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Production of instructional materials for distance education: The case of a federal educational institution

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Abstract: This article analyzes the process of developing instructional materials for Distance Education (DE) at a federal educational institution, addressing its theoretical foundations, characteristics, and production workflow. It describes the stages of the process, the professionals involved, and the use of different media. This research is qualitative and descriptive, based on documentary analysis and on-site observation, highlighting the importance of a multidisciplinary team in the development of instructional materials for Distance Education.

Keywords: Distance Education; instructional materials for Distance Education; multidisciplinary team.

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Produção de material didático para a educação a distância: o caso de uma instituição federal de ensino

Resumo: Este artigo analisa o processo de produção de materiais didáticos (MD) para a Educação a Distância (EaD) em uma instituição federal de ensino, abordando seus fundamentos teóricos, características e fluxo de produção. Descreve etapas, profissionais envolvidos e o uso de mídias. Esta pesquisa é qualitativa, descritiva, baseada em análise documental e observação *in loco*, que evidencia a relevância da equipe multidisciplinar na autoria de MD para a EaD.

Palavras-chave: Educação a Distância; materiais didáticos; equipe multidisciplinar.

Producción de materiales didácticos para la educación a distancia: el caso de una institución educativa federal

Resumen: Este artículo analiza el proceso de elaboración de materiales didácticos (MD) para la Educación a Distancia (EaD) en una institución federal de educación. Aborda sus fundamentos teóricos, características y flujo de producción, describiendo las etapas, los profesionales involucrados y el uso de diferentes medios. Se trata de una investigación cualitativa y descriptiva, basada en el análisis documental y la observación in situ, que destaca la importancia del equipo multidisciplinario en la elaboración de materiales didácticos para la EaD.

Palabras clave: Educación a Distancia; Materiales Didácticos; Equipo Multidisciplinario.

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1 INTRODUCTION

Distance Education (DE) has consolidated itself as an important educational modality for expanding access to higher education, especially in public institutions such as Federal Institutes of Education, Science, and Technology (IFs). DE is characterized by the use of information and communication media and technologies, enabling pedagogical activities to take place across different times and spaces (Brasil, 2025a). In this context, instructional materials (IM) play an essential role, as they are considered "one of the main means of knowledge socialization and of guiding the learning process [in DE]" (Araújo; Zavam; Hissa, 2014, p. 23).

Instructional material, in general, "[...] can be defined as any data and information [...] converted into diverse media, such as text, audio, video, or image, which can be accessed through printed or digital supports [...]" (Guedes; Rocha; Joye, 2014, p. 3), being produced to aid the development of the teaching and learning process. Regardless of the medium, printed or digital, a hypertextual logic must guide instructional material, that is, "[...] a logic that is not necessarily sequential, to promote the non-linearity of the addressed materials and foster the learning path to be traveled" (Araújo; Zavam; Hissa, 2014, p. 24).

In DE, IMs, in addition to transmitting information, must promote dialogue, guide, and engage students across different activities, reflecting the intentions of pedagogical planning (Brasil, 2025a; Costa, 2024; Santos; Araújo, 2024). Furthermore, they must use diverse technologies and employ effective work methods to enable communication, exchange, and cooperation among individuals, thereby fostering reflective thinking and facilitating decision-making and problem-solving (Guedes; Rocha; Joye, 2014).

In this regard, this article presents the characteristics and the production process of instructional materials for DE at a federal educational institution, describing the main stages, the members of the multidisciplinary team, and the production workflow. This is a qualitative, descriptive study based on document analysis and on-site observation. The objective of this study is to analyze the development process of these materials, highlighting the methodological phases and the theoretical-methodological foundations that guide this practice, based on real situations observed within the institution.

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2 METHODOLOGY

This study is characterized by presenting a qualitative and descriptive approach to the characteristics and stages, the actors involved, and the production workflow of instructional materials for DE. The research was developed based on document analysis and observation of the routine production process of IMs at a federal educational institution.

The investigation is grounded in Contextualized Instructional/Educational Design (CID), as proposed by Filatro (2004, 2008, 2018) and Filatro and Piconez (2004), which is structured into five interrelated phases, namely: contextual analysis, design, development, implementation, and evaluation. These phases constitute the categories of analysis used to investigate the institution's IM production workflow, allowing for the comparison between the organization planned by the theoretical model and its actual operationalization in the locus.

Data collection took place through the analysis of institutional documents, internal production flowcharts, and pedagogical guidelines adopted by the federal educational institution, as well as through direct observation of the process, considering all stages of developing printed and digital materials for the Open University of Brazil (UAB) courses within the scope of the federal educational institution. Data analysis followed the Content Analysis stages defined by Bardin (2016), namely: pre-analysis, material exploration, treatment of results, inference, and interpretation, using the CID phases as a reference to guide data interpretation. The triangulation among theoretical references, documentary records, and on-site observations enabled a critical and reflective reading of the paths adopted in the construction of instructional materials at the federal educational institution, highlighting consolidated practices in the production process, structural elements of pedagogical design, operational gaps in the model, and challenges faced within the context of institutional DE.

