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TEACHER TRAINING FOR DIGITAL LITERACY IN THE STATE EDUCATION NETWORK OF AMAZONAS

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ABSTRACT

This article aims to discuss the data from a study on the continuing education of teachers for digital literacy in the state education network of Amazonas, offered by the Department of Education and School Sports (SEDUC/AM) through the Padre José Anchieta Professional Training Center (CEPAN), in the period from 2018 to 2020. To this end, qualitative research was used as a methodology, based on Creswel (2007). The evaluation of training was based on the Kirkpatrick (2006) model, which consists of four levels: reaction, learning, behavior and outcomes. In this research, the first level was considered "reaction", verifying the criteria of coherence, compliance, efficacy and efficiency. The results showed that the offer of continuing education to teachers contributed to their teaching practice, but there are still gaps in the training process for teachers to use technologies within a critical understanding considering their social, ethical and cognitive implications, in addition to developing skills to interpret, produce and evaluate digital information. It is expected that the research will bring significant contributions to the teaching area, focusing on an innovative educational practice aligned with contemporary demands. Therefore, as a Training Center, CEPAN needs to consider the points of attention and the possibilities of improvement for planning future training.

Keywords: Continuing Education. Digital Literacy. Teaching Practice.

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INTRODUCTION

The Padre José Anchieta Professional Training Center (CEPAN) is a department of the Department of Education and School Sports (SEDUC-AM), created in 1976, through Decree No. 3,633/CEE with the objective of offering continuing education to teaching and non-teaching professionals in the state and municipal education networks of the state of Amazonas. CEPAN's training actions are supported by the State Council of Education (CEE-AM) and in its initial training it served lay teachers in the rural area of the state, in order to complement their pedagogical training. This occurred because for a long time there were no teachers with training in teaching or pedagogy. In the absence of qualified professionals, the most distant communities had teachers with incomplete training or trained in other areas, in order to serve the students of these locations.

After going through moments of restructuring over the years, CEPAN is still today the SEDUC-AM department responsible for offering training and serves professionals from the capital and interior of the state with face-to-face and distance training actions in the various teaching modalities and areas of knowledge.

Our previous survey showed that, specifically, in the period from 2018 to 2023, 179 training actions were made available in the form of workshops, short courses, seminars, lectures, etc. As for actions aimed at the use of technologies in teaching practice, only 31 activities were offered, either in the face-to-face or distance modality. It is interesting to think that in this period there was a pandemic, which could justify the reduced number of training actions in this area, however, it is important to consider the previous and subsequent years, signaling a number of training courses below ideal, taking into account the breadth of the network.

In 2018, SEDUC-AM implemented the Qualify Program (Amazonas, 2018) carried out in partnership with the University of the State of Amazonas (UEA), offering a postgraduate course at the specialization level for Digital Literacy. This program aimed to train specialist professionals capable of reflecting on the cultural, political and behavioral changes brought about by the dissemination of the use of technologies and digital platforms and served about 2,800 teachers and other education professionals from 60 municipalities, in addition to the capital.

This article aims to discuss the data of the training in Digital Literacy offered by the Qualify Program in order to observe the points of attention and the possibilities of improvements for planning future training. The results of the training were evaluated using

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a *Google* form sent through a *link* to 19 students as an instrument. The evaluation aimed to verify the perception of the students regarding the development of the training activity and the achievement of the proposed objectives, contributing to the improvement of the praxis of teachers in the teaching units. Within this perspective, it was sought to ascertain whether the specialization course Digital Literacy enabled means capable of contributing to the innovation of pedagogical practice and the development of actions to improve the results of schools.

The data from the analysis bring important information and are tools that can be used to guide the planning and implementation of actions, as well as the improvement of later versions of the training. Such data will compose the ongoing doctoral research, presenting the first impressions about continuing education for digital literacy in the perception of course teachers.

It is known that the use of technological resources by teachers is a reality, however, it is necessary to think about skills that collaborate to enhance literacy pedagogically, involving the critical understanding of the social, ethical and cognitive implications of technology, as well as the development of skills to interpret, produce and evaluate digital information, in addition to discussing privacy issues, security and ethics in digital environments.

