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Resignification of the E-book Through Literature Making of Sciences: Higher Education*

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ABSTRACT

The article reflects on digital educational material developed for the Pedagogy course of the La Salle – University - Canoas. This proposal emerges from the experiences lived by the authors in disciplines offered in the distance modality. To overcome the difficulties evidenced in previous experiences, considering the context of cyberculture, we found as a possibility the Literature making of the Sciences, in the construction of the E-book Education, Technology and Cyberculture. The reflection, developed in the research group COTEDIC UNILASALLE/CNPq, aims to understand the structure used in the construction of the E-book for the Pedagogy course and identify the contributions for student learning. The qualitative research was developed in the methodology of Case Study, with the instruments: E-book and records of the activities carried out by the students. From the empirical data we show in the literature making of the sciences possibilities of establishing metaphors for the construction of knowledge. As well as, the use of history to contextualize the knowledge, to problematize them through the characters and to explore different elements of gamification. We have the need to resignify pedagogical practices in congruence with the contemporary context and intensify pedagogical mediation in On-line Education.

KEYWORDS

Learning processes. Distance education. Teaching practice. Teaching methods.

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Ressignificação do E-book por Meio da Literaturalização das Ciências: Educação Superior

RESUMO

O artigo reflete sobre o material educativo digital desenvolvido para o curso de Pedagogia da Universidade La Salle - Canoas. Essa proposta emerge das experiências vivenciadas pelos autores em disciplinas ofertadas na modalidade a distância. Para superar as dificuldades evidenciadas nas experiências anteriores, considerando o contexto da cibercultura encontramos como possibilidade a literaturalização das ciências, na construção do E-book Educação, Tecnologias e Cibercultura. A reflexão, desenvolvida no grupo de pesquisa COTEDIC UNILASALLE/CNPq, objetiva compreender a estrutura utilizada na construção do E-book para o curso de Pedagogia e identificar as contribuições para aprendizagem dos estudantes. A pesquisa de natureza qualitativa foi desenvolvida na metodologia de Estudo de Caso, com os instrumentos: E-book, tecnologias de compartilhamento e comunicação e ambiente virtual de aprendizagem, ou seja, os registros das ações dos estudantes. A partir dos dados empíricos evidenciamos na literaturalização das ciências possibilidades de estabelecer metáforas para a construção do conhecimento. Assim como, a utilização da história para contextualizar esses conhecimentos, problematizá-los por meio dos personagens e explorar a representação da imersão. Destacamos, a necessidade de ressignificar as práticas pedagógicas em congruência com o contexto contemporâneo e intensificar a mediação pedagógica na Educação On-line.

PALAVRAS-CHAVE

Processos de ensino-aprendizagem. Educação a distância. Prática pedagógica. Meios de ensino.

Reasignación del E-book Mediante la Literaturalización de las Ciencias: Educación Superior

RESUMEN

El artículo reflexiona sobre el material educativo digital desarrollado para el curso de Pedagogía de la Universidad La Salle - Canoas. Esta propuesta surge de las experiencias vividas por los autores en disciplinas ofrecidas en la modalidad a distancia. Para superar las dificultades evidenciadas en experiencias anteriores, considerando el contexto de la cibercultura, encontramos como posibilidad la literaturalización de las ciencias, en la construcción del E-book Educación, Tecnologías y Cibercultura. La reflexión, desarrollada en el grupo de investigación COTEDIC UNILASALLE/CNPq, tiene como objetivo comprender la estructura utilizada en la construcción del E-book para el curso de Pedagogía e identificar los aportes para el aprendizaje de los estudiantes. La investigación cualitativa se desarrolló utilizando la metodología Estudio de Caso, con los instrumentos: E-book, tecnologías de intercambio y comunicación y un entorno virtual de aprendizaje, es decir, los registros de las acciones de los estudiantes. A partir de los datos empíricos, en la literaturalización de las ciencias, tenemos la posibilidad de establecer metáforas para la construcción del conocimiento. Así como, el uso de la historia para contextualizar este conocimiento, problematizar los a través de los personajes y explorar la representación de la inmersión. Destacamos la necesidad de replantear las prácticas pedagógicas en consonancia con el contexto contemporáneo e intensificar la mediación pedagógica en la Educación en Línea.

PALABRAS CLAVE

Proceso de aprendizaje. Educación a distancia. Práctica pedagógica. Método de enseñanza.

1 Introduction: Higher Education in Contemporaneity

Each year, the number of students who choose distance learning in Brazil grows considerably. The possibility of studying in different times and spaces, considering his own pace and breaking boundaries, with the support of different Digital Technologies and structured pedagogical proposals for this modality, become differentials when choosing an undergraduate course in Distance Education.

This is a relatively recent process in the country and in the world, the Distance Education, until reaching the molds we know currently, it went through countless transformations. In its early days, the educational process occurred through the transmission of information via printed material sent by publishers to those interested in learning independently. In the course of time, mass media were also used for this purpose. In Brazil, the Telecourse program is the greatest example of this type of transmission, being a free distance education system and with classes at the most different levels of education. In both cases mentioned, we emphasize that the teaching process occurs in a transmissive way; therefore, the learning process takes place independently and lonely.

From the 1990s onwards, this modality incorporated other forms of actions among the participants involved in the process (students and teachers). With the popularization of the Internet and computers, platforms emerged that enable online education, that is, they explore the potential of communication among students and teachers through the network, in a dialogical relationship, driving the emergence of a new educational paradigm for the distance learning modality, differing from the information transmission model.

Several distance learning courses are created annually and their demand increases in equal proportion. Despite this promising scenario, there are still many criticisms of the modality due to limiting factors: the level of evasion in distance courses, the legitimacy of diplomas in the labor market and the comparison to on-site courses, in addition to the challenges faced by teachers in the development of practices teaching materials and didactic material appropriate to this new modality.

Data collected by the CENSUS Distance Education BR show that, in 2017, more than 1.3 million enrollments were registered in fully distance courses, while in blended courses, the mark of 1.1 million enrollments was surpassed. In 2016, 561,667 enrollments were registered in fully distance learning courses, representing an increase, in one year, of approximately 135%. However, the number of enrollments is still below the vacancies launched by Brazilian Higher Education Institutions (2018). According to the 2017 Higher Education Census, “almost half (48.6%) of the vacancies offered in the selection processes for new vacancies for on-site courses is filled, while in distance education only 1/4 are occupied” (BRAZIL, 2017).

Another relevant datum is associated with the evasion rates in Distance Education, which are still higher than those presented in on-site courses. According to the survey carried out by the CENSUS Distance Education BR, among the Higher Education Institutions participating in the survey, the dropout data recorded in 2017 were as follows: 5% of the institutions have dropout rates between 0 and 5%; 5% of these institutions report rates between 6 and 10%; and 1% of them recorded rates of more than 50% (2018).

In recent years, a factor that served as an obstacle to the expansion of Distance Education in Brazil was related to the segregation of students from Distance Education courses. Despite having the same legal validity as the on-site courses, the fact that it enhances the autonomy of students in their teaching and learning process was confused with the low degree of rigor in the demands on students, in addition to understanding autonomy as self-learning or learning alone.

These obstacles are mobilizing teachers, researchers and politicians to advance in the understanding of Distance Education, reflecting on the teaching and learning processes, new paradigms, management and public policies, making the understanding of Online Education emerge. From this perspective, Online Education, according to Santos (2009, p. 5663), is configured as “the set of teaching-learning actions or curriculum acts mediated by digital interfaces that enhance interactive and hypertextual communicational practices”.

In a dynamic relationship among technological and communicational potentials and epistemological understandings of pedagogical models, we are gradually reconfiguring the educational process in which the student, who used to be a passive and lonely receiver, becomes an active subject and author in the construction of collective knowledge, and the teacher, previously transmitting knowledge, now he mediates, communicates and interacts, disturbing and contextualizing knowledge. In this context, the question that we want to reflect in this article emerges: What structures are necessary in the construction of an E-book, for disciplines in the distance modality, which enhance the learning process?

