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Doctoral Colloquium—Immersive, Inventive and Gamified Narratives: A Pathway to Teacher Training in the Digital Age

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Abstract. Since ancient times, narratives have played a central role in the construction of knowledge and in education, initially through orality and later through printed books, traditional forms that privileged speech and writing as the main means of communication and teaching. With digital technologies, Generative Artificial Intelligence (GenAI) and virtual 3D digital worlds in the metaverse, narratives have expanded, enabling immersion, invention and gamification. These advancements foster new literacies that transcend oral and written traditions, encouraging the development of transliteracy. In view of this, this doctoral colloquium paper presents preliminary results from an ongoing doctoral research study in Education. The objective is to present a pedagogical practice involving the co-creation of immersive, inventive and gamified narratives, to identify clues that help us understand which literacies emerge. Conducted with teachers in initial training from the Pedagogy program at a university in southern Brazil, this qualitative research employs the Cartographic Method of Intervention-Research to produce and analyze the data. Preliminary results reveal that through the co-creation of immersive, inventive and gamified narratives, teachers transcend traditional literacies established in conventional teaching spaces. This process requires participants to be able to move through and appropriate multiple spaces, languages and technologies, promoting a connection between humans and non-humans in a transorganic connective act. In this context, teachers cease to be mere content transmitters, becoming co-creators of pedagogical practices that dialog with contemporary demands, indicating paths for transformative teacher training, sensitive to the complexities of the present and aligned with the OnLIFE Education paradigm.

Keywords: Narratives, Teacher Training, Digital Education.

1 Introduction

Narratives[1] have always been fundamental to knowledge construction and education. Initially transmitted through oral traditions, they were later recorded in writing, first on scrolls and eventually in printed books. These formats became the dominant means of communication and teaching, prioritizing speech and writing as primary ways of sharing information [1].

Digital technologies (DT) have profoundly transformed traditional forms of communication. Today, multiple modes coexist—GIFs, videos, images, music, and written texts—spanning both physical and digital spaces and involving human and non-human languages. This shift has redefined how narratives are structured, expanding possibilities for self-expression and knowledge construction. This process enables the emergence of immersive, inventive and gamified narratives (in Portuguese, narrativas imersivas, inventivas e gamificadas – **NIIG**) [2—3], making it possible not only to invent new ways of telling and experiencing stories but also to develop and produce knowledge.

However, these transformations do not seem to have significantly affected traditional spaces for generating knowledge, such as schools. The school environment is still characterized as a space dominated by oralization, books and writing, relegating to the background the multiple languages and possibilities brought by DT and, more recently, Generative Artificial Intelligence (GenAI). In view of this, it is essential that initial and continuing

[1] In this study, we adopted the term ‘narratives’ as a synonym for ‘storytelling’.

teacher training be developed based on a new understanding of how knowledge is produced in the world, with different technologies, platforms, languages and digital networks, which require new literacies and new skills in reading, expression, communication and knowledge production.

Today, teaching and learning are hybrid and multimodal, and therefore require the invention of methodologies and pedagogical practices that develop from the problematization of a world in constant transformation, which defines education in this third millennium. From this context emerges the research problem: How should we train teachers for teaching in the third millennium? What literacies do they need to develop? Considering this, this doctoral colloquium paper shares preliminary results of a doctoral research in Education. The objective is to present a pedagogical practice involving the co-creation of immersive, inventive and gamified narratives (in Portuguese, NIIG), to identify clues that help us understand which literacies emerge.

2 Immersive, Inventive and Gamified Narratives: Theoretical Foundations

To address the concept of narrative, it is essential to first clarify its meaning. According to Marcuschi [4], narratives are a textual typology that reflect predominant linguistic features and encompass different textual genres that manifest according to social demands and communicative purposes, all within predefined formats focused solely on human communicative production. However, this perspective has been challenged by the growing network connection between humans and non-humans, such as devices, algorithms and data, resulting in complex ecosystems of co-creation and knowledge transformation [5].

In this new scenario, the production of narratives transcends the exclusivity of human action, becoming a connective and collaborative process between different entities. Thus, we do not seek to limit NIIG to rigid definitions of genre or textual typology. Instead, we conceive these narratives as pedagogical practices that, in addition to telling and co-creating stories, promote the construction of meanings and the production of knowledge in the connection between human entities (such as teachers, students and other participants in the educational context) and non-human entities (such as DT, GenAI, schools, cities).