Digital literacy has advanced with rapid technological transformations, through the popularization of new resources, the use of social networks, network-based platforms and the vast supply of *online* information. Since digital literacy was conceived in the 1990s, it has grown rapidly and has come to encompass a wide range of skills that are used in the modern digital environment. Literacy is no longer a simple technical skill and has become fundamental for an active, critical and participatory citizenship. Therefore, these new competencies and skills cannot be ignored by the school.

In the field of education, digital literacy has been more widely used with the adoption of policies that aim to integrate digital technology into teaching practices. An example is the National Common Curriculum Base (BNCC), established in 2017, which signals the need to develop students' digital skills, reflecting the urgency of forming citizens capable of deep, meaningful, and participatory engagement in the digital world. Therefore, it is clear how essential it is to implement public policies to strengthen the continuing education of teachers in this area, as well as to improve the quality of the training offered.

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CONTINUING EDUCATION OF TEACHERS: REFLECTION, INNOVATION AND DEVELOPMENT

PROFESSIONAL DEVELOPMENT

Continuing teacher training is essential to ensure the quality of education. In an ever-changing world, where new technologies and pedagogical methodologies continuously emerge, it is important that teachers are always up to date and prepared to face contemporary challenges in the classroom. Continuing education is not just an extension of initial training, it is a dynamic and reflective process that accompanies educators throughout their career.

Imbernón (2010) argues that teacher training should be seen as a continuous process, adaptable to changes in educational, technological and social needs. For him, initial training, which culminates in obtaining a diploma, is just the beginning of a teacher's educational journey. True professional learning happens in the day-to-day of teaching practice, when teachers have the opportunity to reflect on their experiences, learn from their mistakes and successes, and adapt their pedagogical strategies to the needs of students.

A central point in Imbernón's (2010) ideas is critical reflection on teaching practice, the argument that teachers should be encouraged to continuously analyze and reflect on their actions, always seeking to improve and innovate. This process of reflection should not be solitary, on the contrary, it should be nourished by collaboration and teamwork. The exchange of experiences and collective learning are fundamental for the professional qualification of teachers, allowing them to benefit from the knowledge and practices of their colleagues.

These ideas of Imbernón (2010) reflect a holistic view of training, seeking not only the technical improvement of teachers, but also their development as reflective and autonomous professionals, capable of responding effectively and creatively to the challenges of contemporary education.

Imbernón (2010, p. 103-104) states that

> Training should propose a process that enables teachers to learn how to learn, but also to learn to unlearn with communication, self-analysis and self-regulation, through knowledge, skills and attitudes, in order to develop restless and innovative professionals who learn from successes and mistakes. To achieve this, it is essential to develop intellectual instruments that facilitate reflective capacities about teaching practice itself and whose main goal is to learn to interpret, understand and reflect on teaching and social reality in a community way.

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The idea of "learning to learn" highlights the importance of teachers being autonomous in their professional development, continually seeking new knowledge and skills. At the same time, "learning to unlearn" suggests the need for a critical and reflective posture, which allows the identification of practices that need to be reviewed or abandoned to make way for more effective and up-to-date approaches.

Training needs to give meaning to teaching practice. Training actions need to consider the transformations that society has been going through and the new context of school organization, especially after the pandemic scenario. It should be considered that the educational system is not dissociated from reality, and it is no longer appropriate to merely transmit content, even because students already access this content wherever they are (Oliveira and Souza, 2018). In addition, it is necessary to establish a new meaning to interpersonal relationships at school.

According to Imbernón (2010, p. 25):

> Perhaps we should introduce ourselves to the theory and practice of education from new perspectives: the relationships between teachers, emotions and attitudes, teacher complexity, changes in power relations in teacher centers, self-training, communication, emotions, training in the community, and separate ourselves from the disciplinary training that is so common in teaching plans and practices.

