Memes, online education and teacher training in digital culture

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ABSTRACT. The culture of memes is actualized through the exercise of networked authorship and the playfulness that each individual brings to the communicative dynamics of digital culture. Therefore, it is essential to understand how the language of memes creates learning situations and, above all, how it can mobilize pedagogical practices. Thus, this article aims to analyze the meanings, significances, and digital competencies that internet memes can mobilize in the process of teacher education. The text presents qualitative research of a bibliographic nature and used an online questionnaire as the main data collection instrument, applied via Google Forms to a group of teachers in initial training, linked to a higher education institution in the interior of Sergipe in 2023. The study concludes that memes challenge teacher education as they can stimulate the development of didactic strategies and digital competencies that enable learning situations mobilized by online authorship, content curation, interactivity, and collaborative learning.

Keywords: education; teacher; training; digital culture.

Memes, educação on-line e formação de professores na cultura digital

RESUMO. A cultura dos memes se efetiva pelo exercício de autoria em rede e pela ludicidade que cada sujeito imprime à dinâmica comunicacional da cultura digital. Deste modo, é fundamental compreender como a linguagem dos memes produz situações de aprendizagem, e sobretudo como pode estimular práticas pedagógicas inovadoras. Sendo assim, este artigo tem como objetivo analisar quais sentidos, significados e competências digitais os memes da internet podem mobilizar no processo de formação de professores. O texto apresenta uma pesquisa do tipo qualitativa de cunho bibliográfica e teve como principal instrumento de produção de dados um questionário on-line, aplicado via *Google Forms*, a uma turma de professores e professoras em formação inicial, vinculados a uma instituição de ensino superior do interior de Sergipe no ano de 2023. O trabalho conclui que os memes desafiam a formação de professores ao passo que podem estimular o desenvolvimento de estratégias didáticas e competências digitais que permitem situações de aprendizagem mobilizadas pela comicidade, autoria on-line, pela curadoria de conteúdos, interatividade e pela aprendizagem colaborativa.

Palavras-chave: educação; formação de professores; cultura digital.

Memes, educación en línea y formación docente en cultura digital

RESUMEN. La cultura de los memes se efectúa a través del ejercicio de la autoría en red y la ludicidad que cada individuo aporta a la dinámica comunicacional de la cultura digital. Por lo tanto, es esencial comprender cómo el lenguaje de los memes crea situaciones de aprendizaje y, sobre todo, cómo puede movilizar prácticas pedagógicas. Así, este artículo tiene como objetivo analizar los significados, los sentidos y las competencias digitales que los memes de Internet pueden movilizar en el proceso de formación de docentes. El texto presenta una investigación cualitativa de carácter bibliográfico y utilizó un cuestionario en línea como principal instrumento de recolección de datos, aplicado a través de Google Forms a un grupo de profesores en formación inicial, vinculados a una institución de educación superior del interior de Sergipe en 2023. El estudio concluye que los memes desafían la formación docente en la medida en que pueden estimular el desarrollo de estrategias didácticas y competencias digitales que permiten situaciones de aprendizaje movilizadas por la autoría en línea, la curaduría de contenidos, la interactividad y el aprendizaje colaborativo.

Palabras clave: educación; formación de professores; cultura digital.

Introduction

Teacher education is a process that must be widely discussed and constantly rethought in correlation with the sociocultural changes of each era. In the sociotechnical and technopolitical context of digital culture, the speed of transformations produced by our everyday practices, mediated by internet-connected digital technologies, frequently mobilizes new challenges for pedagogical practice and, above all, for education itself.

The multiplicity of languages that have become part of the communicational dynamics of digital culture over the last decade challenges teachers to design didactic strategies that consider online environments and technologies as spaces for teaching, learning, and training. However, beyond the mere appropriation of digital environments for the passive and unidirectional reproduction of knowledge, teacher education must be attentive and committed to the dynamics of authorship, collaboration, and interactivity inherent to digital media and digital culture.