3 INSTRUCTIONAL MATERIALS FOR DE AT THE FEDERAL EDUCATIONAL INSTITUTION

Instructional materials for Distance Education, regardless of whether they are printed/physical or virtual, are considered important interlocutors in the educational process. This is because, in DE, contrary to what occurs in face-to-face education – in which interactions, communications, and practices take place at the same time and space – a large part of the learning process develops in a

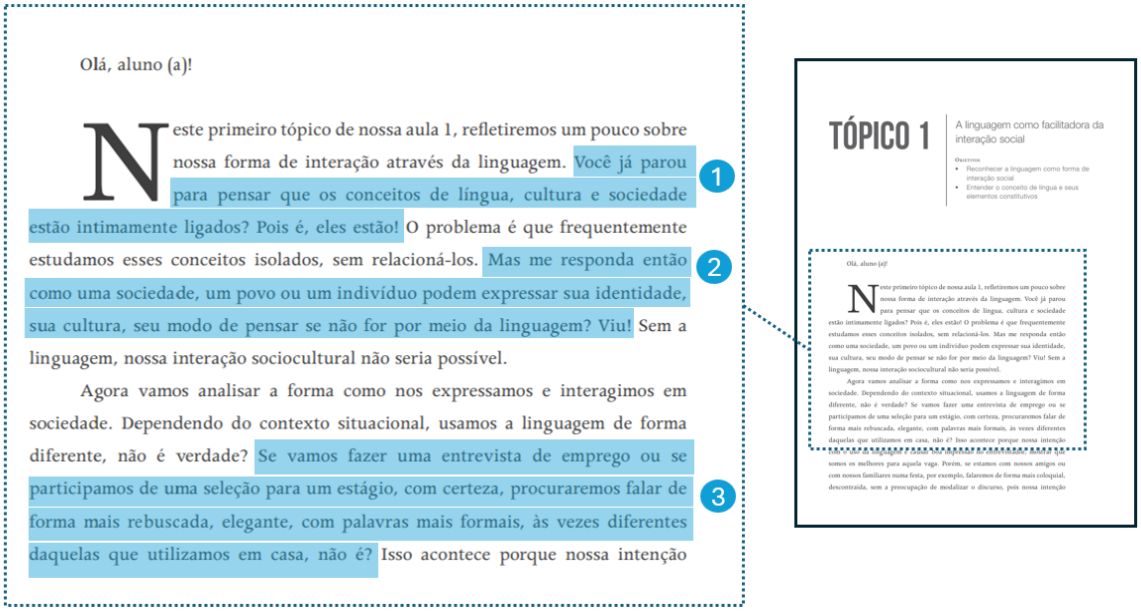
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manner mediated by the available content, in digital or analog format, across diverse times and spaces (Brasil, 2025a; Filatro, 2018; Hissa, 2017).

In this scenario, it is essential that instructional materials for this educational modality be self-sufficient and present a language with a dialogic tone that enables student reflection and critical thinking. Dialogic language is important because it allows for an "[...] interactive and engaging communication, which promotes closeness and the exchange of ideas between the educator and the student [...]" (Costa, 2024, p. 46). In the same sense, Bento (2015) states that, when developed with a dialogic tone, educational resources for DE avoid ambiguity and comprehension barriers, favoring learning. According to the author, IMs should also follow certain guiding principles, such as flexibility, encouragement of curiosity, creativity, and critical thinking, as well as respect for students' prior knowledge, as can be observed in the example of instructional materials for DE at the federal educational institution, Figure 1.

Figure 1 – Example of applying dialogic language in IM for DE at the federal educational institution



Olá, aluno (a)!

Neste primeiro tópico de nossa aula 1, refletiremos um pouco sobre nossa forma de interação através da linguagem. Você já parou para pensar que os conceitos de língua, cultura e sociedade estão intimamente ligados? Pois é, eles estão! O problema é que frequentemente estudamos esses conceitos isolados, sem relacioná-los. Mas me responda então como uma sociedade, um povo ou um indivíduo podem expressar sua identidade, sua cultura, seu modo de pensar se não for por meio da linguagem? Viu! Sem a linguagem, nossa interação sociocultural não seria possível.

Agora vamos analisar a forma como nos expressamos e interagimos em sociedade. Dependendo do contexto situacional, usamos a linguagem de forma diferente, não é verdade? Se vamos fazer uma entrevista de emprego ou se participamos de uma seleção para um estágio, com certeza, procuraremos falar de forma mais rebuscada, elegante, com palavras mais formais, às vezes diferentes daquelas que utilizamos em casa, não é? Isso acontece porque nossa intenção

1 2 3

TÓPICO 1

A linguagem como facilitadora da interação social

Objetivos
- Reconhecer a linguagem como forma de interação social
- Entender o conceito de língua e seus elementos constitutivos

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somos os melhores para aquela vaga. Porém, se estamos com nossos amigos ou com nossos familiares numa festa, por exemplo, falaremos de forma mais coloquial, descontraída, sem a preocupação de modalizar o discurso, pois nossa intenção

Source: partial reproduction of Hissa (2013), with highlights and excerpts prepared by the authors**.**

From Figure 1, excerpts stand out from the printed material developed by the federal educational institution, highlighting the use of dialogic language and other features specific to IM for DE, as described by Bento (2015). The use of questions, such as "Have you ever stopped to think

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about...?" or "Shall we understand this concept together?", and exclamations, such as "Indeed they are!" and "See!", simulate a dialogue between professor and student. Furthermore, the inclusion of everyday examples, such as the reference to a "job interview," contributes to communicative closeness and considers students' prior knowledge.

Unlike other textual genres, such as academic texts written for an audience that is generally specialized in the subject, IMs for DE need to be developed considering that the interlocutor/student "[...] does not possess the full set of mental representations that would allow them to alternate quickly between several ideas" (Filatro, 2018, p. 81). In other words, the target audience of the instructional material is, for the most part, a beginner in the area of knowledge or practice being addressed and therefore requires a didactic interaction that makes sense and respects their learning pace and style (Filatro, 2018).

In this context, instructional materials for DE must present accessible language appropriate to the student's level of knowledge, structured with a logical, sequential, and direct organization. Furthermore, they should enable clear and objective interpretation, connecting theory and practice (Filatro, 2018).

According to Hissa (2017), adopting accessible and dialogic language when developing IMs does not mean making them simplistic or trivial in terms of content. On the contrary, the materials must display conceptual depth and ensure proper presentation and organization of information (with clear, cohesive, and coherent texts written in accordance with standard written Portuguese). The function of IMs is to facilitate the acquisition of competencies, skills, and attitudes necessary for student development. Therefore, they must also make the adopted methodologies transparent and present study guides featuring diverse opportunities for reading, research, and activities (Barrera, 2017).