The new perspectives of education, mentioned by the author, point to a more careful and more humanized look, breaking the rigidity of 'disciplinary training' to the detriment of prioritizing emotions and attitudes. The author proposes a transformative view of teacher training, which goes beyond the traditional focus on curricular components and considers a broader set of factors that influence educational practice. This approach can contribute to the development of teachers who are more prepared, resilient, and able to meet the diverse needs of students and today's society.

Corroborating the ideas of Imbernón (2010), Nóvoa (1997; 2017) reinforces the view of education as a stimulus to the critical-reflective perspective, stating that it does not occur only through courses, knowledge or techniques. More important than that is the investment in the person and their experiences, reinforcing personal identity.

According to Nóvoa (1997, p. 16):

> Training can stimulate the professional development of teachers, within the framework of a contextualized autonomy of the teaching profession. It is important to value training paradigms that promote the preparation of reflective teachers, who take responsibility for their own professional development and who participate as protagonists in the implementation of educational policies.

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It is important to note that, when talking about training, the author warns about the importance of developing 'contextualized autonomy', highlighting that the preparation of reflective teachers also requires teachers to play a leading role, so that they also feel responsible for their own professional development. He also points out that training is a 'mechanism of change' and that this change happens in the training path.

According to Nóvoa (1997, p. 28):

> Teacher training should be conceived as one of the components of change, in close connection with other sectors and areas of intervention, and not as a kind of precondition for change. Training is not done before the change, it is done during, it is produced in this effort of innovation and search for the best paths for the transformation of the school.

Thus, it can be argued that continuing education is essential for the development of teaching knowledge, as well as for the construction of the professional profile that must be consolidated throughout the career. The training activities offered should promote moments of reflection on the role of the teacher in the current context and consider the new ways of teaching and learning.

The integration of Digital Information and Communication Technologies (DICTs) is another crucial aspect in the continuing education of teachers, pointed out by Imbernón (2010). DICTs offer vast opportunities to access educational resources, enabling distance learning and facilitating communication and collaboration among educators. In this sense, continuing education should include the development of digital skills, preparing teachers to use these tools effectively in their pedagogical practices.

On the other hand, Nóvoa (1997; 2017) draws attention to the need for continuing education to be connected with educational change. He argues that training should be an active component of the process of transforming schools, occurring in an integrated way with other areas and sectors of intervention. It is not about preparing teachers for future change, but rather about involving them independently in the process of innovation and adaptation to new educational realities.

Nóvoa (1997; 2017) and Imbernón (2010) state that teacher education needs approaches that encourage the preparation of reflective teachers, who take responsibility for their own professional growth and who play a central role in the implementation of educational policies. This implies that continuing education plays a fundamental role in the development of teachers' knowledge. It should also encompass individual skills and attitudes of each teacher and the team as a whole. The exchange of experiences with other

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educators in continuing education programs also enriches the repertoire of teachers' practices, promoting collaboration and the collective construction of knowledge.

Both authors also agree on the need for public policies that support the continuing education of teachers. Imbernón (2010) talks about the importance of resources, time and recognition for these strategies, while Nóvoa (1997; 2017) emphasizes that such policies are vital for the sustainability and effectiveness of continuing education. Without adequate support, teachers may find it difficult to participate in training programs and implement new practices in their classrooms.

In short, the continuing education of teachers is a crucial element for the construction of quality education. The ideas of Imbernón (2010) and Nóvoa (1997; 2017) offer an integrated view of this process, highlighting the importance of critical reflection, professional autonomy, collaboration among educators, and support for public policies. By taking a holistic and continuous approach to teacher training, it can be ensured that teachers are always prepared to deliver relevant, innovative, and quality education to all students.

The current educational legislation signals actions and goals that guarantee the initial and continuing training of teachers. The Federal Constitution (Brasil, 1988), by ensuring the right of all citizens to education, addresses the need for the training of professionals, observing the personal, political, social, historical and pedagogical dimensions, to guarantee quality education to all Brazilians. In Article 205, the Constitution emphasizes that education must be promoted and encouraged with the collaboration of society, aiming at the full development of the person, his preparation for the exercise of citizenship and his qualification for work.