Within this scenario, internet memes, understood as collective representations of our online authorship and interactivity that daily mediate digital communication in different forms and formats, also challenge us to grasp the new educational paradigm sociomaterialized in our time. To understand and appropriate meme language beyond its comic effect, it is essential for teachers to comprehend the processes, challenges, and potentialities inherent to digital culture so they may, consequently, develop pedagogical practices that are critical, reflective, and emancipatory.

The development of digital competencies thus becomes indispensable, to be incorporated into teacher education not merely in an instrumental way but in a manner that enables a broad understanding of the phenomena of digital culture and, accordingly, of how they affect education and educational processes. Furthermore, to foster formative experiences, teacher education must be articulated with the development of competencies such as collaboration, authorship, interactivity, digital content curation, active teaching mediation, and ubiquitous learning. That is, the construction of a repertoire that enables the elaboration of innovative, student-centered pedagogical practices, mediated by multidirectional communication rather than exclusively by the transmission of content.

Against this backdrop, we understand internet memes not merely as online jokes restricted to an image format but as shared experiences of meaning that enable online authorship and interactivity. Thus, to conceptualize meme culture not solely through the superficiality of its humorous and comic effects, but in articulation with the development of teachers' digital competencies, is to recognize the necessity of producing a new relationship between teachers and students, re-signifying the construction of learning in mediation with the phenomena of everyday socio-interactionism.

With the intention of broadening reflections on the online educational experiences mobilized by meme language in our time, the central argument of this study is that memes produced and replicated on the internet construct pedagogies that guide networked interactivity, mediate discursive experiences of online authorship, and generate meanings and subjectivities within teacher education processes. Moreover, their online mediation demands the development of digital competencies, which are not only essential for understanding meme language but can also serve as a didactic repertoire when articulated with pedagogical practice.

This research is grounded on the premise that the discourses and narratives mobilized by memes—due to their capillarity, speed of dissemination, and reach, exist 'inside and outside' formal educational environments, enhancing and expanding communicational interactivity between students and teachers. Such environments may be physical, digital, hybrid, or may not even require materiality to constitute themselves as online educational spaces and sites of ubiquitous learning.

Accordingly, the guiding research question is: What pedagogies are constructed through the language of internet memes, and how do they affect the production of meanings and significations in the process of teacher education? Beyond this central question, the study is guided by additional secondary inquiries: What digital competencies can meme language mobilize within teacher education? What educational practices and formative processes can be developed from meme language?

To address these questions, the general objective of this article is to analyze what meanings, significations, and digital competencies internet memes can mobilize in the process of teacher education. To this end, the research method adopted was qualitative, bibliographic in nature, and descriptive, with the main data collection instrument being an online questionnaire with closed questions, applied via Google Forms to a group of pre-service teachers enrolled at a higher education institution in the interior of Sergipe, during the first semester of 2023.

Thus, seeking to expand spaces of reflection and present research findings, the following sections discuss what internet memes are and how they operate as a language mediated by online authorship experiences within digital culture. Next, we present an analysis of teacher education for online learning, addressing both the challenges and potentialities within the context of digital culture. Finally, we analyze the data, as well as the results and questions they mobilized.

The language of memes, online authorship, and educational practices

Internet memes have become notable for the specific ways in which they are generally used to express humor, social critique, collective engagement, and the comic mediation of public discussion and everyday issues (Chagas, 2020). Beyond their role in generating laughter and playfulness on social media, they can also articulate different narrative and discursive processes that may materialize disinformation and disseminate harmful content. Thus, memes can be used to foster informal learning experiences across different domains and intentions, which require the development of digital literacy for the critical understanding of their meanings.

The polysemy of meme formats and collections can be observed in the capacity of a given word, expression, image, or audiovisual format to acquire a new meaning, or multiple meanings, as it circulates. Polysemy thus establishes a network of meanings among words and expressions with the same semantic load, which convey different significations even when they belong to a similar semantic or imagistic field and share a common discursive framework.