After this brief review of the concept of narratives, we arrive at the first element that encompasses the narratives discussed in this article: immersion. According to Murray [6], immersion refers to the deep and total involvement of the participant in an experience, where they not only absorb the story but become part of it, interacting with the development of the plot. This concept has expanded with the advancement of DT, enabling greater depth in participant engagement and significantly transforming the ways narratives, characters, settings and even storytelling methods are constructed.

Bonfim, Morgado and Pedrosa [7] state that immersive narratives have the potential to engage audiences through their structural elements, such as characters, settings and plots, creating a sense of belonging to the fictional world without necessarily relying on digital technologies. However, in this research, the process of immersion in narratives is deeply connected to co-creation with DT, GenAI and metaverses, enabling the connective and collaborative construction of plots, characters and settings. This act of co-creation develops as a transorganic act [5], where human and non-human entities connect to generate narratives and knowledge, promoting networked learning and offering new forms of co-creation.

The inventive nature of the narratives developed in this research is based on the studies of Kastrup [8] and Schlemmer [9—10]. According to Kastrup [8], the concept of invention is not limited to creating something new from what is already established; instead, it emerges from a process of problematization, experimentation and discovery. Invention occurs in encounters with the unexpected, when humans experience and explore new ways of thinking, acting and knowing. This concept is directly related to the idea of problem invention, which moves away from merely seeking solutions to pre-formulated questions and operates within the realm of problematization. In the context of this study, it refers to the process of co-creating the narrative, which emerges from the problematization of the contemporary world.

The concept of gamification, as adopted in this research, is based on Schlemmer [11], who emphasizes that games and gamification have been widely explored in education to create teaching and learning situations that engage participants in enjoyable and challenging ways. According to the author, one way to promote gamification is through the construction of narratives, enabling individuals to create their own narrative while simultaneously participating in it, thus fostering a higher level of engagement and immersion. From this perspective, a story can unfold into several others that may occur in parallel times and spaces. In this research, the NIIG are built from an initial narrative inspired by the Hero's Journey [12] and aim to develop challenges and missions.

In the field of education, the NIIG are developed with teachers in initial or continuing training, as well as with students in basic or higher education. The objective is to stimulate the process of invention in a connective act with various GenAI systems, as well as DT, apps and networked platforms. Rather than merely representing or

interpreting reality, these narratives encourage problematization and invention, prompting critical reflection on the present.

This perspective is supported by the OnLIFE Education Paradigm [9—10, 13—14], which refers to an education that, regardless of modality, is linked and connected (On) to life (LIFE). In this paradigm, teaching and learning processes emerge from the problematization of the world in the present time and are developed through acts that connect humans and non-humans in an inventive process. This process is enhanced by inventive methodologies and inventive, sympoietic and gamified pedagogical practices [15].

3 From Multimodal Literacy to Transliteracy in Immersive, Inventive and Gamified Narratives

We live in a world characterized by multiple forms of communication (words, images, music, videos, gestures) that coexist in different spaces (geographical and digital), presences (physical and digital), and languages (human, computational, verbal and non-verbal). In this context, the combination of these varied semiosis reflects our worldview and the way we organize and share ideas. Such diversity highlights the need to understand the meanings of different modes of communication and their implications for the construction of the NIIG.

Multimodality, according to Kress and Van Leeuwen [16], requires a literacy that goes beyond traditional reading and writing, incorporating the interpretation of multiple semiosis. This multimodal literacy fosters a critical understanding of the relationships between different modes of meaning-making, challenging educational paradigms exclusively centered on written and oral culture. However, the complexity of the contemporary world demands going beyond multimodal literacy to address new forms of communication and learning that emerge with technological expansion.

The NIIG mobilize new languages, such as stochastic generative ones originating from GenAI, which extend beyond modes of communication like text, image, audio and video, but also intertwine with the multiplicity of spaces in which the narratives are co-created (physical – such as schools, neighborhoods, cities – and digital – such as the metaverse), in physical and digital presences (social media profiles, game characters, avatars in metaverses, or via webcam), in different sites and platforms (Canva, YouTube, StoryJumper, Discord). These narratives emerge from different analog technologies (audio recording, photos, music) and digital technologies (smartphones, computers, video call apps, instant messaging), developed in acts that connect humans (students, teachers) and non-humans (DT, GenAI). In these narratives, there is a decentering that causes knowledge to circulate in environments beyond books, traditional formats and languages.