Goal 16 of the National Education Plan – PNE (Brasil, 2014) highlights the guarantee of continuing education for basic education professionals in their area of activity, 'considering the needs, demands and contextualizations of the education systems'. Strategy 5.6 of the PNE deals with the promotion and stimulation of initial and continuing education with the knowledge of new educational technologies and innovative pedagogical practices.

Likewise, the BNCC/2017 emphasizes that the school and teachers need to appropriate new methodologies and strategies to meet the new context of education systems and the new skills necessary for the exercise of citizenship and student protagonism.

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In addition, the Teaching Digital Knowledge Reference of the Ministry of Education and Culture (MEC) presents three dimensions that need to be developed in teacher training and that collaborate for a pedagogical intentionality regarding the use of digital technologies in teaching practice. They are: Teaching and Learning using digital technologies; Digital Citizenship and Professional Development.

The Professional Development dimension, according to the Framework, should involve the understanding and application of principles that encourage the strategic use of resources, digital technologies and virtual learning environments to promote continuous training and pedagogical innovation. The use of digital tools also facilitates organization and pedagogical planning, according to the document, contributing to a more collaborative educational practice.

Among the knowledge signaled in the Professional Development dimension of the Referential, there is continuing education, highlighting the identification of 'strategies, resources and digital technologies' in order to contribute to professional qualification and pedagogical innovation. In practice, according to the document, it is necessary to use digital resources and sources in the training process, with a view to contributing to professional qualification.

Thus, it is important to discuss training in meeting the needs of professional growth and the development of teachers' knowledge, as well as the recognition of teachers as an agent of social transformation. The training activities offered should promote moments of reflection on the role of the teacher in the current context and observe the new ways of teaching and learning, as well as introduce new methodologies and resources.

Thus, it is necessary to rethink not only the consolidation of a greater offer of training courses, but also the realization of a diagnosis of the actions already carried out. In addition, to identify what knowledge is being developed, what are the possibilities for improvements in the planning and evaluation of these actions, in order to ensure better professional qualification and consequently better results in student learning.

RESEARCH METHODOLOGY: QUALITATIVE APPROACH AND MULTI-EVALUATION TRAINING FOR DIGITAL LITERACY

The study was conducted under a qualitative approach, based on the perspective presented by Creswel (2007). This author emphasizes that, in the qualitative sphere, the natural environment constitutes a direct source of data, and the researcher acts as the

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main instrument of investigation. The focus of this approach is to interpret the situation studied from the perspective of the participants themselves, prioritizing the process to the detriment of the result.

The evaluation was a central element in the development of the research, initially organized in a diagnostic stage. For data collection, a Google form was used as instruments in order to identify the perceptions of course teachers about training for digital literacy. The Form was composed of objective and open questions. This instrument was structured in seven items: i. Initial Expectations; ii. Course Structure; iii. Content developed; iv. Methods used; v. Evaluation Instruments; vi. Skills and Competencies developed and vii. Teaching practice.

The open questions addressed the most relevant topics for professional performance, as well as suggestions for future training. The objective answers were organized based on a three-point scale: "YES", "IN PART" and "NO".

The percentage of participants who responded to the evaluation was 63%. The analysis of the data after the previously defined indicators was guided by Kirkpatrick's (2006) "Multilevel Approach" evaluation model, specifically Level 1 (Reactions). This level evaluates the perception of the participants, highlighting what they think and feel about the training.

The following criteria proposed by Kirkpatrick (2010) were considered for analysis:

- Coherence: verification of the relationship between the components of the training process. This evaluates the relationship between the different components of training, seeking to identify the harmony between its objectives, contents, methodologies and evaluation practices. A consistent training is one in which all the elements complement each other, creating a logical and integrated flow that facilitates the learning of the participants. The analysis of coherence verifies, for example, whether the training activities are aligned with the needs of the target audience and the proposed objectives.
- Compliance: assessment of compliance with established standards and requirements. The conformity classification verifies that the training was conducted in alignment with the requirements, procedures and standards previously established in the planning. It is about ascertaining how much the training process follows faithfully what was proposed, ensuring the execution according to the defined standards.