This process, which is not necessarily verbal, does not always require prior knowledge for interaction to occur between subjects and the meanings of circulating memes, nor for meanings to be understood. Although context is defining, it is not always determinant. Often, when one views an image-based meme, connections are made with their worldview and life experiences, drawing on cultural background or repertoires of visuality. This allows certain memes to take on the effect of an 'inside joke', comprehensible only within a very specific context.

In this sense, every act of interpretation involves attributing individual meaning or associating its aesthetic values with one's own reading. Although these artifacts allow for multiple interpretive pathways, they always entail an exercise in correlating meanings. Likewise, when producing and sharing memes, individuals imply approval or disapproval of their meaning, which may or may not be re-signified and carried forward with different intentions through the communicational dynamics of networks.

Thus, the phenomenon of memes as a language of digital culture is intrinsically linked to online authorship, remix, and reconfiguration, which enable each user to perform communicative actions that traverse interactivity, content curation, collaboration, and active mediation. This does not necessarily demand complex technical or instrumental skills but rather critical and reflective abilities for comprehension.

It is important to stress that authorship and networking practices are not always tied to high standards of graphic quality, but often to the representation of the intentions, subjectivities, and experiences of the author or the group around which a collection of memes is articulated. Therefore, the potential for content production inherent in digital environments does not necessarily require concern with style, graphic quality, or aesthetic standards, but rather with communicational intentionality.

Knobel and Lankshear (2019) argue that memes represent a set of experiences that social media users 'live through' and that, in order to grasp their meanings, they must be read socially and culturally, which demands digital literacy. Literacy practices in this sense involve not merely technical instrumentality but critical and reflective interpretation of experiences with this type of digital language.

The language of memes on the internet is therefore notable for its potential for capillarity—that is, for the way it reaches audiences and interlocutors who are not always the direct target of the communicative act. This is made possible by practices of sharing and dissemination across various social media platforms and messaging applications such as WhatsApp, in the form of text messages, stickers, audio clips, gifs, videos, and more.

This type of language has become embedded in our modes of representation and expression in online communication, in a unique way within the Brazilian context (Chagas, 2024), shaped by different fields of experience and systems of belief, and mobilizing specific contexts such as advertising, journalism, television content, music, and cultural production. Its genres and formats thus fit into our daily lives within a dynamic of ephemeral information consumption, synthesized and mediated through multiple meanings—often humorous. Memes, therefore, represent a mode of disseminating condensed content, achieved through processes of synthesis or the substitution of phrases and messages.

Bergson (2004) draws attention to the pedagogical function of humor, which is essential for understanding the phenomenon of memes. For him, laughter is a social phenomenon that serves to punish deviant behaviors and pressure individuals to return to socially accepted norms. This helps explain how the proliferation of memes on different themes may operate as a form of popularizing information, even through irony and playful critiques embedded in persuasive narratives across many aspects of daily life.

Such dynamics often occur with an additional factor: communication through shared, reproduced, and re-signified messages in an instantaneous manner. This happens through the authorship of each network user, whether directly linked to the content or in relation to it, facilitated by the characteristics of the digital environment (captions, links to complementary content, editing, reactions).

According to Oliveira (2020, p. 86), "[...] the construction of meme language inserts the subject into an environment of bricolage, where imagetic and semiotic potential can be heightened and becomes fundamental in the construction of meanings." Thus, we can think of communication through instant messaging or digital media in our daily lives not only from the perspective of digital playfulness but as communication mediated by memes and comic formats derived from remix and reconfiguration of content.

We therefore understand that the construction of meanings with memes generates a semantic experience that, even informally, contributes to educational practices and formative processes. In this way, recognizing that meme language materializes through the decoding of languages from a given audience to others, we now seek to understand how this language impacts the ways we discuss and analyze our social, cultural, and political contexts, and consequently how it affects online education and teaching practices.

Meme culture and teacher education

Given the scenario of digital culture, we emphasize that teacher education is a continuous and unfinished process that must keep pace with sociocultural changes. For this, it is necessary to reflect on the importance of continuing education for the constant updating of teaching practices. In the context of online education, teacher education assumes an even more significant role, as teachers are increasingly required to deal with the specificities inherent to digital culture and the challenges materialized by the communicational dynamics emerging from computational thinking and networked digital languages.