2 Education, Technologies and Cyberculture: Resignification of the E-book

The subject of Computing and Multimedia in Education began to be developed in the distance teaching modality in 2014 at the La Salle University - Canoas. During this period, aspects such as evasion, lack of engagement in the construction of knowledge, difficulty in representing knowledge in congruence with technologies, little interaction among students and student-educators, and poor student performance in the evaluation process began to be discussed in the research group Coexistence and Digital Technology in Contemporaneity – COTEDIC UNILASALE/CNPq at the beginning of each semester, at the time of planning and preparation of didactic-pedagogical resources. From these tensions, some experiences, researches and theories began to be strongly considered.

The Pedagogy course at the La Salle University - Canoas, in 2018, underwent curricular restructuring and the subject of Computing and Multimedia in Education was excluded from the then current curriculum, making room for the subject Education, Technologies and Cyberculture, in the Distance Education modality. This discipline was conceived in line with the new trends and didactic and methodological possibilities of contemporary educational praxis. In this new curricular proposal, an E-book was created for each discipline offered at distance teaching, which contextualizes the other virtual digital spaces, including the Virtual Learning Environment, for the sharing of knowledge, communication and interaction. The E-book, in its original format, consists of a hypertextual document, in PDF format, with no possibility of student interaction. From this scenario, we intend the emerging reflections in the research group to think about the exploration of the E-book in the cybercultural context, that is, advancing in the conception of a book in digital format, presented as multimedia, with different resources that do not exist in the printed format.

Works such as *Sofia's World* (GAARDER, 1991), *When Nietzsche Wept* (YALOM, 1992), *Schopenhauer's Cure* (YALOM, 2005), among others, have always stood out for being novels that dealt with scientific knowledge. We highlighted some works that made it possible to study theories through a fictitious context (scenario) in a playful and metaphorical way. From this perspective, Palma (2014; 2016) highlights the distancing of a metaphorical, aesthetic, mythological language, literatureized in a scientific discourse, in a perspective that Santos (2004) defines as the dominant paradigm. For Palma (2014), in understanding the dominant paradigm, the use of metaphors in scientific discourses, as in the case of the works mentioned above, represent a mere didactic-pedagogical resource, with no cognitive value. Santos (2004) highlights that we are currently experiencing the emergence of new paradigms. Thus, Palma (2014; 2016) understands metaphors in association with literature, as sources of creativity, of diffuse, free, unlimited meanings and which have the potential of reaching and socialization of the scientific knowledge for humanity.

Also from an emerging perspective, Alves (2008) defines the construction of knowledge through ways of *makingthinking* in a dynamic movement of *practicetheorypractice*, constituting knowledge networks and weaving knowledge into networks. "This knowledge and the ways in which it is woven require us to admit that it is necessary to fully dive into other logics in order to learn and understand them" (2008, p. 16). In this dynamic movement, a new way of writing is essential, narrating life and literaturalizing the sciences.

Considering the epistemic metaphors of Palma (2014; 2016) and the revolution in the ways of building and representing knowledge, according to the models proposed by the emerging paradigm, when narrating life and writing science (ALVES, 2008), we propose the literatureization of science (BACKES; MANTOVANI, 2017). According to the authors, considering the current cybercultural context, we have the possibility of representing scientific knowledge, proposed in the curriculum of disciplines in the distance teaching mode, in E-books, establishing dialogues between antagonistic, paradoxical and/or contradictory

thoughts and articulating scientific thinking and literary thought, arts and humanities, digital and analog, among others. In other words, comprising the digital educational material (E-book, Moodle and digital technologies of communication, construction and sharing) from an epistemology with systemic and complex characteristics for an online education.

Online education, in the perspective of Silva (2014), emerges as a demand of the information society, manifesting itself as a phenomenon of cyberculture, “[...] guaranteeing learning in the flexibility and interactivity characteristic of the Internet” (p. 11), transforming and redefining the traditional educational model of a transmissive nature. Through interactivity and flexibility, characteristics of devices connected to the Internet, students and teachers communicate, interact, cooperate and build in a network, overcoming the barriers of time and space evidenced in face-to-face education and enhancing hypertextuality in the construction of knowledge and authorship of students. For online education to be configured, “[...] it will be necessary to educate based on dialogue, exchange, participation, intervention, authorship, collaboration” (SILVA, 2014, p. 12), that is, rethink the dominant pedagogical model.

For the creation of the E-book and the subject of the Education, Technologies and Cyberculture, actions were carried out in the context of the COTEDIC UNILASALE/CNPq research group based on experiences in the study meetings, when the unibirthday tea was proposed to discuss the interaction process and the intervention of the group participants in a class in which Alice should teach White Rabbit to tell the hours based on learning theories. Epistemological aspects of epistemic metaphors proposed by Palma (2015) were explored, such as: identifying the novelty in the way of producing meanings in the creation of the metaphor; contextual elements enhance the understanding of the metaphor; possibility of building knowledge. Thus, in the context of the research group, we noticed different aspects to be considered: discussing knowledge through dialogues among the characters; explore the characteristics of knowledge in the characters' actions; and inserting knowledge into the narrative of the story.

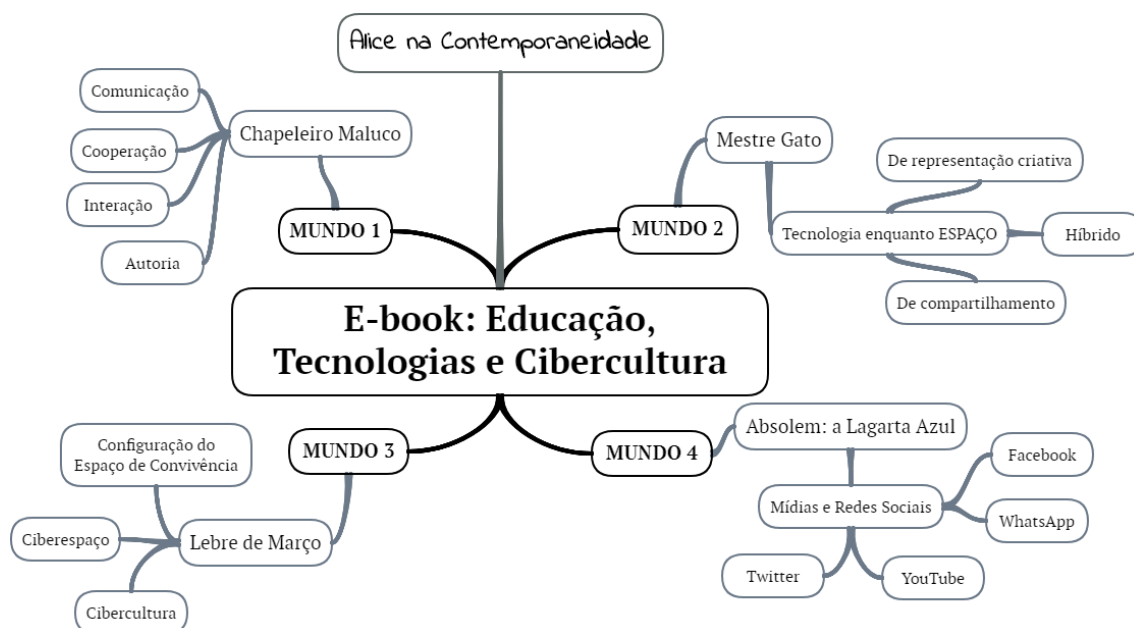
The E-book for the subject of Education, Technologies and Cyberculture was built from the story of Alice in Contemporaneity, that is, it does not use the scenario of Wonderland, but travels through the contemporaneity, with the characters of the original work in a dedicated narrative to students on the subjects of the discipline, in the Distance Education modality.