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- Effectiveness: measurement of alignment between results and objectives. Effectiveness focuses on the evaluation of results in relation to the objectives previously defined for training. This objective verifies the extent to which participants achieve the expected results, such as the development of new skills, the expansion of knowledge or changes in pedagogical practices. Effectiveness is directly related to the impact of the training on the target audience, evidencing how much the learning objectives were achieved. For example, in digital literacy training, effectiveness could be measured by the application of the knowledge acquired in the school context, the increase in teachers' confidence in the use of digital technologies, and their ability to integrate technological tools into teaching.
- Efficiency: analysis of the justification of the results in relation to the resources mobilized. Efficiency offers *fundamental insights* to improve the management of future training. He points out possible adjustments in time planning and in the organization of activities, ensuring that the initiatives are viable and bring concrete results.

These steps were essential to validate the effectiveness of the training. The evaluation process proved to be an indispensable tool to identify weaknesses and potentialities, allowing the improvement of pedagogical and methodological practices. As a continuity, the results will compose the doctoral research, aiming at the continuous improvement of the quality of training and the strengthening of teaching practice in the context of digital literacy.

EVALUATION OF CONTINUING EDUCATION IN DIGITAL LITERACY: RESUL FACTS AND PERSPECTIVES

The results of this study reflect the perception of course teachers about continuing education focused on digital literacy, promoted by SEDUC/AM. Through graphs and qualitative analyses, aspects such as the modality of offer and workload, contents covered, methods used, materials available, development of skills and competencies, applicability of the course, evaluation instruments, among others, were evaluated. In addition, the answers to the open questions provided valuable *insights* into the demands and suggestions of the participants, allowing the identification of advances, weaknesses and possibilities for

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improvement. This analysis aims to understand the impact of training on teaching practice and provide subsidies for the improvement of future training actions.

The observed aspects will be presented below considering the criteria of the evaluation model "Multilevel Approach" by Kirkpatrick (2006), with regard to Level 1 (Reactions). They are: Coherence, Conformity, Effectiveness and Efficiency, allowing an analysis of the effectiveness and impact of training on teaching practice:

The criterion of Coherence, according to Kirkpatrick (2006), refers to the logical and aligned relationship between the objectives, contents, methodologies and evaluative practices of an education. For an evaluation based on this criterion, it is considered whether the methods used are appropriate for the development of the desired competencies, whether the teaching materials are understandable and whether there is a connection between the different modules of the course. In addition, it is analyzed whether the training meets the expectations of the participants and whether its activities are in line with the needs of the target audience.

It is observed that the criterion Coherence of the training was widely recognized by the participants, reflected in the acceptance of the face-to-face modality, which obtained 83.3% approval. This result indicates that the structure of the training met the needs of the teachers, valuing interaction and the exchange of experiences. Likewise, the language of the material was well evaluated, being considered clear and accessible by 83.3% of the students. In addition, the contents covered were considered updated and relevant by the participants, demonstrating alignment between the proposed themes and the educational reality.

Still regarding Coherence, an aspect that deserves attention is the evaluation of the methods used in the course. According to the data collected, most respondents considered the methods appropriate for the development of skills and competencies in digital literacy. This result demonstrates that the training maintained coherence with its pedagogical proposals, ensuring that teachers had access to strategies compatible with the objectives of the course.

However, 16.7% indicated that the methods were only partially adequate, suggesting that some practices could be improved to ensure greater effectiveness and comprehensiveness. This need for adjustments points to the importance of a continuous review of the approaches used, ensuring that training is always aligned with the demands of the participants and the development of educational practices. In addition, 25% of the

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students considered that the integration between disciplines occurred only partially, pointing to a possible disconnection between the modules of the training.