In this study, we draw on the notion of online education as an epistemological approach (Santos, 2019) for the understanding and analysis of educational practices and formative processes that occur through mediation with digital technologies connected to the internet. It is important to highlight that online education is not merely an evolution of the generations of Distance Education, but rather a phenomenon of digital culture.

Thus, it becomes possible to conceive formative processes that are mobilized by the consolidation of cyberspace and media convergence in our daily lives, rather than by the physical and cognitive separation of subjective experiences with digital technologies and online environments. Online education can, therefore, be understood as a set of teaching and learning actions, or curricular acts, mediated by digital interfaces that enhance interactive and hypertextual communicational practices (Santos, 2019). Hence, it is not simply an educational experience with technologies, but a formative process articulated and connected to cyberspace in a generalized way.

From this hybrid and multimodal context of online education, we can identify some challenges that need to be considered in order to implement effective educational practices within digital culture: recognizing the need for mastery of digital technologies, not only from an instrumental perspective but also in a critical and reflective way regarding their challenges and possibilities; being able to develop didactic strategies mediated by digital language and online environments; and considering the sociocommunicational context in which students are immersed, as well as the necessity of implementing a student-centered teaching model rather than one focused exclusively on the teacher.

Considering the relevance of these issues in the process of teacher education for online learning, in 2023 we developed a formative experience based on the 'Language of Memes', within the curricular component 'Educational Technology', taken by students from the Pedagogy and Language and Literature degree programs[1], at a private higher education institution in the countryside of Sergipe, Brazil.

This class presented a heterogeneous profile, composed of 22 participants aged between 24 and over 45 years (according to the data collected in the research), who reported using social media for an average of 2 to 5 hours per day. This indicates a significant level of involvement in sociocultural practices mediated daily by the

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[1] Item VII of Resolution No. 510, dated April 7, 2016 (CEP/CONEP), states that "research aimed at the theoretical deepening of situations that emerge spontaneously and contingently in professional practice, provided that they do not reveal data that may identify the subject," shall neither be registered nor evaluated by the Research Ethics Committee (CEP). In this article, the study is presented in a manner that does not allow the identification of the participants involved. Therefore, the research was not registered.

communicational dynamics of the internet. It is important to note that, although the digital environment is present and integrated into everyday communication for many people, conceiving it as a space for learning, mediation, and teacher education remains a major challenge.

With this profile, the experience was carried out over four weeks in February 2023. During this formative journey, among other component activities, the work was divided into online and in-person meetings addressing the following themes: Meeting 1: 'general conceptions of digital culture'; Meeting 2: 'what are memes in digital culture'; Meeting 3: 'digital literacies and online education'; and Meeting 4: 'pedagogical practices with memes'.

In addition to problematizing issues that challenge education within digital culture, we sought to explore and analyze different discursive and narrative contexts mobilized and mediated through memes in social media. Moreover, in one of the meetings, we explored online environments where memes can be produced, fostering authorship and creativity. Finally, the activity involved designing lesson plans and didactic sequences based on the critical and reflective appropriation of memes as units of information and generative themes for authorship and the development of digital literacy.

After the pedagogical experience, an online questionnaire (Google Forms) was sent via email, consisting of closed-ended questions, and answered by all participants. The responses helped us reflect not only on meme culture in everyday life but also on the relationship between education and digital culture and on teacher education based on authorship, interactivity, active teacher mediation, and particularly the playfulness involved in the critical and reflective appropriation of digital language.

Based on this, in the following pages, we will present and analyze the data collected during the experience. The results serve as outcomes of a formative process for online education grounded in theoretical and practical aspects of teacher education and its modes of appropriation of meme language, while also reflecting how this language affects behaviors, belief systems, and representations within the communicational dynamics of digital networks. Without claiming the universality of the phenomenon, the findings nonetheless provide evidence of how these interactions are materialized.