According to the Ministry of Education and Culture (MEC), in the document on quality benchmarks for undergraduate courses offered via distance education, IMs must enable the development of competencies "associated with creative, analytical, and academic and cognitive development processes compatible with the level of education" (Brasil, 2025b, p. 27), through diverse media and in line with the learning objectives and the needs of the target audience. For MEC, IMs are understood as a "[...] set of resources (texts, videos, various applications, digital laboratories, among others) aligned with the other elements within a course or curricular unit, such as assessment processes and activities [...]" (Brasil, 2025b, p. 27) and must explore the alignment and integration between

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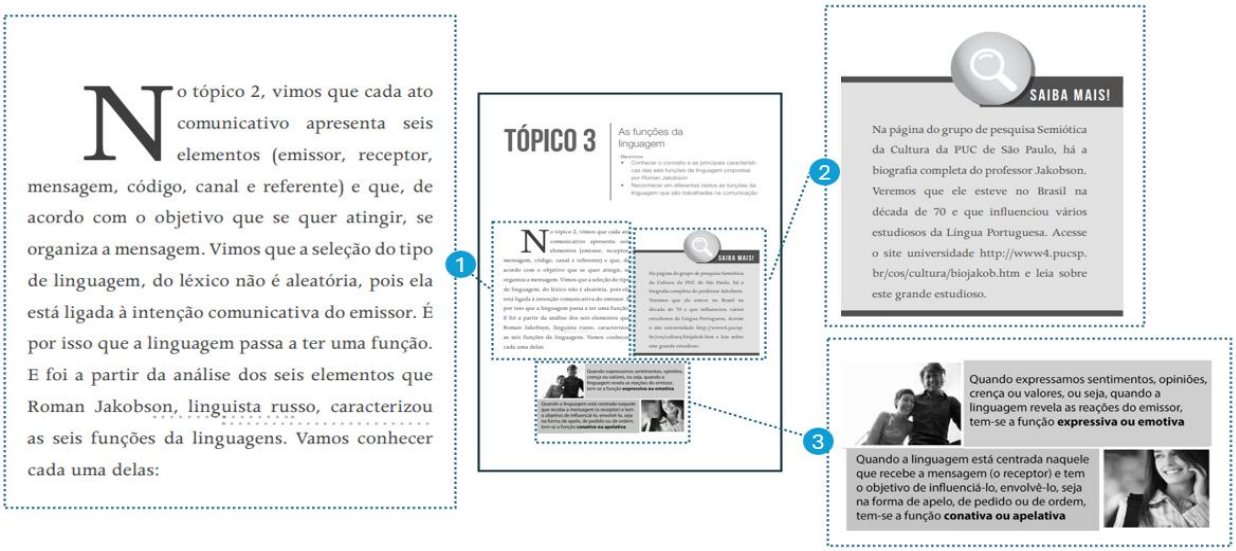
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printed materials, digital and audiovisual resources, different types of texts, among other materials, aimed at knowledge construction (Brasil, 2025b).

In this manner, instructional materials for DE are educational resources that convey content through a variety of media (print, audiovisual, and computing), which can be made available across different technologies, such as electronic, digital, or mobile (Flemming, 2004; Filatro, 2018). According to Filatro (2018), these media support various languages: oral, written, visual, and multimedia. Oral language, usually present in podcasts and videos, must display pace, intonation, expressiveness, as well as clear pronunciation and diction. Written language, in turn, must be clear, concise, cohesive, and coherent, paying careful attention to correct normative spelling and grammar, in addition to featuring intratextual features (unity, continuity, and progression) and intertextuality (relationships with other materials). Meanwhile, visual language (static or dynamic) must consider degrees of realism and identification, making use of metaphors such as icons and graphic symbols. Finally, multimedia language, which combines two or more languages within the same support, must consider interactivity and movement (Filatro, 2018).

Figures 2, 3, and 4 present three types of instructional materials (print material, online lesson, and video lesson) produced for DE by the team at the federal educational institution, which exemplify the use of the different languages (oral, written, visual, and multimedia) cited by Filatro (2018).

Figure 2 – Example of applying multimodal languages in printed IM for DE at the federal educational institution



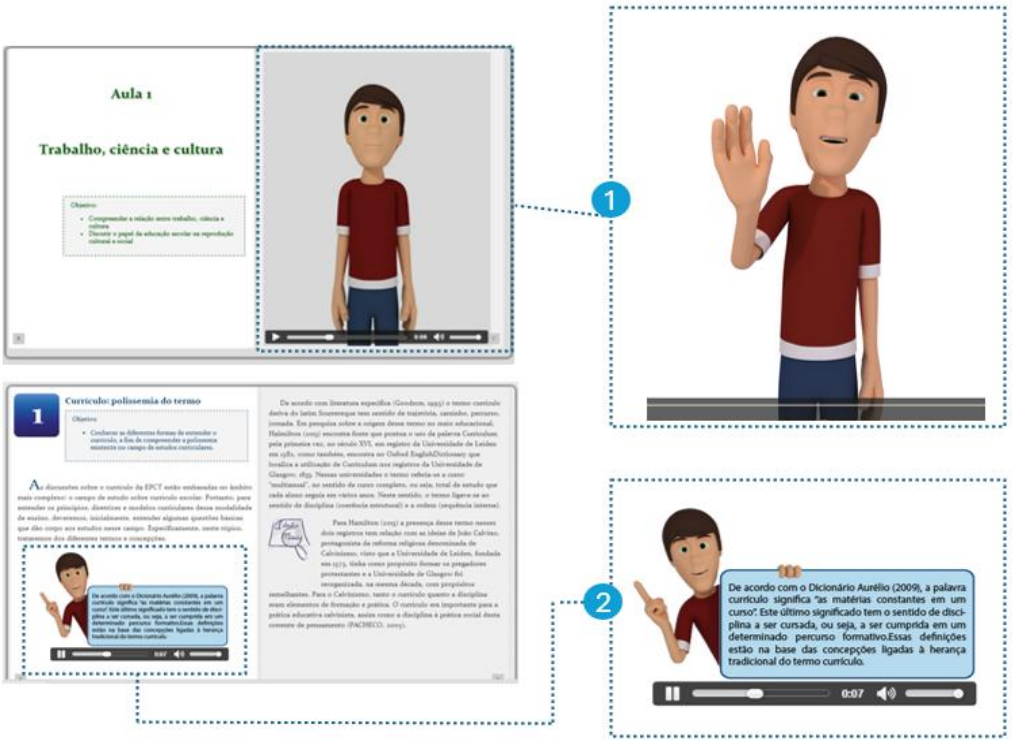
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Figure 2 presents a page of the printed instructional material that combines textual and visual languages. Regarding textual language, intratextual features can be observed, such as the excerpt "In topic 2, we saw that...", which allows internal connections between sections of the material itself, conveying a sense of unity and progression of the content. There are also elements of intertextuality, such as the indication of other study materials in the "Find out more!" text box. As for visual language, the use of visual metaphors stands out, such as icons and realistic illustrative images (photographs) that complement the text, facilitating the understanding of the topics studied.

