently technological resources were seen as another alternative to be used, currently they are deemed as one of the only possibilities to carry out the pedagogical and educational processes of teachers in the context of a pandemic. In this sense, the need to discuss pedagogical practices in schools, mediated by technological resources, has evidenced an urgency to be faced, considering that the pedagogical work developed through remote education, despite being linked to technological infrastructure and availability to those in need, is already a reality inseparable from the school environment.

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