Therefore, the issues raised from the data collected and analyzed in this study may serve as indicators for decision-making, as well as for expanding repertoires. Likewise, they may guide the planning, imagining, and 'inventing' of new teaching and learning processes within multimodal contexts of digital culture.

Data analysis, or on meanings and significance

Memes are apparently intended for online entertainment. However, beyond this purpose, they have become notable for the various formats through which they mediate public debate and political discussion, the dissemination of events, as well as sociocultural behaviors and trends in our time (Oliveira et al., 2021). As has been demonstrated so far, they can be analyzed through the different ways they enable teaching and learning, thus constructing an important narrative and discursive environment that, through online authorship and interactivity, can mobilize digital competencies.

Based on the data collected in the experience described in this study, it was possible to infer that in the everyday social practices of pre-service teachers, as shown in Figure 1, there is a substantial appropriation of memes in the image format. Specifically, 50% of the research participants reported that image-based memes are integrated into their daily communicational dynamics. This can be explained by the predominance of memes in this format, which shape public debate through captioned images, often summarizing and simplifying discourses and narratives in instant messaging applications and social media timelines.

The data further suggest that teachers are strongly engaged with the visual and imagetic culture of memes in our time. In this sense, online visual authorship, as well as the analysis and interpretation of images, are fundamental digital competencies for online communication and interactions on social media, which can enhance pedagogical practices. This occurs because such practices replicate and produce discourses materialized through a set of symbols and icons, reconfigured through the processes of synthesis and bricolage inherent to memes and other visual artifacts.

According to Oliveira (2020), internet memes, due to their editable and reconfigurable compositional characteristics, can also be considered products of bricolage that mobilize different imagetic and semiotic experiences. In order to understand their meanings and significances, it is necessary to interpret the symbolisms, colors, iconography, and contexts associated with the artifacts circulating online.

On the other hand, the data also suggest the need to develop digital competencies, such as reading and interpreting the meanings and significances of memes mediated through images, in a critical and reflective

manner. While memes may be wrapped in comedic pieces within audiovisual contexts, the underlying discourses can sometimes trivialize narratives, propagate harmful content, and produce hate speech and misinformation, often through intertextuality and various comedic formats contained in images.

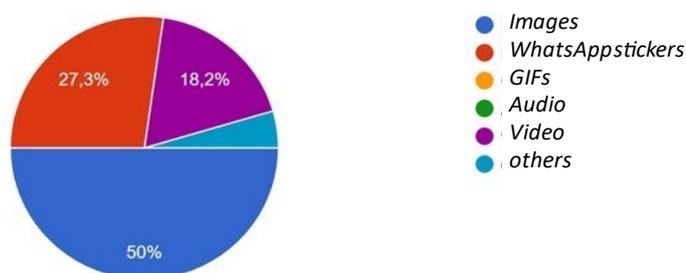What types of memes do you most often receive or share in your daily life?

Figure 1. Content format.
Source: Questionnaire (Google Forms) (2023).

When asked whether they had ever learned about or engaged with political news through memes, the responses indicated a comprehensive role of memes (Figure 2) in the communication and dissemination of political news. These data point to a trend of political communication mediated by memes, reinterpreted through online playfulness and discursive humor, yet tending to bridge society and the political sphere through ideologically and meaning-laden jokes, while also fostering an environment of activism, persuasion, and collective engagement.

Have you ever learned about or engaged with a political news story through a meme?

Figure 2. Political Information.
Source: Questionnaire (Google Forms) (2023).

A notable issue is the process of misinformation inherent in this model of political communication, since the narratives produced can influence belief systems and generate "post-truths." Bentes (2016) emphasizes that memes can amplify both misinformation and the belief systems of different groups, as well as popular intelligence through humor and irony. Post-truth regimes produce more than facts and information; they operate within belief systems, worldviews, prejudices, and emotions. Whereas the purpose of lies was once to create a false view of the world, it now aims to reinforce opinions, prejudices, and emotions, while neglecting the presentation or analysis of factual information.