Despite a mostly positive perception, the presence of a quarter of the respondents who considered the articulation between the disciplines only partial suggests that improvements can be made to ensure greater integration and fluidity between the contents. This information can be valuable for future planning, encouraging the review of evaluation practices and the expansion of the dialogue between the disciplines developed.

Regarding the Coherence criterion, it is observed that the contents addressed were considered updated and relevant by 91.7% of the participants, demonstrating alignment between the proposed themes and the educational reality. Only 8.3% indicated that this has been partially achieved, suggesting that while the upgrade is well underway, there may be minor adjustments to be made in some specific aspects.

As for the Compliance criterion, according to Kirkpatrick (2006), it evaluates whether the training was conducted in accordance with the previously established standards, norms and requirements. For this evaluation, it is considered whether the course followed the proposed planning, including workload, curricular structure and methodologies foreseen. It is also analyzed whether the contents and materials used are aligned with the institutional guidelines and whether the evaluation instruments applied correspond to the objectives defined for the training.

In the Compliance criterion, it is considered that the training largely followed the standards established in its initial planning. Compliance was evidenced by the approval of the evaluation instruments, which were considered adequate by 91.7% of the participants, in addition to being aligned with the proposed objectives. Only 8.3% of the participants answered "In part", suggesting that, for a minority, the instruments were not fully effective or would need adjustments to better meet the objectives. These data indicate that a large part of the participants recognized the adequacy of the evaluation strategies adopted, although there is room for small adjustments that can meet more specific expectations.

Likewise, the criterion of Conformity appears in the reading indications that were positively evaluated by the majority of the students, demonstrating the relevance of the materials that were adequate and aligned with the proposed objectives. The percentage of 8.3% of "In part" answers suggests that, for a small group, some readings may not have completely met their expectations or needs.

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Still in the Compliance criterion, the course workload received a less unanimous evaluation, with 41.7% of the participants indicating that the time could have been better distributed or expanded. In other words, almost half of the students felt that, to some extent, the extension of time would be important for deepening the contents. This suggests that, regarding the Compliance criterion, although the training has followed the previously established guidelines, some adaptations in the planning may be necessary to ensure a more complete use of the time dedicated to the course.

The Effectiveness criterion measures the degree to which the training achieved its objectives and generated an impact on the participants. For this evaluation, it is considered whether the professionals developed the expected competencies, whether the contents were understood and applied in practice, and whether there were positive changes in the participants' performance. Furthermore, it is analyzed whether the knowledge acquired contributed to improvements in the work environment and in the quality of pedagogical practices.

Regarding the Efficacy criterion, the training was widely recognized by the participants. The development of skills and competencies related to digital literacy was positively evaluated by 91.7% of the students, indicating that the course was effective in qualifying teachers for the use of technologies in their teaching practice, although a minority signaled that the development of these competencies was only partial or that the course could have offered greater depth.

Also with regard to Effectiveness, a considerable percentage of the participants stated that they acquired new knowledge on the subject of literacy with regard to the development of skills to interpret, produce and evaluate digital information. However, 8.3% of the participants opted for the answer "In part", that is, they considered that the course addressed these topics in a partial way, indicating that the course was not effective in this regard.

The data indicate that the course was largely successful in addressing issues related to digital literacy and providing the development of basic technological skills. With a satisfaction rate of over 90% on both questions, the overall perception is quite positive. However, the percentage of "In part" answers (8.3%) suggests that there is room for improvement, especially with regard to deepening discussions and expanding more robust practices for the development of technological skills.

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The training was able to achieve Effectiveness in terms of learning objectives. The answers signaled that the course fulfilled the objective, promoting significant debates on the relevance of digital literacy in the educational context. However, the applicability of the acquired knowledge presented a challenge. Although most participants stated that they were able to apply the contents in their teaching practices, 25% indicated that this application occurred only partially. This data suggests that, although training is effective in transmitting knowledge, practical implementation still faces barriers, which may be related to factors such as inadequate infrastructure or closer monitoring after training.