Figure 3 – Example of applying multimodal languages in the online lesson IM for DE at the federal educational institution



Source: partial reproduction of Oliveira, Braga, and Sousa (2013), with highlights and excerpts prepared by the authors.

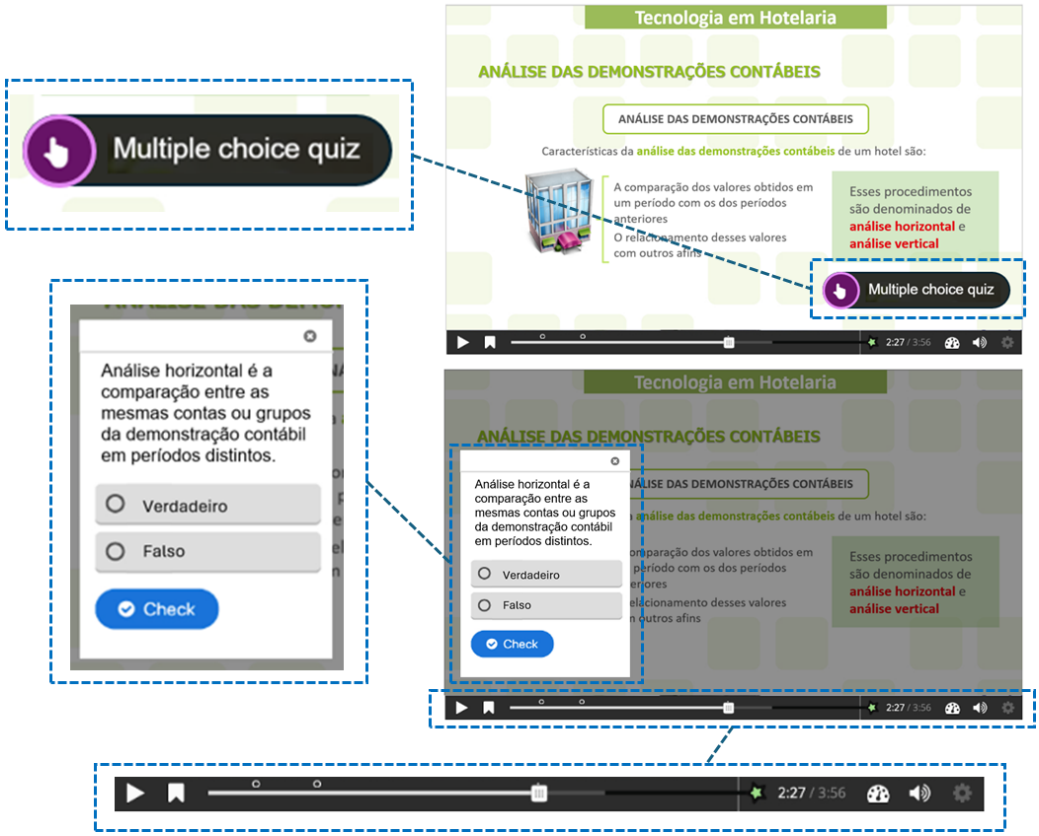
Figure 3 presents several pages of the instructional material in online lesson format, which exemplify the use of multimedia language through the combined use of text, images, audio, and animations/videos. It is worth noting that the online lesson maintains the same content as the printed material; however, it utilizes other media, such as audio and videos, as a means of pedagogical communication, exploring the flexibility and potential of the web while replacing part of the written text from the printed version.

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Figure 4 – Example of applying multimodal languages in the video lesson IM for DE at the federal educational institution using H5P features



Source: partial reproduction of Peixoto (2025), with highlights and excerpts prepared by the authors.

Figure 4 illustrates details of a video lesson characterized by using hypermedia language, which goes beyond multimedia language by integrating hyperlinks between text, images, animations, audio, and videos, enabling non-linear navigation through the content. With the advancement of digital technologies and the incorporation of new tools into the Moodle Virtual Learning Environment (VLE), such as H5P (HTML5 Package), it became possible for the federal educational institution to develop video lessons in a more interactive format. This was achieved by overlaying content layers (such as text, images, videos, hyperlinks, and quizzes) onto traditional video screens, as well as embedding hyperlinks directly into the video timeline. According to Portela (2023), the use of these interactive videos fosters students' control and personalization of content, the regulation of individual learning processes, and an increase in "social presence" within videos, among other benefits.