In this sense, the concept of transliteracy [17—18] expands the scope of multimodal literacy by integrating competencies that involve reading, writing, interpretation and creation across various contexts, technologies and modalities. Transliteracy is the ability to navigate between different platforms and spaces, mobilizing different literacies — multimodal, academic, digital, scientific, among others — according to the demands of each learning experience. This study adopts this perspective to highlight the importance of inhabiting, interpreting, and co-creating narratives in multiple languages, spaces and technologies, promoting teaching and learning in a dynamic and integrated way.

The concept of transliteracy is evident in the connective-ecologies [10] that are formed in the co-creation process of NIIG. In these connective-ecologies, knowledge is built in a network, integrating various intelligences and languages (human and non-human), driven by the co-engendering of multiple spaces, presences, technologies, etc. Based on the concept popularized by Jenkins [19], transliteracy can also be understood through its non-sequential, decentralized movement, without the assumption that one path or modality is better than the other, since all pathways complement each other and contribute to form the whole.

Considering this, promoting transliteracy in teacher training is essential to transform pedagogical practices aligned with new paradigms, such as the OnLIFE Education Paradigm. Thus, the co-creation of NIIG values the diversity of languages, technologies and spaces, fostering collaboration, inventiveness and networked knowledge construction. This approach, by transcending traditional centralities, contributes to the formation of connective-ecologies [10], challenging still-dominant school practices and aligning education with the demands and complexities of the contemporary world.

4 Methodology

To develop the research, we adopted the Cartographic Method of Research-Intervention [20], which is a method aimed at following a process, rather than representing an object. It involves investigating a production process,

understanding research not as a search for pre-defined goals, but as a journey that establishes its own goals along the way.

To analyze the co-creation process of the NIIG and identify its goals, we mapped the research process, observing how the investigation impacts the study object, the researchers, and knowledge production. The study took place within the Academic Activity "Teaching and Learning in the Digital World" (AA-TLDW), conducted between August and December 2023, with the participation of 12 pre-service teachers, one teacher-researcher, one PhD student, and one undergraduate research assistant. Inspired by Gamified Learning Projects [15], the AA-TLDW involved platforms such as Discord, Moodle, Spatial, and various DT and GenAI (ChatGPT, Copilot), integrating technologies and digital spaces with pedagogical practice.

In the initial narrative "Alice and Tom Kat on the Paths of OnLIFE Education[2]", the teachers in training experience the concepts of the OnLIFE Education Paradigm [9—10] through multimodal clues (texts, images, audios and videos) and interactions with technologies and digital platforms such as Google Docs, Discord, Canva, StoryJumper, GenAI (ChatGPT, Copilot), and metaverses (Spatial). This interaction promoted a dynamic articulation between humans, technologies, and spaces, configuring a connective-ecology [10].

During the activity, the mission "Tom Kat in Schools" emerged, challenging participants to present their schools to the narrative's characters. This experience allowed them to integrate the knowledge and discussions from the AA-TLDW into basic education contexts, expanding the immersive, inventive and gamified narrative initiated in the academic activity. The co-creation process connected teachers and students with generative AI, digital devices, technologies, and online platforms, while also incorporating elements from school and urban environments. This interaction formed an interactive network between human and non-human entities [5], fostering a collaborative process of invention.

To systematically capture and analyze the co-creation process of the NIIG, we adopted a qualitative approach based on the method. Data were generate through multiple sources, including participant observations, narrative logs and digital interactions on platforms such as Discord and Spatial. These qualitative insights were recorded in field notes, transcribed discussions, and multimodal artifacts produced by participants. The analysis followed a thematic coding process, in which emerging patterns were identified, categorized, and interpreted in relation to the theoretical framework of this paper.

5 Analysis and discussion of preliminary results

The "Tom Kat in Schools" mission involved the development of three challenges, which emerged from the initial narrative "Alice and Tom Kat on the Paths of OnLIFE Education," as shown in Fig. 1.