The narrative is intended to invite students to participate in the story, in an immersive representation, as well as to insert knowledge in this context.

Strangely, on the screen of her tablet appears a rabbit that says: - Alice, check out this new app!!! There are many things here... different scenarios, many discoveries and incredible challenges!!! Alice realizes that this game is made up of 4 different worlds, but they are interconnected with each other. The worlds follow a certain sequence that doesn't need to be respected. (BACKES; MANTOVANI; VAZ, 2018, p. 6)

Thus, Backes, Mantovani and Vaz (2018), explore different technologies and knowledge (concepts required by the program) from cybercultural characteristics such as hypertextuality and technological hybridism¹ and languages², in order to enhance the learning process, overcoming the tensions evidenced in previous experiences. The knowledge explored in the narrative is presented in a scheme, in order to articulate knowledge, history (character) and technology.

Figure 1. Schemes of the Education, Technologies and Cyberculture E-book Units.



Source: Adapted from Barchinski and Backes (2018).

The units that make up the discipline are called World, referring to the stages of a game, and in each World challenges are explored in order to contemplate gamification elements. The following topics were covered in the E-book narrative, in line with the pedagogical design proposed by the Distance Education Unit of the La Salle University - Canoas: presentation of the discipline; contextual issues; general objective, specific objectives, study topics with glossary icons, expanding knowledge, highlighting, challenge; unit synthesis; Enade model issues and learning questions.

¹ For Noronha, Backes and Casagrande (2018, p. 274) “With a focus on the diversity of technologies, the term hybridity, associated with the word technological, is intended to refer to the idea of working with a mixture of technologies, or as Backes suggests (2015), combination, articulation and integration, through a pedagogical practice that provides opportunities for the construction of knowledge. The technological mix occurs in the association and articulation of technologies of different natures, from the more traditional ones, the analogue technologies, to the more contemporary ones, the digital technologies”.

² The hybridity of Languages for Backes, Chitolina and Barchinski (2018, p. 01) “enables the representation of knowledge through textual, oral, imagery, gestural means, emerging other forms of expressions, dramatizations, metaphors” from “word, text, fixed and animated images can complement each other and exchange functions in the weave of a common fabric” (SANTAELLA, 2001, p. 392).

From these and other aspects that will still be explored in the article, we understand the Education, Technologies and Cyberculture E-book as a hypermedia, according to Santaella (2001), in addition to hybridization, it contemplates the convergence of media, expanding the virtual universe of networks, contextualized in cyberculture. Texts and hypertexts, metaphors, images, sounds contribute to the flexibility of the act of reading, the creativity of the act of interpreting, building different cognitive paths, as they are guided by the logic of each reader, enhancing the authorship of students.

3 The Literature Making of Sciences: Aspects to be Explored

The literature making of sciences, according to Palma (2015), consists of transforming or translating a theoretical, scientific and/or complex subject into a literaturelized language. Thus, we use characters existing in literature or created in a specific way in a metaphorical narrative, with a hybrid language to contextualize knowledge and in congruence with cyberculture through technological hybridism, the representation of immersion and gamification elements. The literature making of science occurs in narratives that explore networks of knowledge and texture of knowledge in networks (ALVES, 2008).

In these networks, metaphors are explored in analogies established among the characteristics of knowledge with those of the object, through literary narrative. Epistemic metaphors are defined by a set of elements that simultaneously belong to two or more schemes that, converted by an author, produce a new and unexpected result (PALMA, 2015). The relationship between the two elements – literature and science – creates another – the E-book.

In the E-book, the different knowledge were treated through dialogues among the characters following the plot proposed by the story, so the concept of configuring the living space means effectively participating in the five o'clock tea, promoted by the Queen of Hearts. The characteristics of a certain knowledge were also explored in analogy with the actions of the characters, the March Hare, with each cognitive action twisting and retwisting its ears. In the narrative, all the knowledge covered was inserted in the context of the story, as we can see in the extract referring to the meeting between the March Hare and Alice:

Both are silent. The March Hare twists and retwists its ears. Alice observes the movement and both realize that gaining space at the Queen's table was not just occupying two seats, but it meant having the possibility of establishing a relationship and interaction with all participants and elements present, that is, effectively participating in the five o'clock tea, with all possible voltages and crossovers. At that moment, two more chairs appear at the table. March Hare is radiant and Alice observes the luminous dot on the tablet screen indicating the following challenge: IN ORDER TO LIVE WITH THE GUESTS AND THE QUEEN AT THE TEA TABLE, IT IS NECESSARY TO DEFINE WHAT A PEACE SPACE IS! (BACKES; MANTOVANI; VAZ, 2018, p. 88)

This narrative is built in the context of cyberculture, contemplating technology, cognitive action and space as an object of knowledge. For that, there is the articulation of different elements, characters, narrative, content, language, in a hybrid way.

Hybridity is understood as the mixture and articulation of two or more elements, forming a new element, which retains previous characteristics of each one desirable in this process. The result is a single new element, inseparable, therefore, it can no longer be explained from the previous elements, according to Backes (2015), Noronha (2016) and Backes, Mantovani, Barchinski (2017). In the E-book narrative, the hybridity of language was contemplated, exploring multiple languages in a single text in a hybrid way, according to Barchinski and Backes (2018). Textual language has characteristics, both conceptual and fictional, according to Santaella (2001). To explore knowledge about different social media, the characters interact through WhatsApp, articulating the image information, Figure 2, with the text narrative in the E-book, demonstrating the communication potential of this technology with regard to multidirectionality among the participants and the use of emoticons.

Figure 2. Language hybridism based on literaturalization.



Source: Backes, Mantovani e Vaz (2018, p.121).

For Santaella (2001), hybridity is enhanced by the digitization process, which encodes different languages and information in the same format, allowing the intertwining among them. In the digitized format we have the multimedia, whose texts can assume the following characteristics: fictional texts (interactivity in fictional writing); instructional texts (problem solving); artistic texts (artistic activities for creativity); and conceptual texts (approaching different theoretical frameworks).

The E-book also provides theater links in video classes, images about the narrative and texts with images, as shown in Figure 3. The Technological hybridity was explored in two dimensions: mixing and articulation of technologies, both analog and digital, according to Noronha (2016) and digital technological hybridity - mixing and articulation between different digital technologies, according to Backes (2015).

Figure 3. Elements used in the discipline.



Source: Images from the researcher's archive.

The discipline is developed from the E-book, contemplating a technological context for communication, interaction, authorship and creation, organized in the Moodle virtual learning environment. Technological hybridity and digital technological hybridity are explored with the aim of increasing the students' sense of belonging to the discipline (history) and to assign meaning to the cybercultural context.

The theater made available in the video class had as plot the Unbirthday Party, in order to contextualize the knowledge about the Interaction Process. The characters talk about the concepts of communication, interaction and cooperation, through the interaction process itself on the preparation of the unbirthday party among Alice, Mad Hatter and March Hare.

In moments such as the video class, students are, in a way, transported to other worlds that take place in the virtual realm, experiencing an induced reality and, in most cases, conducted. Thus, we intend to awaken the feeling of being there, in order to act cognitively in relation to knowledge. The representation of immersion was also explored in the narrative of the book:

Remember Alice? [...] Nevermind. After all, we are no longer at the same epoch (time) and space has changed significantly. Ah! The space! But, after all, which space are we talking about? The garden in which Alice dreamed of Wonderland has transformed itself. (BACKES; MANTOVANI; VAZ, 2018, p. 10)

In other narratives, common functions in games and video games were used through character progression, classification, missions, etc., developed in the E-book, such as: challenges, stages and "powers". The idea of gamification was to use game elements to collaboratively engage students in activities that promote interaction and knowledge construction.