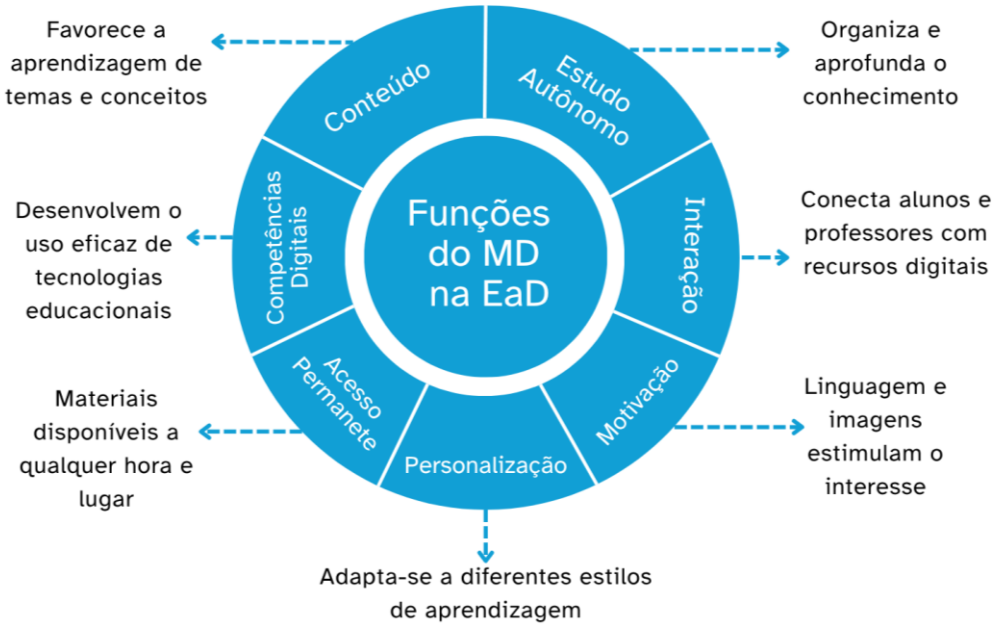
The use of these different languages in IMs contributes to meeting students' multiple needs and learning styles (Bento, 2015). According to Neder (2001), instructional materials for DE must

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perform key functions in the teaching and learning process, such as promoting dialogue, guiding students through various activities, encouraging and expanding active learning, and stimulating a critical understanding of knowledge. For Costa (2024), the primary functions of instructional materials in DE are represented in Figure 5 below.

Figure 5 – Functions of instructional materials in Distance Education



Source: conceptual inspiration from Costa (2024)

From a reading of Figure 5, it can be inferred that the content contributes to a critical understanding of concepts, themes, and information—which, according to Filatro (2018), should be presented in a progressive and integrated manner, fostering the connection between theory and practice. Regarding autonomous study, IMs must promote a structured learning pathway that enables the construction of new knowledge and the development of new skills and attitudes, while encouraging a deeper exploration of the concepts studied. Interaction, in turn, serves as the mediating element of learning, connecting students and teachers through digital resources such as forums, quizzes, and other interactive technologies (Costa, 2024).

One function of IMs for DE is to foster extrinsic motivation in students. The use of a variety of languages and media, the employment of texts with a dialogic tone, and the adoption of an attractive design can make learning more engaging and, consequently, motivate or involve students. As for

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personalization, it is characterized by enabling the adaptation of content and resources to distinct individual needs, offering different pathways and tools for each learning style (Costa, 2024).

Regarding the function of permanent access, it is understood that information, content, and resources must be accessible anytime and anywhere, allowing students to consult the material at their own pace and from any device (Costa, 2024). This characteristic, aligned with the other functions of IMs for DE, is also associated with digital competencies, which foster the use of digital resources and interaction within VLEs, contributing to the efficient training of students in educational technologies (Costa, 2024).

Therefore, for IMs to fulfill the described pedagogical functions, decision-making is required regarding structural, linguistic, and conceptual aspects alike. Producing IMs involves defining their organization—that is, the content presentation format, the available media, and technologies; making linguistic-syntactic choices, such as vocabulary, terms, structures, degree of formality, and markers of interaction; as well as conceptual choices, such as general and specific content to be addressed (Hissa, 2017).

Such decisions refer to various didactic transpositions, that is, "[...] the work or the set of adaptive transformations that render the savoir savant, that is, scholarly knowledge, meaning knowledge constructed in academia, capable of being transformed into taught knowledge [...]" (Hissa, 2017, p. 84). For these didactic transpositions to occur effectively, particularly in the selection of content and the use of media for DE, technical and pedagogical knowledge is also required, alongside an understanding of its application, extent, and integration, with the aim of devising strategies tailored to the target audience and their learning. In this context, it is essential to have a multidisciplinary team to carry out the activities involved in producing IMs for DE.

For the elaboration and preparation of IMs for DE, there is a systematic process involving: understanding the context in which content will be used; specifying learning objectives; organizing content into units, modules, lessons, topics, among others; defining format and language; collaboratively developing different types of text, images, video lessons, podcasts, etc.; guiding the multidisciplinary team; and validating products throughout the entire process (Filatro, 2018).

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4 THE PRODUCTION PROCESS OF INSTRUCTIONAL MATERIALS FOR DE AT THE FEDERAL EDUCATIONAL INSTITUTION

The production process of instructional materials for Distance Education at the federal educational institution was compared, in this research, with the tenets of Contextualized Instructional/Educational Design (CID). Educational Design (ED) is understood as "[...] the intentional and systematic action of teaching, which involves the planning, development, and use of methods, techniques, activities, materials, events, and educational products in specific didactic situations" (Filatro, 2004, p. 64).

From a contextualized perspective, ED consists of five phases that occur recursively throughout the entire process, without absolute prediction or prescription. These phases are: analysis, design, development, implementation, and evaluation, which constitute the classic ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) (Filatro, 2004; Filatro; Piconez, 2004).

In contextual analysis, the first phase, characteristics of the target audience are identified, as well as institutional goals—such as the mission, production model, and internal production policies—and the constraints involved, such as available material and human resources (Filatro; Piconez, 2004; Filatro, 2018). In the second phase, concerning design and development, "[...] the planning of instruction and the elaboration of instructional materials and products" take place (Filatro; Piconez, 2004). Furthermore, this phase encompasses actions such as "[...] curriculum mapping, selecting methods and techniques to achieve the objectives, and choosing the media and tools to be used" (Portela, 2023, p. 29).