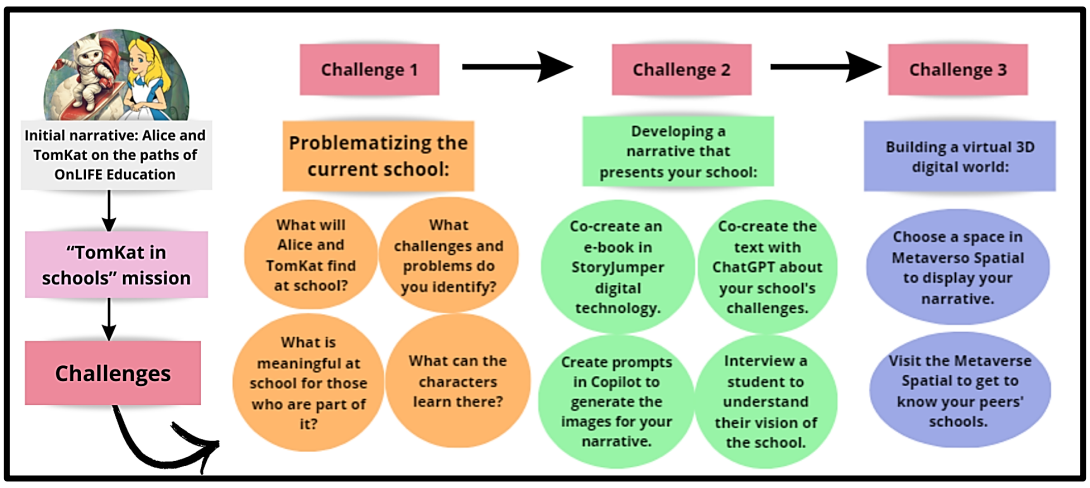

Fig. 1. "TomKat in schools" mission.

[2] In this narrative, Alice, the character from Lewis Carroll's classic "Alice in Wonderland", during one of her adventures in Wonderland, discovers a new portal: the OnLIFE Education Paradigm portal. In this portal, she meets a new character, Tom Kat. He is the main character of the ConectaKat, a network connecting children, teenagers and teachers in Brazil and Portugal, enhancing ecological-connective, inventive, and responsible protagonism in the OnLIFE Education Paradigm. To know more, visit: https://conectakat.com/.

Analyzing Fig. 1., we can see that the mission "Tom Kat in Schools" promotes engaged teaching and learning, transforming teachers into creators of a connective-ecology. Through inventive processes and problematization, teachers become co-creators, going beyond the mere reproduction of knowledge. In Challenge 1, they are prompted to reflect on the school space, identifying what is meaningful, recognizing challenges and problems. These elements demonstrate a pedagogical practice aligned with the OnLIFE Education Paradigm, which seeks to rethink teaching and learning in the contemporary context, problematizing the present world.

The second challenge expands the process of problematization, integrating collaboration with GenAI, in addition to the human perspective, through generative stochastic languages, such as ChatGPT and Copilot. Creation transforms into co-creation, moving from an exclusively human action to a transorganic connective act [5], where human and non-human entities co-engage, enhancing new ways of teaching and learning.

In this challenge, 12 immersive, inventive and gamified narratives emerged on the StoryJumper platform, enriched by various digital technologies (such as smartphones, ChatGPT, Google Docs, Discord, etc.). These narratives involved physical spaces (school and university) and digital spaces (Spatial Metaverse), connecting humans (teachers and students) and non-humans (DT and GenAI). These connections formed a connective-ecology [10], allowing participants to integrate different modes of languages and technologies, transcending the boundaries between the physical and digital, the human and the non-human. In the process, the teachers in training developed competencies in reading, interpretation and production in multiple formats, cultivating the transliteracy skill that emerged in this practice.

When constructing the narratives, the teachers reflected on the current school system, revealing a traditional model with classrooms organized in a rigid manner, focused on copying and reproducing content, with teachers centralizing the teaching and learning process (Fig. 2.). Through the images generated by GenAI and the spaces chosen by the teachers, it became evident that schools still preserve practices and structures that have changed little since their origin over five centuries ago. These narratives highlighted how physical and symbolic spaces shape a teaching vision centered on the transmission of content. Such a scenario points to the urgency of rethinking schools, their spaces, curricula and practices, considering the demands of current generations, the transformations of a hyperconnected world and emerging new paradigms, such as OnLIFE Education.

Fig. 2. A Co-creation of images of the spaces that constitute the school.