These results indicate the need to include additional strategies to facilitate the implementation of knowledge in daily professional life, such as practical examples, simulations, or continuous technical and pedagogical support. This could help turn learning into concrete actions more effectively.

The criterion Efficiency refers to the relationship between the resources used in training and the results achieved. For this evaluation, it is considered whether the time, materials, methods and infrastructure were used optimally to achieve the proposed objectives. It also analyzes whether the participants were able to apply the knowledge acquired in a practical way and whether there was a good balance between cost and benefit in the execution of the training.

As for the criterion Efficiency, the training had a positive evaluation in most aspects, with high approval rates for the contents, materials and activities developed. It was also observed a high approval rate regarding the language and the coherence of the contents. However, although it met the criterion of Efficiency in these aspects, it is worth considering the 16.7% who indicated "In part" suggesting opportunities for improvement. Therefore, for greater efficiency in future training, it is important to reevaluate the teaching materials and seek more detailed feedback on the points that generated doubts, as well as to verify that there is sufficient clarity in the instructions and that the objectives are explained in a more accessible way.

Regarding the efficiency of the activities developed, it was observed that for the majority, the guidelines and the execution of the activities were clear and well structured. However, a smaller percentage of respondents indicated that some activities may have presented a certain degree of difficulty or required additional explanations. This distribution of responses suggests that, although planning has achieved predominant clarity, it is

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important to review specific points to ensure that all activities are fully understandable to different participant profiles in order to achieve efficiency.

It is important to consider the improvement of content and activities for greater alignment with current needs, as well as the possibility of reviewing the methods used, seeking to integrate more efficient and innovative strategies for digital literacy. It is valid to listen to the participants to identify specific points that can be improved.

Another important aspect regarding Efficiency is related to the deepening and connection between the training modules, as well as the issue of the partial applicability of knowledge that reinforces the need for post-training support to ensure that teachers are able to effectively use the skills acquired in their pedagogical practices.

In the open questions, in relation to the context of the application of the knowledge acquired in the classroom training, it was observed the diversity of contexts mentioned (classroom, art projects, use of social networks) indicating that a part of the teachers was able to adapt the knowledge to the specific needs of their disciplines and classes, highlighting the use of active methodologies and technological tools, even in environments with infrastructure limitations.

The valorization of themes related to active methodologies, applications, and the Amazonian context reflects a demand for practical and contextualized approaches and the inclusion of content that connects simple technologies (cell phones, apps) with innovative pedagogical practices had a positive impact.

Among the difficulties presented by the course teachers, there is the structural precariousness of the schools that represent a significant barrier to the implementation of the knowledge acquired, evidencing the need for public policies that invest in technology and connectivity, as well as the lack of support from school management, a recurring theme in the responses, reinforcing the need to align managers with the training offered to teachers.

Positive *feedback* on various aspects of the course demonstrates the impact of training, but it also signals a continued demand for improvement and support. The absence of continuity in future training was pointed out as a failure, highlighting the need for permanent programs for teacher development.

As suggestions, the teachers signaled the need to improve the school infrastructure; availability of quality internet and basic equipment (computers, cell phones); and the creation of adequate spaces (computer labs) for technological integration in classes.

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As for continuing education, they suggested offering the second phase of training, including deepening in active technologies and methodologies; the expansion to master's programs, as requested by the participants at the time of the course; alignment with school management and also the inclusion of managers in training so that they support teachers and enable the use of the tools acquired.

The need for regional and technological contextualization was also mentioned, especially for the Amazonian reality, in addition to the development of pedagogical materials that connect traditional and technological practices.

To ensure a support channel, post-training follow-up and support was suggested so that teachers can share difficulties and receive guidance after training. The findings of the research confirm the relevance of training for teaching practice, but also highlight structural and organizational challenges that should be addressed in future programs.