In the third phase, implementation, the teaching and learning events or situations are effectively carried out, and the instructional materials are applied (Filatro; Piconez, 2004). In addition, students undergo onboarding, while teaching staff participate in training sessions.

In the final phase, concerning evaluation, the tracking, review, and maintenance of the proposed system take place, aiming to implement possible improvements in processes or products (Filatro; Piconez, 2004). Although presented as the final phase, this step is categorized as such solely for methodological organization, as evaluation occurs transversally throughout the IM development process, being conducted at every stage of construction (Filatro et al., 2019; Moreira et al., 2019).

The phases described in the production process of IMs for DE at the federal educational institution, in comparison with Contextualized Educational Design, do not follow a linear and rigid

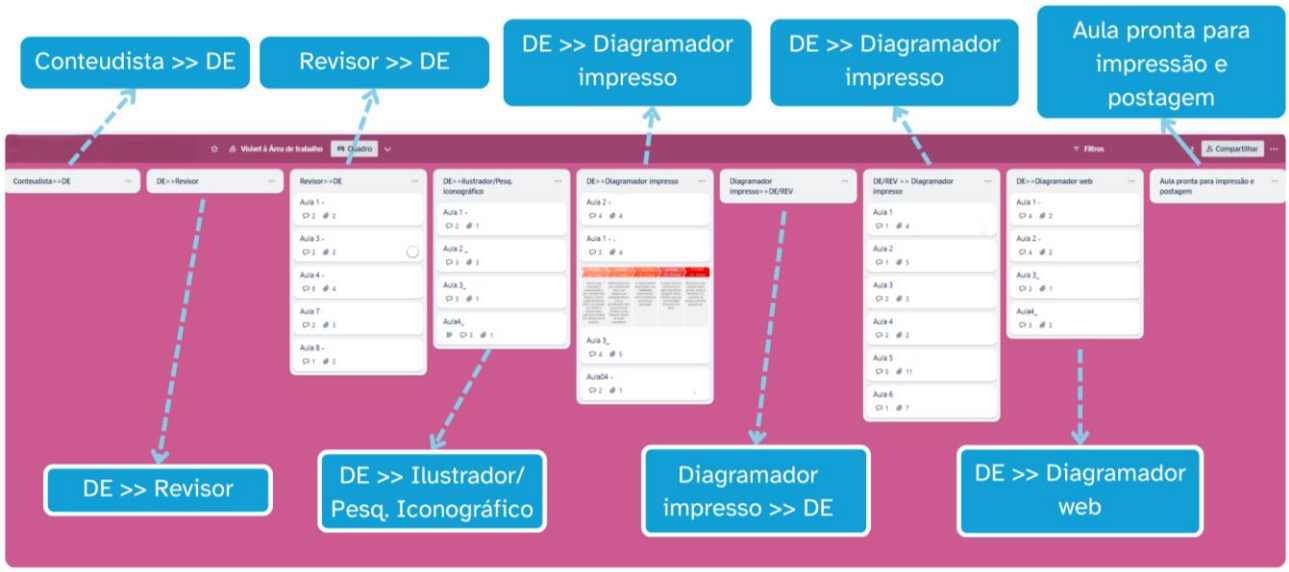
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workflow; on the contrary, they constitute a dynamic process in which stages can be resumed or revisited according to the need for modifications in the IM based on the adopted course model.

In this context, the production process of IMs for DE at the federal educational institution is planned and managed through the collaborative online tool Trello (Figure 6), developed based on the Kanban model. This platform enables the visualization and tracking of all stages of the production workflow, the team members responsible for each process, and the established deadlines. Furthermore, it allows for the uploading and sharing of different versions of the materials directly within the interface, facilitating communication and decision-making among the team.

Figure 6 – Management of IM production for DE at the federal educational institution



Source: Screenshot of the Trello platform, with annotations developed by the authors (2025).

In the production of instructional materials for DE, "the involvement of people in instructional [or educational] design is what brings the process to life" (Filatro, 2004, p. 128). In the following section, the members of the multidisciplinary team and the production workflow of instructional materials for DE at the federal educational institution will be presented.

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5 THE MULTIDISCIPLINARY IM PRODUCTION TEAM AT THE FEDERAL EDUCATIONAL INSTITUTION FOR DE

The production process of instructional materials for distance education at the federal educational institution involves the joint effort of a multidisciplinary team—that is, a group composed of professionals from diverse fields, such as: content-authoring professors, educational designers (ED), proofreaders, illustrators, iconographic researchers, print and web layout designers, audiovisual technicians, animators, and programmers, among others.

Below, the characteristics of the IMs for DE at the federal educational institution will be presented, along with details on the relationships among the various contributors in the collaborative production process of these materials.

- **Content-authoring professors:** Also referred to as subject matter experts or authoring professors, they are responsible for the intellectual creation of instructional materials, whether print or digital (Guedes; Rocha; Joye, 2014).
- **Educational designers (ED):** They execute the didactic-pedagogical design and the didactic transposition of the materials developed by the content-authoring professor. At the federal educational institution, they are tasked with monitoring the creation process of instructional materials across all its phases (analysis, design and development, implementation, and evaluation), acting as a link between the content-authoring professor and the other members of the production team (Guedes, 2014).
- **Proofreaders:** They perform the textual, grammatical, and orthographic editing of all written instructional materials, such as lesson contents, activities, assessments, scripts, among others (Guedes; Rocha; Joye, 2014).
- **Illustrators:** They are tasked with the creation, editing, and composition of educational graphics—such as illustrations, technical figures, charts, and tables—for print and digital materials, including books, workbooks, online lessons, video lessons, animations, among others (Filatro, 2018).
- **Iconographic researchers:** They carry out the search for images and photographs in image banks, with due care regarding copyright licensing for the use of these works.
- **Print and web layout designers:** They are tasked with organizing graphic elements (titles, text, illustrations, photographs, charts, formulas, etc.) on a page, whether web or print, in accordance with the visual identity adopted for the material.