A similar situation occurred when the teachers included moments in their narratives where students were engaging in study activities. Whenever they asked GenAI for a description of a study situation in school, characters like Alice or TomKat were portrayed surrounded by books and notebooks (Fig. 3.), once again perpetuating a more traditional view of teaching and learning, where written modalities predominate. Smartphones, tablets, or computers were rarely featured, distancing the narratives from more contemporary learning scenarios.

Fig. 3. Co-creation of images of study situations at school.

In Challenge 3, teachers collaboratively built a virtual 3D digital world in the Spatial Metaverse. To support their development, they participated in guided workshops where they explored Spatial's interface, experimented with digital technologies, and engaged in peer discussions on designing immersive learning environments. Throughout the process, they received technical and pedagogical guidance on integrating multimodal elements, such as avatars, interactive objects, and embedded media, to enhance the narrative experience. In this world, the characters Alice and Tom Kat acted as hosts, leading visitors through a journey that showcased the teachers' schools and their experiences in the AA-TLDW. This hands-on engagement with 3D space creation not only deepened their understanding of immersive pedagogies but also fostered critical reflections on how digital environments can transform contemporary teaching and learning.

The space was designed to provide teachers the opportunity to explore their colleagues' immersive, inventive and gamified narratives (Fig. 4.). Through interactions in the Spatial chat (via audio, video and written text) and avatar presence, they had the chance to discuss and reflect on the transformations experienced in their peers' schools, as well as collectively problematize them, with the aim of rethinking contemporary education.

Fig. 4. Virtual 3D digital world built in the Spatial Metaverse by the teachers.

While experiencing the immersive, inventive and gamified narratives in the form of portals in the Spatial Metaverse and navigating between different platforms such as StoryJumper, YouTube, among others, the teachers in training identified the predominance of narratives whose plots portrayed the reality many face today: the scarce presence of devices, technologies, platforms and digital networks in school spaces, while also recognizing the gap that this absence creates. Similarly, they identified a strong presence of centralities: sometimes focused on the teacher, sometimes on the student, sometimes on the content, moving away from a networked perspective of teaching and learning.

This process revealed transliteracy as a central element, connecting physical and digital spaces, analog and digital technologies and multiple literacies to produce networked knowledge. The co-creation of the narratives required a critical perspective on traditional practices, challenging historical structures limited to physical spaces and exclusively human formats, aligning with the OnLIFE Education Paradigm. Furthermore, by integrating multiple languages, spaces and technologies, and developing transliteracy skills, the teachers transcended the role of mere users of educational technologies, adopting a co-creation and invention approach that transformed their understanding of the role of digital technologies in education.

We also highlight that the development of the Mission: Tom Kat in Schools took place within a connective-ecology, where teaching and learning processes unfolded in a network, in a transorganic connective act, within a

context of co-creation of NIIG. In these movements, learning developed in a linked and connected way, "On," with real LIFE, in the real professional contexts of the teachers in training, once again highlighting the OnLIFE Education Paradigm.

6 Conclusion and Future Work

This ongoing study highlighted the transformative potential of co-creating immersive, inventive and gamified narratives in the initial teacher training process. Through the creation of hybrid scenarios between the physical and digital worlds, such as in the Spatial Metaverse, participants experienced new ways of inhabiting educational spaces. Invention shifted the focus from pre-defined solutions to the problematization of real-world contexts, while gamification introduced playful elements, fostering collaboration and empowerment. This practice transcended the traditional centrality of teaching and learning, aligning with the OnLIFE Education Paradigm and promoting connective-ecologies that link humans and non-humans in transorganic connective acts that mobilize transliteracy.

However, as this study is still in progress, some limitations must be acknowledged. First, it was conducted within a specific academic context, which may restrict the generalizability of the findings. Additionally, while the research highlights the role of GenAI in narrative co-creation, further investigation is needed to assess its influence on participants' creative agency, critical engagement, and the ethical implications of AI-generated content.

Future research will expand to include a broader range of educational contexts, incorporating diverse institutional settings and longitudinal studies to assess the long-term effects of immersive, inventive and gamified narratives in teacher training. At the doctoral level, a more in-depth literature review will be conducted to refine the theoretical framework, critically examining transliteracy, the OnLIFE Education Paradigm, and GenAI's role in multimodal learning. By addressing these aspects, future studies will provide deeper insights into how these narratives can transform pedagogical practices in the digital age.

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