To gain space at the tea table, it is necessary to define what space is. [...] To socialize with guests and the Queen at the tea table, it is necessary to define what is a living space. [...] To drink a cup of tea at five o'clock, it is necessary to define what is a virtual digital space. (BACKES; MANTOVANI; VAZ, 2018, p. 87-92).

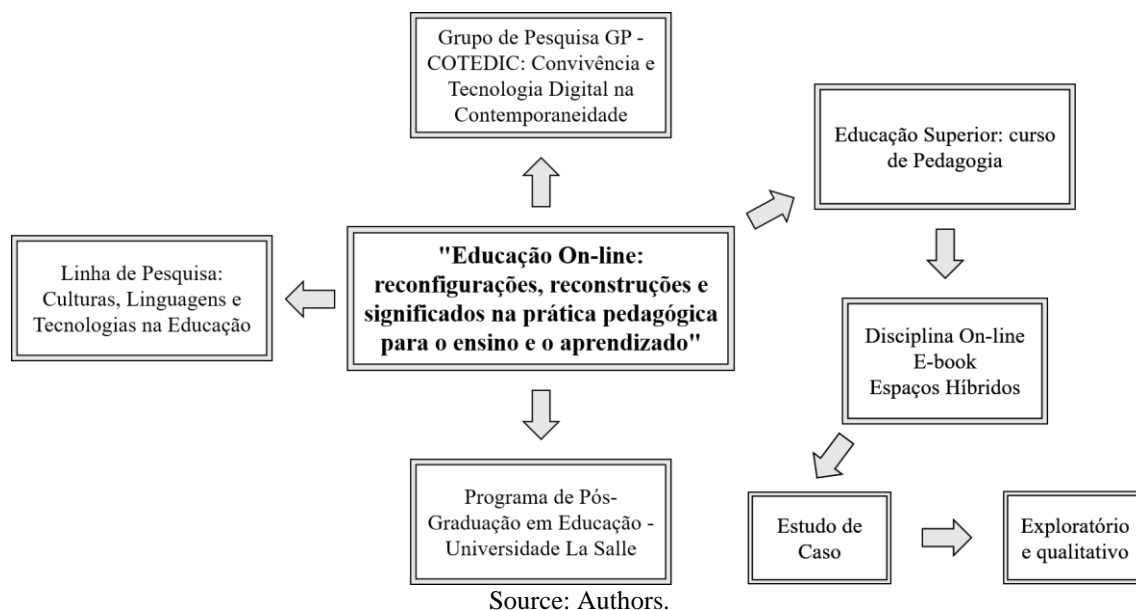
In the E-book the Education, Technologies and Cyberculture covered aspects such as metaphors, epistemic metaphors, hypertextuality, language and technological hybridism, representation of immersion and gamification elements in a perspective of literaturalizar science. We emphasize that in the cybercultural context there are countless possibilities that can still be explored.

4 Research Methodology

The methodological design contributed to the reflection on the structure requested in the construction of the E-book for the Pedagogy course at the La Salle University - Canoas and the expansion with other possibilities, tensioned with the difficulties highlighted in the research group, in order to enhance student learning. These discussions cross the project "On-Line Education: reconfigurations, reconstructions and meanings in pedagogical practice for teaching and learning", inserted in the research line Cultures, Languages and Technologies in Education, of the Graduate Program in Education and in the Research Group of COTEDIC UNILASALLE/CNPq. The methodology for the construction of scientific knowledge regarding the objective of the study is exploratory in nature, submitted to the Case Study and with a qualitative approach.

This type of research, according to Gil (2017), has as its main purpose to develop, clarify and modify concepts and ideas. Thus, in the methodology, the academic context was dynamically articulated, involving, as shown in Figure 4, the dimensions of teaching and research.

Figure 4. Methodological research scenario.

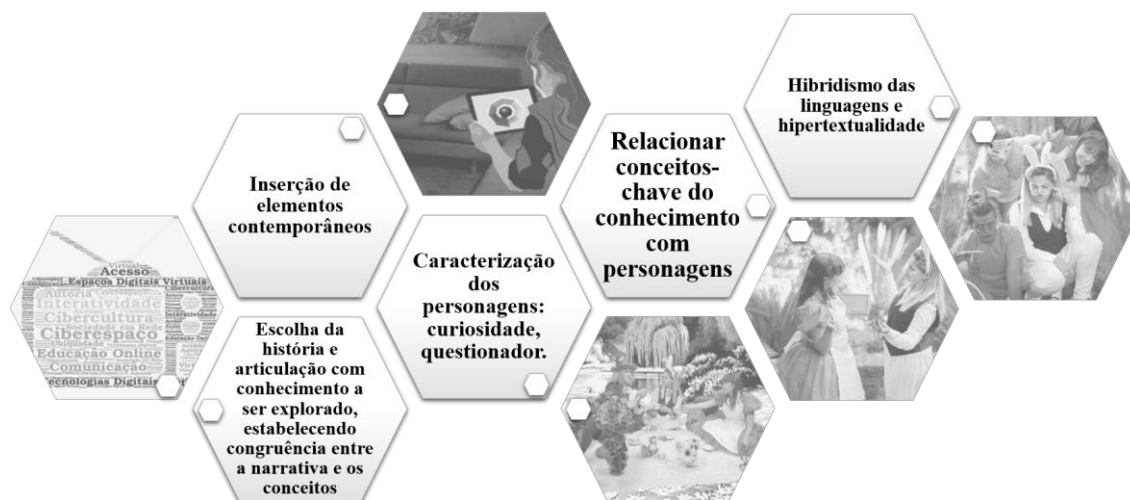


The exploratory nature is justified by the search to explore new learning objects and pedagogical practices from an E-book in congruence with the understanding of Online Education. Initially, the demand for the elaboration of the E-book contemplated the following aspects: division of the course program into 4 Learning Units; Study Topics consisting of introduction, background knowledge activity, titles and subtitles and unit synthesis; Icons such as glossary, highlighting and expansion of knowledge; one question in the Enade ³ per Unit model; Learning activities; Proof questions (also in the Enade model).

From the conventional request, standard stipulated by the university, and the tensions evidenced in previous pedagogical practices, we expanded the studies on the literaturalization of sciences and epistemic metaphors and contemplated in an articulated way, as shown in Figure 5, other aspects such as: Narrative of a story; Congruence between narrative and concepts; Characterization of characters; Contemporary elements; Highlight to the concepts metaphorically; Hypertext links; Multiple languages (Language Hybridism).

³ The National Student Performance Examination (Enade) consists of an assessment system for undergraduate courses in Brazil, articulating objects of knowledge, skills and abilities built throughout their training. More information at: <<http://inep.gov.br/enade>>.

Figure 5. Elementos de resignificação do E-book.



Source: Authors.

The case study took place from a systemic perspective, involving: bibliographic survey, pedagogical practice in the context of Higher Education, data collection and analysis, according to Yin (2015), an investigation of the contemporary phenomenon within its own real world context. Thus, the study consisted of the direct application of the E-book Education, Technologies and Cyberculture, built in the context of the research group for the disciplines: Computing and Multimedia in Education (from the Degree Courses and Psychology course program) and Education, Technologies and Cyberculture (from the Pedagogy course) of the La Salle University - Canoas.

The two disciplines are developed following the interactionist/constructivist/systemic epistemology, therefore, knowledge is understood from the interactions among students, students and knowledge, students and educator, in congruence with the environment, in a construction that occurs in the collective, where the whole and the parts are in dynamic relationship. The pedagogical practice was built through the following elements, which were the instruments for data observation:

- Moodle virtual environment for structuring the meetings, problematization of knowledge, chat for interaction, availability of scientific materials and the E-book, links for other technologies and achievement of the activities;
- E-book containing knowledge to be built in a hypertextual way, with articulations of links to other knowledge and proposition of activities;
- Sharing technologies, such as: Prezi, GoConqr and Popplet for carrying out activities and instantaneous communicators, such as: ICQ, Messenger and Skype for interaction.