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- **Audiovisual technicians:** They are the professionals responsible for operationalizing the pre-production, production, and post-production processes of video lessons. As specialists in audiovisual language, they assist in scriptwriting, set assembly, equipment selection and operation, audio and image capture, as well as the editing and distribution of media across platforms or media channels (Portela; Souto; Maia, 2014).
- **Animators:** They are in charge of creating animations, that is, moving images.
- **Programmers:** They are involved in software and systems development and maintenance. At the federal educational institution, they also perform the customization of Virtual Learning Environments (VLEs) and the creation of web pages.

The joint effort of a multidisciplinary team contributes to the development of high-quality DE courses. Recognizing this reality, the Ministry of Education (MEC) highlights the importance of instructional materials developed by professors with the support of a team of professionals from different fields, to "[...] construct and develop educational content that meets pedagogical needs and integrates the planning, execution, and tracking of teaching and learning processes" (Brasil, 2025b, p. 17). These materials must foster students' creative, analytical, and cognitive competencies, stimulate collaboration and communication, present clear objectives, reflect the actual workload through well-defined metrics, be continuously updated, alongside other quality requirements (Brasil, 2025b).

The complexity of developing instructional materials for DE, in compliance with the quality standards presented by the Ministry of Education, is manifested in the production workflow of these materials at the federal educational institution, as can be observed in Section 6 below.

6 THE IM PRODUCTION WORKFLOW AT THE FEDERAL EDUCATIONAL INSTITUTION FOR DE

Aiming at the production of relevant and high-quality IMs, the multidisciplinary team at the federal educational institution relies on several strategies, such as collaborative writing. As Hissa (2017, p. 8) states, collaborative writing "[...] occurs through a mediated orchestration among subjects, based on a specialized and multitasking cooperation required at each stage of the production process [...]" of the IM. This is because the production of these materials for DE brings together, as observed in Section 5, individuals with distinct communicative competencies and technical skills, which

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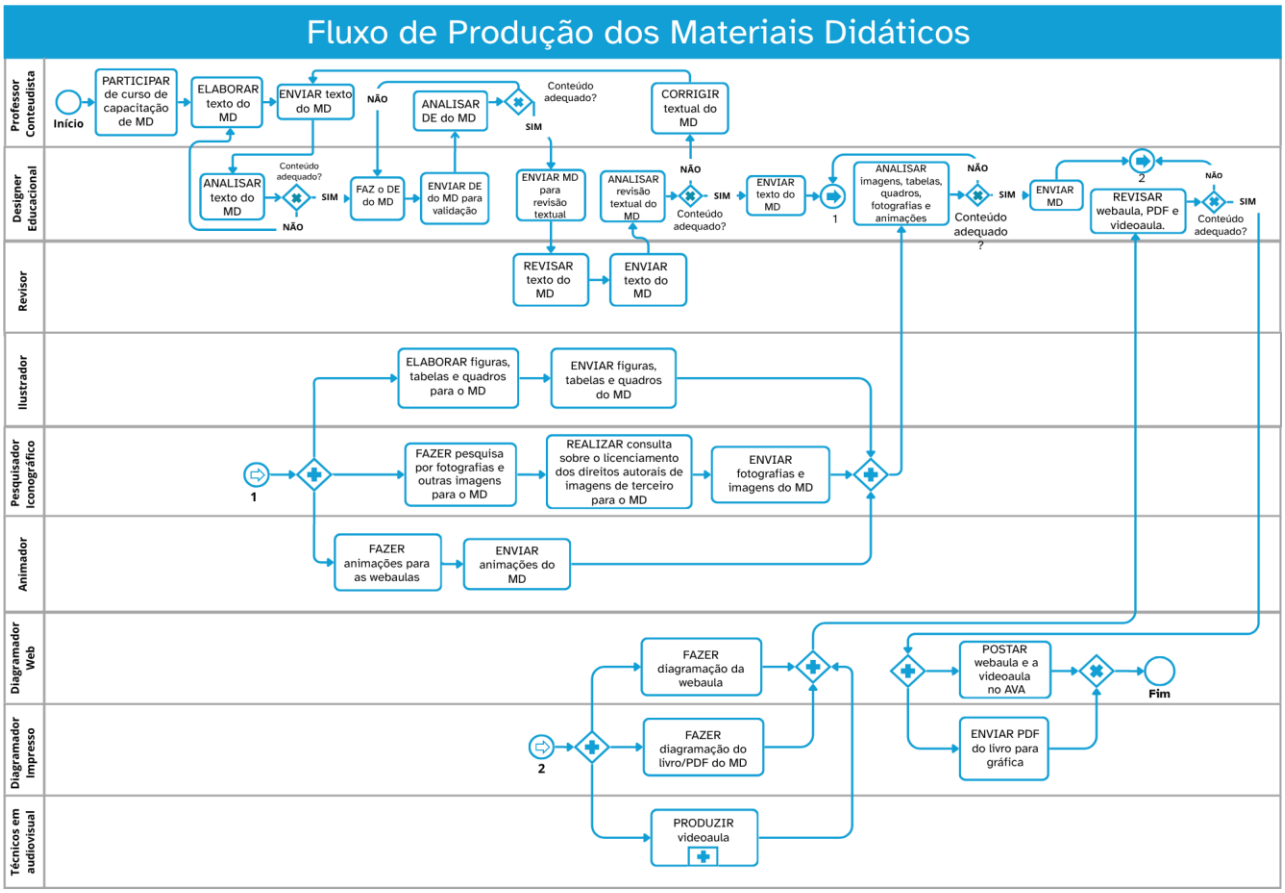
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articulate and complement one another, rendering IM production an eminently multidisciplinary activity (Hissa, 2017).

It is worth highlighting that, unlike individualized writing, in the collaborative production of instructional materials for DE, the professionals involved in the process do not participate directly in every stage of production. According to Hissa (2017, p. 24), "[...] some are only familiar with a single stage of the process; others both produce the material and orchestrate the dialogues with the various authors; while others work solely with the multimodal and hypertextual aspects in the production process."