FINAL CONSIDERATIONS

The research shows that the continuing education for digital literacy offered by SEDUC-AM through CEPAN was an important initiative that contributed to the development of skills and competencies for course teachers. It can be observed from the teachers' answers some fundamental aspects that signal positive points in the planning, execution and evaluation of training, as well as points of attention that suggest the need for improvements. It was evident that training needs to enable greater depth, especially when it comes to the development of skills to interpret, produce and evaluate digital information. It was also observed the need to expand the workload and care in the articulation between the disciplines taught.

A fundamental point for the training is its applicability, however, it was found that a considerable percentage of students were unable to apply the knowledge acquired in the course in their classes, which suggests the need to offer new strategies to meet this aspect. In addition, it was clear the interest of the participants in more formative moments, showing the scarcity of training that addresses digital literacy.

The data collected are important for conducting a more robust study, considering the perceptions of teachers and the contribution to the development of a product that meets their expectations and pedagogical needs.

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REFERENCES

1. Amazonas. (n.d.). Programa Qualificar. Secretaria de Educação e Desporto Escolar do Amazonas. Available at: https://antigo.seduc.am.gov.br/em-parceria-com-ufam-e-uea-seduc-lanca-programa-qualificar-disponibilizando-cursos-de-especializacao-aos-educadores-da-rede-publica-de-ensino-do-amazonas/. Accessed on January 30, 2025.

2. Amazonas. (1976, November 3). Decreto nº 3.633 de 03/11/76 – CEE. Discorre sobre a criação do CEPAN. Available at: https://antigo.seduc.am.gov.br/institucional/estrutura/cepan/#:~:text=Desta%20forma%2C%20aponta%20para%20a,Adultos%2C%20Ensino%20Fundamental%20e%20M%C3%A9dio.&text=A%20Ger%C3%AAncia%20de%20Forma%C3%A7%C3%A3o%20Profissional,estabelecem%20em%20cada%20realidade%20escolar. Accessed on January 30, 2025.

3. Brasil. (1988). Constituição da República Federativa do Brasil: Texto constitucional promulgado em 5 de outubro de 1988, com as alterações determinadas pelas Emendas Constitucionais de Revisão nos 1 a 6/94, pelas Emendas Constitucionais nos 1/92 a 91/2016 e pelo Decreto Legislativo no 186/2008. Brasília: Senado Federal, Coordenação de Edições Técnicas.

4. Brasil. (2014). Plano Nacional de Educação (PNE). Plano Nacional de Educação 2014-2024 [recurso eletrônico]: Lei nº 13.005, de 25 de junho de 2014, que aprova o Plano Nacional de Educação (PNE) e dá outras providências. Brasília: Câmara dos Deputados, Edições Câmara.

5. Brasil. (2017). Base Nacional Comum Curricular. Brasília: MEC.

6. Brasil. (2024). Referencial de Saberes Digitais Docentes. Ministério da Educação, Secretaria de Educação Básica. Brasília.

7. Creswell, J. W. (2007). Projeto de pesquisa: Método qualitativo, quantitativo e misto (2nd ed.). Porto Alegre: Artmed.

8. Creswell, J. W. (2014). Investigação qualitativa e projeto de pesquisa [recurso eletrônico]: Escolhendo entre cinco abordagens (S. M. da Rosa, Trans.; D. da Silva, Rev.; 3rd ed.). Porto Alegre: Penso.

9. Imbernón, F. (2010). Formação continuada de professores (J. dos S. Padilha, Trans.). Porto Alegre: Artmed.

10. Kirkpatrick, D. L. (2010). Como implementar os quatro níveis de avaliação de treinamento em equipes: Um guia prático. Rio de Janeiro: Ed. SENAC RIO.

11. Nóvoa, A. (1997). Os professores e sua formação. In A. Nóvoa (Org.), Os professores e sua formação (pp. 13–33). Lisboa: Dom Quixote.

12. Nóvoa, A. (2017). Firmar a posição como professor, afirmar a profissão docente. Cadernos de Pesquisa, 47(166), 1106–1133.

13. Oliveira, C. de S., & Souza, A. C. R. de. (2018). O letramento digital na formação inicial e continuada dos professores. Revista de Educação, Ciência e Tecnologia do Ifam, 12(2).