The instruments record the interaction, participation and representation of the knowledge built by the research participants in the activities carried out in geographic space (classroom) and digital virtual spaces (Digital Technology). Participants are students enrolled in subjects from Pedagogy, Psychology and other Undergraduate courses at the La Salle University - Canoas.

Data were observed and organized to be analyzed in a qualitative approach, through interpretations attributed to situations experienced and recorded in activities carried out in undergraduate disciplines, considering the characteristics of “literature making” of sciences, epistemic metaphors, hybridity and representation of immersion.

Empirical data were subjected to content analysis, as proposed by Bardin (2011). The content analysis took place in three stages, which comprise: a) pre-analysis: phase of organization and systematization of the records to be analyzed, the resumption of the problem and research objectives in relation to the collected material and the elaboration of the units of analysis that will guide the interpretation; b) exploration of the material: phase of reading and exploring the data in relation to the criteria and units of analysis proposed to reach the understanding of the text; c) treatment of the results obtained and interpretation: at this stage, the data are systematized in order to become meaningful, valid and to highlight the information obtained.

5 Pedagogical Practices in Higher Education: Reflections on the E-book

The Education, Technologies and Cyberculture E-book explores the history of Alice in Contemporaneity in the subjects of Informatics and Multimedia in Education and Education, Technologies and Cyberculture, developed in the Distance Education modality. Thus, different digital virtual spaces and the E-book are used to present the contents, problematizations, interactions and representations of students in the construction of knowledge.

The empirical data observed were organized in different files according to the activities performed: chats, learning diary, glossary, evaluation activities, mental maps and presentations. The units of analysis were also defined, according to the problem and research objectives explored in this article, constituting the stage of pre-analysis according to Bardin (2011).

The material exploration stage, in the Content Analysis methodology (BARDIN, 2011) included the reading and exploration of data referring to the units of analysis: “literature making” of sciences, epistemic metaphors, hybridism and representation of immersion. In this reading, some extracts were selected that represent the units of analysis or their absence as a representation of situations that happened in the disciplines.

In the development of classes, from the Education, Technologies and Cyberculture E-book, we evidenced in the interactions and representations in virtual digital spaces that the students' learning presented different characteristics, such as the incorporation of epistemic metaphors, from the establishment of a relationship among knowledge, the metaphors and characters of the E-book story. This characteristic can be exemplified in a student's Learning Diary when he becomes aware of this process (Chart 1). In each subject, two Learning Diaries were proposed with the aim of the teacher to mediate the students' learning process; so the interaction occurs between student and teacher through feedback.

This characteristic can be exemplified in a student's Learning Diary when he becomes aware of this process (Chart 1). In each subject, two Learning Diaries were proposed with the aim of the teacher to mediate the students' learning process, so the interaction occurs between student and teacher through feedback.

Table 1. Recording in the Moodle Learning Diary.

One of the lessons I can take from the E-book is how questioning can be a powerful tool for learning and building knowledge. It is very noticeable in Alice, that, when she was in doubt, she asked questions for her own knowledge, and thus she managed to obtain information necessary for her learning.
Feedback: Congratulations on exploring Wonderland at every stage of the game!!!

Source: Extracted from Moodle.

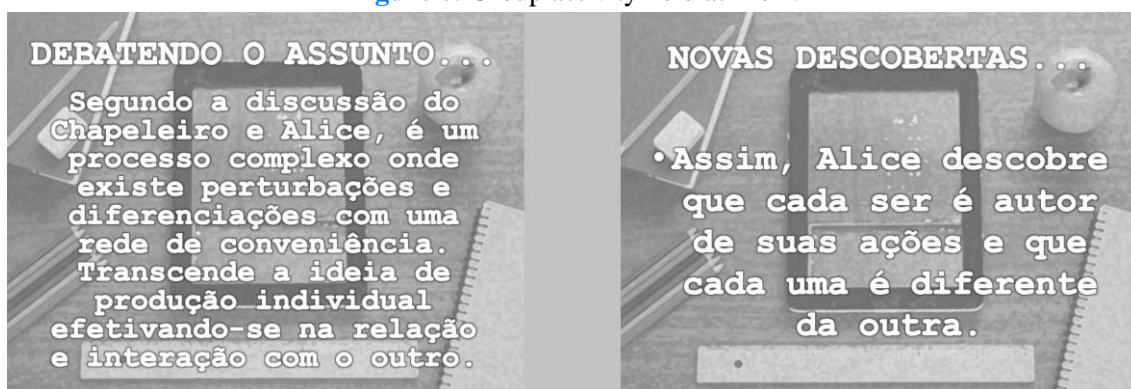
In this statement, the student legitimizes the explored history and understands the metaphors addressed in the E-book, re-signified through interactions among colleagues and activities built during the course, according to Palma (2015), identifying the novelty in the way of producing meanings. The student demonstrates awareness of his own learning process, emphasizing the importance of problematization (questioning) for the construction of knowledge.

In the E-book narrative and in the proposed activities, the students' cognitive actions were highlighted, either through dialogues among the characters involving the reader, problematization about knowledge or systematization of learning through Distance Teaching, in order to identify the meanings attributed to knowledge by the students, placing it in a context (or setting). In the E-book, Alice and the March Hare research in scientific works the concepts to solve the challenges of the “game”.

- See what I found in this book, Alice, according to Maturana and Varela (2002), the configuration of living spaces occurs in the flow of interactions among human beings and the environment; in this flow of interaction we evidence the transformation of human beings and the environment, both are transformed in daily life, intertwined by emotions, perceptions, representations, disturbances and compensation of the disturbances. (BACKES; MANTOVANI; VAZ, 2018, p. 91).

In the E-book, the content referring to the living space is explored based on its own characteristics: group activity for the flow of interactions, definition of a common theme based on perceptions and representations, collective construction for transformation and sharing technology. At the beginning of the semester, an activity was developed through sharing technology on Education and the processes of expression (authorship), communication, interaction (interactivity) and cooperation, in both subjects. Of 9 group works, 5 contemplated the relationship of knowledge, metaphors and characters. Figure 6 represents the construction of one of the groups that stood out from the others.

Figure 6. Group activity held at Prezi.



Source: Extracted from Moodle.

In the group, students appropriated the story proposed in the E-book to represent knowledge about the importance of disruption in cooperation, pointing out to Alice the protagonism of her actions in interaction with the other characters. According to Alves (2008), we can highlight other ways of weaving knowledge, considering other logics to learn and understand it.

In this activity, we evidence that students attributed meanings to knowledge in the creation of the metaphor, inserting it and characterizing it in a literatureized context. Still, in this same perspective, we highlight the textual record of another student in the learning diary.

Table 2. Moodle Learning Diary Record.

I learned from Alice, the Cat and the Hare that we can interact, use social networks to connect and also not forget about the book, which is a very good tool we also use reading to communicate.