Thus, the work of the professionals who make up the multidisciplinary team at the federal educational institution is reflected in a production workflow that involves multiple interactions (many back-and-forth movements) within a continuous process of creation, review, adaptation/correction, and validation, as illustrated in Figure 7.

Figure 7 – IM production workflow at the federal educational institution



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In Figure 7, it can be observed that the process of developing instructional materials for distance education at the federal educational institution begins with training for the content-authoring professor. This is because it is understood that one of the greatest challenges in DE is the development of instructional materials, often due to the technical difficulties experienced by content-authoring professors (Guedes, 2014).

According to Filatro (2018), many of these professionals are selected for the development of IMs due to their academic background or professional performance, and it is not uncommon for them to have little experience in drafting teaching texts. Therefore, it is essential to provide training courses so that these professionals can develop the new competencies and skills required for the production process of instructional materials for DE (Guedes, 2014).

Furthermore, as Hissa (2017, p. 27) asserts, these professors "[...] display a greater willingness to write collaboratively when they are familiar with the phases of the instructional writing process in DE and the modes of participation of the interlocutors in incorporating the reflective procedures necessary for production."

Therefore, at this stage, this professional undergoes workshops on the development of IMs with practical activities, in which they learn to plan and structure course content, taking into account the target audience, the learning objectives to be achieved, and the characteristics of the instructional materials for DE adopted by the federal educational institution, as well as the workflow of the collaborative production process (Guedes, 2014; Guedes; Rocha; Joye, 2014).

Upon completion of the training, the content-authoring professor is expected to have the first version of the text for an instructional unit (a lesson, unit, or study chapter), which must then be sent to the educational designer (ED). The ED performs the analysis and educational design of the material, taking into account: the target audience; the learning objectives; the time metrics (calculating the equivalence of online study workload to the number of face-to-face class hours) and the volume of the material; the dialogic language characteristic of this type of text; and the use of the different media and technologies available (Filatro, 2018; Guedes; Rocha; Joye, 2014).

The ED acts as a link between the content-authoring professor and the other members of the production team, suggesting various improvements and corrections to the material. In addition to analyzing the instructional text alongside the proofreader, the ED, in direct contact with the technical team (proofreaders, illustrators, iconographic researchers, print and web graphic layout designers, and audiovisual technicians), designs the illustrations; guides the image research; monitors the pre-

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production, production, and post-production processes of the video lessons; and verifies the layout of the graphic elements in both the print and web versions of the materials (online lessons), among other activities (Guedes, 2014; Portela; Souto; Maia, 2014).

The production process of instructional materials does not follow a linear workflow. The elements that compose an instructional unit (texts, icons, illustrations, links and hyperlinks, videos, animations, etc.) undergo various modifications throughout their creation process – which is why numerous back-and-forth movements between the ED and the other members of the multidisciplinary production team are necessary – until the final publication-ready version of the material is reached.

This final version must be reviewed, tested, and, above all, validated by the content-authoring professor, the students, and the other professionals involved, such as teacher trainers and tutors (Guedes, 2014; Guedes; Rocha; Joye, 2014). This validation stage is often omitted, mainly due to tight production schedules that, in practice, end up compromising the completion of the Contextualized Instructional/Educational Design cycle, as described by Filatro (2004), Filatro et al. (2019), and Filatro and Piconez (2004).

7 FINAL CONSIDERATIONS

This article analyzed the process of producing instructional materials for DE at the federal educational institution, highlighting the methodological phases, the roles of the different professionals involved, and the theoretical-methodological foundations that guide this practice, based on real-world situations observed at the institution. Furthermore, it underscored the importance of IMs as a vehicle for pedagogical mediation, knowledge socialization, and guidance of the learning process in DE, from the perspective of various scholars, such as Bento (2015), Costa (2024), Filatro (2018), Hissa (2017), Portela (2023), among others.

Based on the theoretical discussions and the descriptions of the characteristics of the IMs at the federal educational institution, it was demonstrated that the development of these materials must align with the characteristics of the target audience and the learning objectives, ensuring comprehensiveness, depth, and theoretical consistency. It was also possible to observe that the materials are developed based on hypertextual logic and utilize diverse technologies, enabling non-linear navigation that fosters the articulation between prior and new knowledge through links, media, and interactive resources.

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In addition to these aspects, the use of dialogic language and multiple media (printed and interactive resources, such as video lessons and online lessons) by the institution under analysis can contribute, according to Bento (2015), Costa (2024), Filatro (2018), and Portela (2023), to optimizing the learning experience and expanding access to diverse content. In this context, it can foster active student participation in a more meaningful, dynamic, autonomous, exploratory, and connected learning process.

The study also highlighted the importance of planning and establishing a well-structured IM development workflow based on the theoretical foundations of instructional design, such as the Contextualized Instructional/Educational Design proposed by Filatro (2004, 2008, 2018) and Filatro and Piconez (2004). Based on the experiences at the federal educational institution, it was possible to observe the complexity of the production stages and the importance of the performance of a cohesive and collaborative multidisciplinary team for the quality of the courses offered in the distance learning mode.

Furthermore, this study presents limitations related to the investigative context, as it represents a cross-section of a specific reality or case and is restricted to documentary analysis and process observation, without directly incorporating the perspectives of participants, such as members of the multidisciplinary team and others involved in the process. Nevertheless, the research can contribute to the practical systematization of IM production processes in other educational institutions that offer or intend to offer courses in this educational mode, providing examples of structures for these materials and objectively describing the production workflow and the professionals involved in each development phase.

As suggestions for future research, it is proposed to analyze instructional materials and their production workflow from the perspective of the subjects involved, such as the technical-pedagogical production team, content-authoring professors, and IM users, including trainers, tutors, and students. These individuals bring the process to life and assign meaning to the materials through their experiences, interactions, and practices.

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