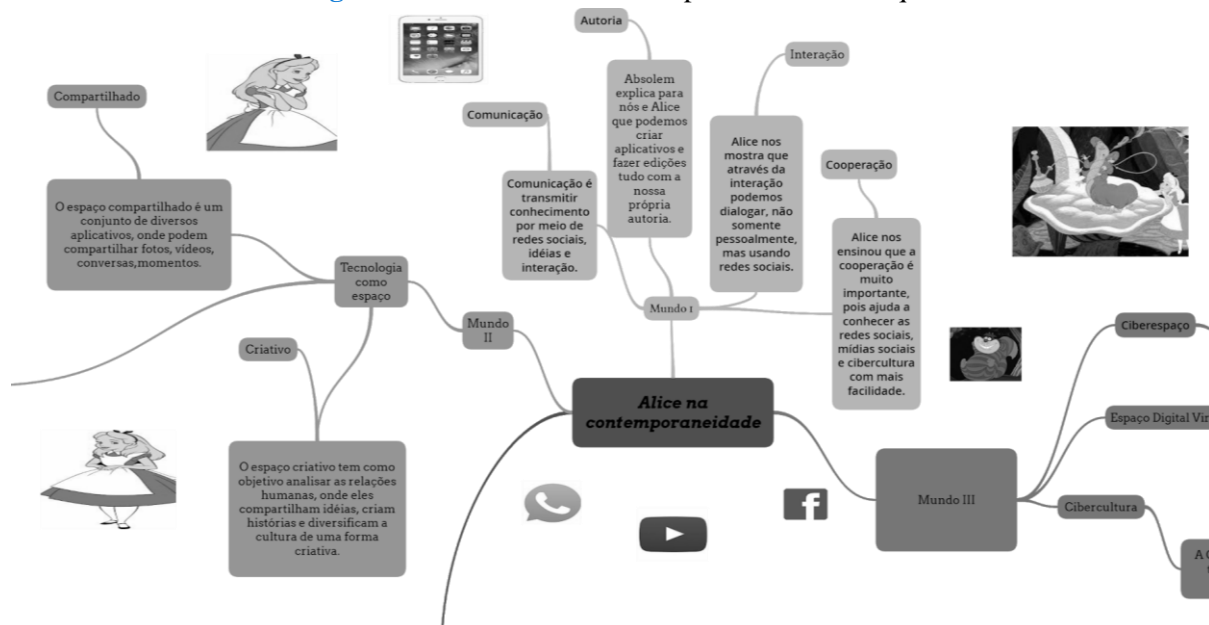
Source: Extrcted from Moodle.

In this record, the student represents the hybridity among technologies and the book, from the perspective of coexistence, and identifies the knowledge built in his daily life (social networks), also in a literatureized way.

In addition to the technological hybridity evidenced in the activities carried out in Prezi (sharing technology and E-book) and in the learning diary (reference from social networks and printed books), we also evidenced the hybridity of language explored in the mental map activities. In each subject, 3 different moments were proposed, initially most

students explored the hybridity of language in maps using only images. In Figure 7, a group of students used GoConqr, exploring texts, words, icons, character images, scenes and objects. Conceptual and fictional texts for the representation of concepts are also explored.

Figure 7. Cut from the mind map made in GoConqr.



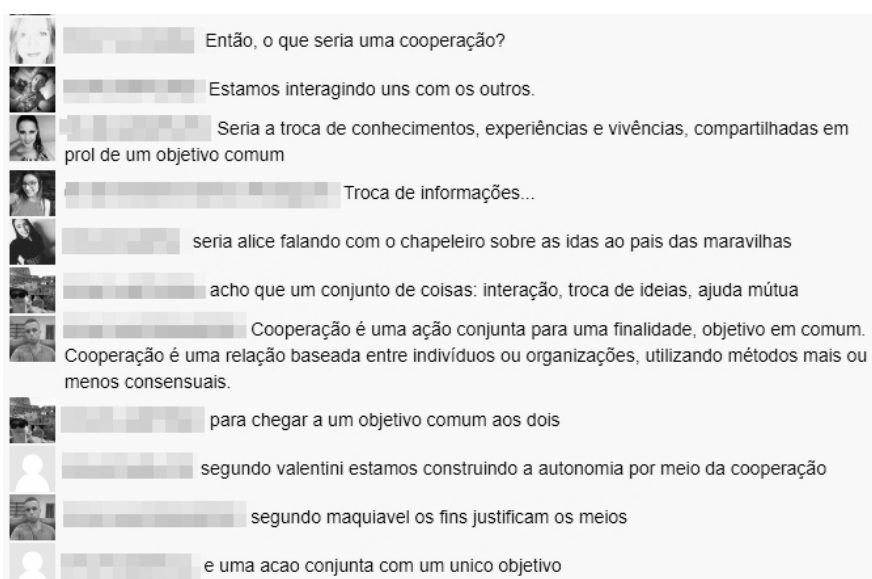
Source: Extract from Moodle.

In the mental map we show the narrative that accompanies and articulates the different elements, both imagery, iconic and textual. Students represent the logic of their thoughts, that is, the “path” followed for the construction of knowledge, in a literary and schematic way, different from the narrative used in the E-book, even if the plot of the story is maintained. According to Palma (2014) we perceive creativity, meanings, free and unlimited articulation in the representation and socialization of scientific knowledge.

In this sense, we notice the emergence of the meaning attributed to knowledge, learning, configured by the authorship in the construction of the text, stating that the interaction does not only occur personally (physical presence), but also in social networks. This authorship is experienced and expressed in the activity through the relevance of the joint construction with the colleague, co-authorship, by highlighting the creative space as a space of diversity and sharing, being named by Silva (2014) Online Education. We also identified that the concept of cooperation, represented in the mental map, is under construction from approaches that do not always make sense or are not justified, as in the case of the association with "social networks" and "cyberculture".

The representation of immersion in relation to the context in which the knowledge was inserted can be seen in the extract from the chat held in Moodle for the discussion of the concept of interaction. This representation of immersion occurred through the literaturalization of sciences, proposed in the E-book, and adapted by the students during the discussion. Students interact as if they were part of history, accepting the invitation to “rewrite it”, questioning and re-elaborating it, in the construction and understanding of the concept of cooperation.

Figure 8. Extract from the chat held in the Moodle virtual environment.



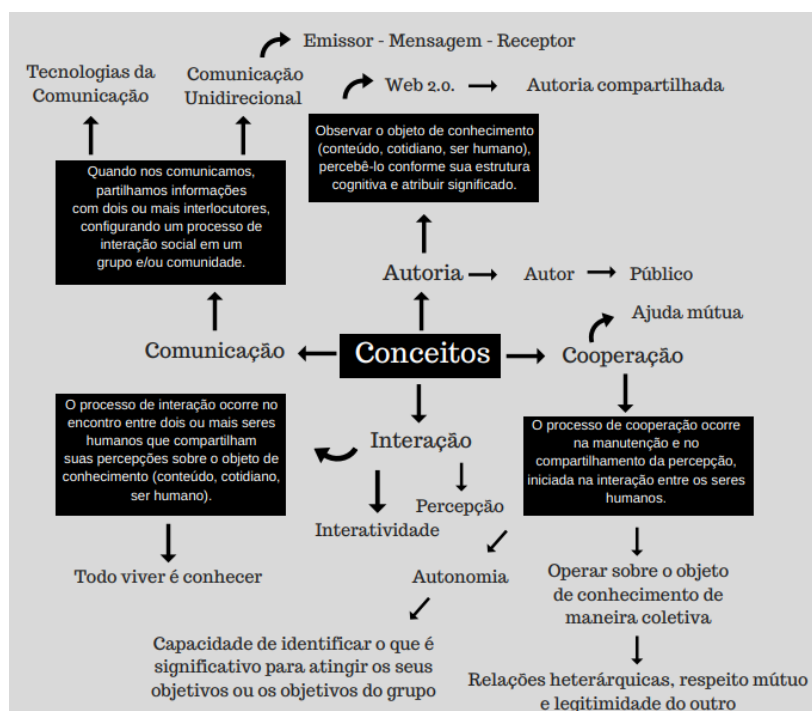
Source: Image captured from Moodle.

Through the story, students are able to identify the characteristics of the discussed concept (joint action, mutual help) and establish a relationship with the situation (context) defined in the story. In this sense, students attribute meaning to scientific knowledge based on the situation created for the story, identifying and citing theoretical authors explored in the E-book narrative, such as the case of Valentini and Soares (2010), and establishing congruence with their ontogenies, history of human interactions, according to Maturana and Varela (2002), articulating with other prior knowledge, such as the reference to Machiavel.

In the development of the disciplines, we realized that the exploration of the E-book contemplating characteristics of literaturalization of sciences and representation of immersion, from epistemic metaphors and gamification elements, did not only occur through a resource to learn better. At times, the exploration of the E-book potentialized the opening to other forms of representation and understanding of knowledge among students.

It is important to highlight that the literaturalization of sciences represents a challenge for students. Ontogeny is built from educational experiences based on dominant paradigms, characterized by pedagogical practices considered traditional, as defined by Becker (2012). In some situations, we evidence that students attributed meaning to knowledge, corresponding, in a way, to the learning objectives from the exploration of the E-book. However, the form of representation follows the format traditionally used in the academia environment, reproducing the text explored in class, as we can evidence in the mental map in Figure 9, referring to the theme Education, authorship, communication, interaction and cooperation.

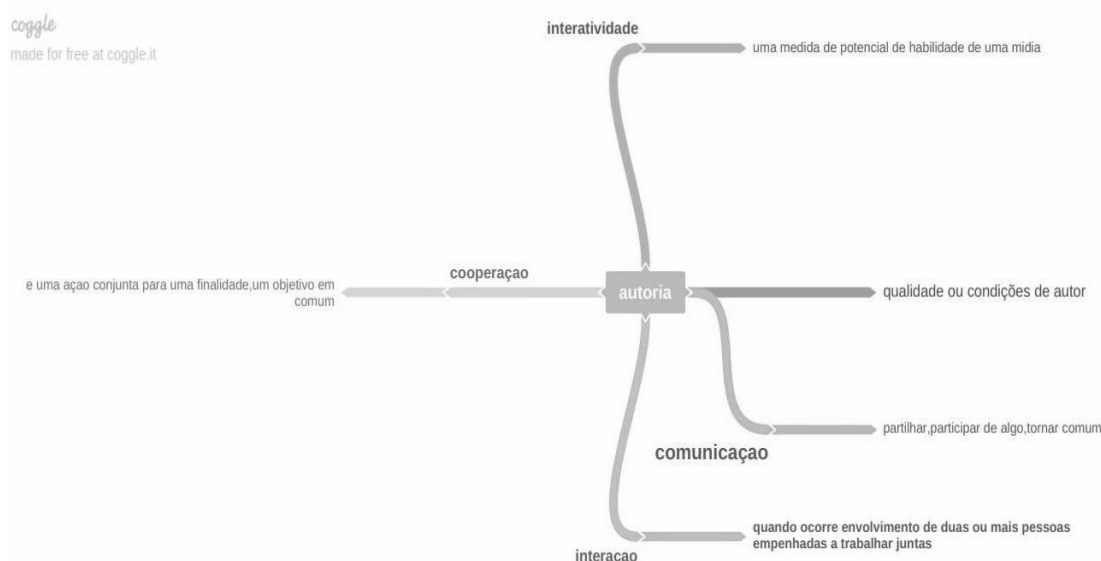
Figure 9. Group activity performed in Microsoft Office Word text editor.



Source: Extracted from Moodle.

In the representation, we identify the students' cognitive action in the articulation of knowledge with the experiences lived in the discipline and an authorial text in the definition of "communication". In the representation, we identify the students' cognitive action in the articulation of knowledge with the experiences lived in the discipline and an authorial text in the definition of "communication". Articulations between different processes and technologies are identified. However, even presenting an authorial text for "communication", it is not related to multidirectional communication, highlighted by its importance in the narrative. The hybridity of language through images, icons and other visual representations was also not evidenced, nor were epistemic metaphors. In this activity, we realize that knowledge is under construction.

In other situations, we have shown that it is not possible to identify whether the learning objectives were achieved. In Figure 10, the student creates a mind map based on the definition of Authorship present in the E-book. However, the map only presents decontextualized concepts, without establishing relationships with daily life or the knowledge built in the discipline. Furthermore, there is no use of language hybridism (such as articulation with figures related to concepts) or metaphors involving history for the representation of knowledge.

Figure 10. Activity performed on the Coogle platform.

Source: Extracted from Moodle.

In the schematic representation, we evidence the mere reproduction of knowledge, as presented in the E-book, not revealing the cognitive action performed by the student. This does not necessarily mean that the students have not learned, but we do not evidence, in the constructed representation, their meaning, their authorial and creative positioning, as well as the lack of technological fluency in the use of this sharing technology.

We also identified the difficulty in representing knowledge in activities with familiar characteristics to the academic environment, as in the case of the Learning Diary, in the Moodle virtual environment. In the following extract, the student reports his learning in an evasive way, citing some concepts developed in the E-book.

Table 3. Learning Journal Record in Moodle.

Aprendemos melhor as ligações com tudo, o mundo e a tecnologia, que a interação, comunicação e cooperação podem estar em união quando se trata do meio digital e que assim pode se ter um aproveitamento maior para uma melhor aprendizagem

Source: Extracted from Moodle.

In this extract, we have difficulty in showing what are the understandings about the concepts of communication, interaction and cooperation, as well as the possibility of these concepts being present in non-digital media. In this activity, we can stress the difficulty of a narrative in which science is literatureized, the student's lack of cognitive structure or the non-reading of the E-book, which may justify the weakness in understanding the concepts studied.

Despite being explored in the construction of the E-book and in the activities proposed in the Education, Technologies and Cyberculture discipline, after analyzing the data, we realized that the element of gamification was not contextualized in the students' representations, which shows a tension to be explored in the learning process. In this sense, it

is necessary to reflect on the potential of gamification in pedagogical practices for the students' learning process in order to contribute to the apprehension and redefinition of knowledge.

6 Considerações Finais

The Education, Technologies and Cyberculture E-book contemplates aspects of literaturalization of sciences, epistemic metaphors, hybridism, elements of gamification and representation of immersion in congruence with the ways of living and living in contemporaneity, including training in the Distance Education modality, configuring itself as a potential for online education. In its structure, it presents a dialogical, problematizing, interactive and contextual narrative, based on metaphorical, familiar understandings and in congruence with technologies.

The subjects of Education, Technology and Cyberculture and Computing and Multimedia in Education, developed from the E-book, literatureizing the knowledge of the program, were concluded with significant indices of participation, interaction and student achievement. Initially, the proposal disturbed the students who expressed difficulty in understanding this new way of representing and presenting knowledge in the educational context. “How to learn from an Alice in Wonderland story? What should I consider as knowledge, history, dialogues or quotes used?”. Some students were unable to overcome this difficulty, following the recommendation to consult the original texts referenced in the E-book on each topic.

The development of classes, as well as the carrying out of activities, followed the logic of literalize the sciences, therefore, knowing and living for Maturana and Varela (2002). During the course, students engaged in the plot and understood that in the metaphors presented in the narrative there was also knowledge (episteme), articulating the characteristics of knowledge to the actions of the characters. During the discipline, students engaged in the plot and understood that in the metaphors presented in the narrative there was also knowledge (episteme), articulating the characteristics of knowledge to the actions of the characters. During the course, students engaged in the plot and understood that in the metaphors presented in the narrative there was also knowledge (episteme), articulating the characteristics of knowledge to the actions of the characters. To represent knowledge, it was not enough to represent what the studied authors addressed, but to understand the characteristics of this knowledge in order to be able to identify them in the analogies established with the metaphorical object. To represent knowledge, it was not enough to represent what the studied authors addressed, but to understand the characteristics of this knowledge in order to be able to identify them in the analogies established with the metaphorical object.

The narrated story represents the scenario that invites students to participate, contextualize the knowledge covered, problematize them through characters and dialogues, and explore different gamification elements that consist of challenges, playfulness, stages,

among others. Therefore, the redefinition takes place in a systemic and complex perspective that enhances the engagement of students, the interaction among participants and in congruence with the cybercultural context, avoiding dropout rates.

We highlight, in agreement with Backes and Mantovani (2017), the importance of reframing pedagogical practices in congruence with the contemporary context, characterized by complexity, dynamics, paradox and emergence and of intensifying pedagogical mediation in online education, so that we can significantly develop the role of students and educators in the processes of teaching and learning.

This perspective is a novelty for educators and students and needs more research and pedagogical practices so that this novelty becomes an innovation for education. Aspects related to gamification elements need to be further explored, as well as other possibilities are being investigated in the creation of new E-books.

References

ABED - ASSOCIAÇÃO BRASILEIRA DE EDUCAÇÃO A DISTÂNCIA. **Censo EaD.BR:** Relatório analítico de aprendizagem a distância no Brasil 2017. Curitiba: InterSaberes, 2018. Available on: http://abed.org.br/arquivos/CENSO_EAD_BR_2018_digital_completo.pdf. Access on: 4 ago. 2020.

ALVES, Nilda. Decifrando o pergaminho: Os cotidianos das escolas nas lógicas das redes cotidianas. In: ALVES, Nilda; OLIVEIRA, Ines Barbosa (Eds.). **Pesquisa nos/dos/com os cotidianos das escolas** (pp. 15-38). Petrópolis, Brasil: DP&A, 2008.

BACKES, Luciana. O hibridismo tecnológico digital na configuração do espaço digital virtual de convivência: Formação do educador. **Inter-ação** (UFG. Impresso), v. 40, n. 3, p. 435-457, 2015. Available on: <https://www.revistas.ufg.br/interacao/article/view/35419>. Access on: 4 abr. 2019.

BACKES, Luciana; MANTOVANI, Ana Margô. Educação on-line na cibercultura: Desafio de literaturalizar a ciência em E-book. **Informática na educação: Teoria & prática**, v. 20, n. 1, p. 95-113, 2017. Available on: <https://seer.ufrgs.br/InfEducTeoriaPratica/article/view/76261>. Access on: 4 abr. 2019.

BACKES, Luciana; MANTOVANI, Ana Margô; BARCHINSKI, Karen Cardoso. Educação superior em espaços híbridos: A presença e a copresença no processo de cooperação. **Conjectura: Filosofia e Educação** (UCS), v. 22, n. 3, p. 458-481, 2017. Available on: <http://www.ucs.br/etc/revistas/index.php/conjectura/article/view/4792>. Access on: 4 abr. 2019.

BACKES, Luciana; CHITOLINA, Renati Fronza; BARCHINSKI, Karen Cardoso. A Configuração do Hibridismo na Educação On-Line: Desafios para a Prática Pedagógica. In: IV SEMINÁRIO INTERNACIONAL PESSOA ADULTA, SAÚDE E EDUCAÇÃO: A CONSTRUÇÃO DA PROFISSIONALIDADE DOCENTE. 4, 2018, Porto Alegre. **Anais do...** Porto Alegre: ediPUCRS, 2018. p. 1-11. Available on: <http://editora.pucrs.br/acessolivre/anais/sipase/assets/edicoes/2018/arquivos/33.pdf>. Access on: 5 abr. 2019.

BACKES, Luciana; MANTOVANI, Ana Margô; VAZ, Douglas. **Educação, tecnologias e cibercultura (E-book)**. Canoas, Brasil: Universidade La Salle, 2018.

BARCHINSKI, Karen Cardoso; BACKES, Luciana. (2018). A literaturalização das ciências no contexto acadêmico – UNILASALLE: hibridismo das linguagens e metáforas epistêmicas. **Póiesis Pedagógica**, 16(1), 87-102. <https://doi.org/10.5216/rpp.v16i1.55540>. Access on: 10 jun. 2019.

BARDIN, Laurence. **Análise de conteúdo**. São Paulo: Edições 70, 2011.

BECKER, Fernando. **Educação e construção do conhecimento**. 2 ed. Porto Alegre: Penso, 2012.

BRASIL. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP).

Censo da educação superior: Notas estatísticas 2017. Brasília, 2017 Available on:

http://download.inep.gov.br/educacao_superior/censo_superior/documentos/2018/censo_da_educacao_superior_2017-notas_estatisticas2.pdf. Access on: 10 abr. 2019.

GAARDER, Jostein. **O mundo de Sofia**. São Paulo: Companhia das Letras, 1991.

GIL, Antonio Carlos. **Métodos e técnicas de pesquisa social**. 7 ed. São Paulo: Editora Atlas SA, 2017.

MATURANA, Humberto; VARELA, Francisco. **A árvore do conhecimento: as bases biológicas da compreensão humana**. São Paulo: Palas Athena, 2002.

NORONHA, Fabrícia Py Tortelli. **A construção do conhecimento de algoritmos no contexto do hibridismo tecnológico: Análise da prática pedagógica aplicada no IFRS**. 2016. Dissertação (Mestrado em Educação), Universidade La Salle, Canoas, 2016.

NORONHA, Fabrícia Py Tortelli; BACKES, Luciana, CASAGRANDE, Cledes Antônio. Algoritmos na Concepção da Teoria Piagetiana: Tecnologias Analógicas e Digitais. **Schème: Revista Eletrônica de Psicologia e Epistemologias Genéticas**, v.10, n. 2, p. 270-282, 2018. Available on: <http://www2.marilia.unesp.br/revistas/index.php/scheme/article/view/8622>. Access on: 30 abr. 2019.

PALMA, Héctor A. Metáforas científicas. Límites y posibilidades de una relación tradicionalmente incestuosa. In: BAUZÁ, Hugo Francisco (Ed). **Reflexiones contemporáneas**. Nuevos aportes desde las humanidades y la ciencia. Buenos Aires: Academia Nacional de Ciencias de Buenos Aires, 2014. 136 p.

PALMA, Héctor A. Ciencia y metáforas: Los viejos ruidos ya no sirven para hablar. **Cuadernos de Neuropsicología**, v. 9, n. 1, p. 134-146, 2015. Available on: <http://www.redalyc.org/pdf/4396/439643126008.pdf>. Access on: 24 abr. 2019.

PALMA, Héctor A. **Ciencia y metáforas**. Crítica de una razón incestuosa. Buenos Aires: Prometeo, 2016.

SANTAELLA, Lúcia. **Matrizes da Linguagem e Pensamento**. Sonora, Visual, Verbal. Aplicações na Hipermídia. São Paulo: Iluminuras/Fapesp, 2001.

SANTOS, Boaventura de Sousa. **Um discurso sobre as ciências**. 2 ed. São Paulo: Cortez, 2004.

SANTOS, Edméa. Educação online para além da EaD: Um fenômeno da cibercultura. *In: X Congresso Internacional Galego-Português de Psicopedagogia*, n. 1, 2009, Braga. **Anais do...** Braga: Universidade do Minho, 2009. p. 5658 -5671. Available on: <http://www.educacion.udc.es/grupos/gipdae/documentos/congreso/Xcongreso/pdfs/t12/t12c427.pdf>. Access on: 17 abr. 2019.

SILVA, Marcos. **Sala de aula interativa**. Rio de Janeiro, Brasil: Quarter, 2014.

VALENTINI, Carla Beatris; SOARES, Eliana Maria do Sacramento. Fluxos de Interação: uma experiência com Ambiente Virtual de Aprendizagem na Web. *In: VALENTINI, Carla Beatris; SOARES, Eliana Maria do Sacramento (Org.). **Aprendizagem em ambientes virtuais**: compartilhando ideias e construindo cenários*. Caxias do Sul, RS: Educs, 2010. Available on: <https://goo.gl/vpxv8L>. Access on: 28 nov. 2016.

YALOM, Irvin. D. **Quando Nietzsche Chorou**. 1ed. Rio de Janeiro: Harper Collings, 1992.

YALOM, Irvin D. **A Cura de Schopenhauer**. 1ed. Rio de Janeiro: Harper Collings, 2005.

YIN, Robert K. **Estudo de Caso: Planejamento e métodos**. 5 ed. Porto Alegre: Bookman editora, 2015.