It is important to highlight that the summarizing function exercised by meme-mediated communication also creates a precedent for the necessity of fact-checking and evaluating the integrity of disseminated information. This can be seen as an opportunity to use memes as generative themes for authorship and critical engagement with social and political issues in pedagogical practices. In this way, teachers can design and implement learning situations that involve fact-checking through investigative production and research, serving as a critical exercise in social analysis to promote students' scientific and digital literacy.

When further asked about memes as mediators of access to information, 90.9% of the students involved in the formative process in question responded (Figure 3) that the language of memes mediated, in some way, their access to information during the pandemic in 2020 and 2021. The results indicated an increased role of memes in the communicational landscape, reverberating themes across different domains and socio-materializing narratives in circulation across multiple topics that affected the prevailing social order. The data also suggest the role of memes in simplifying discourses through humor, creating a locus of information in both the political sphere and in debates about public health and scientific knowledge, as exemplified during the pandemic.

Did you learn any important information during the pandemic through a meme?

Figure 3. Memes during the pandemic.
Source: Questionnaire (Google Forms) (2023).

When asked whether they usually share memes solely for their comedic effect (Figure 4), 77.3% answered yes, while only 22.7% responded no. These data point to what may be the primary characteristic of meme culture: its comedic potential and ability to generate humorous experiences, articulated through different formats of authorship, playfulness, and laughter.

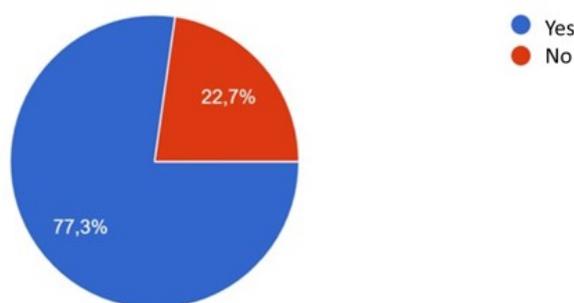Do you usually share a meme just because you found it funny?

Figure 4. Memes and Humor.
Source: Questionnaire (Google Forms) (2023).

When analyzing memes through laughter and the forms of humor with which they are inserted into our everyday communication, we may risk oversimplifying other discourses inherent in their play of meanings and multiple possibilities of interpretation. On the other hand, we must take into account the forms of humor being circulated. According to Bergson (2004), humor as a social gesture—i.e., the idea that such a gesture emerges—is always accompanied by a certain "insensitivity" of the mind. In this sense, laughter has no greater enemy than emotion (Bergson, 2004). Laughter seems to arise only when, for a few moments, we are indifferent to such feelings. Therefore, comedy, according to Bergson (2004, p. 4), "[...] ultimately requires something like a momentary anesthesia of the heart. It is directed at pure intelligence."

Beyond the comedic effect and the laughable aesthetic mobilized by memes, the data presented in Figure 5 indicate that memes also function as translators of contexts, since 45.5% of participants reported sharing memes that reflect their opinions, while 40.9% said they share memes solely for being funny. In other words, these are different ways of digitally materializing their interests, meanings, and worldviews within the digital environment.
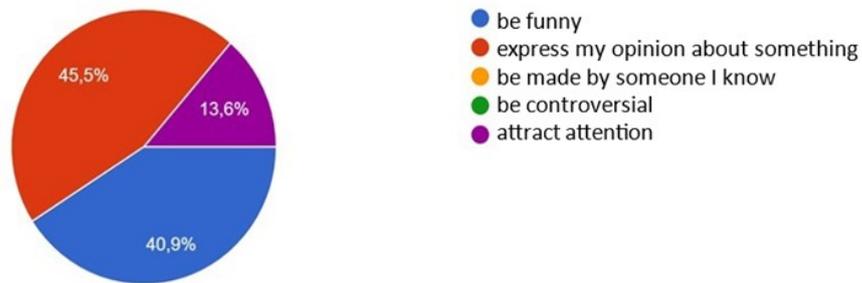

Figure 5. Intentions behind sharing memes.
Source: Questionnaire (Google Forms) (2023).

The integration and the way in which the language of memes articulates and groups discursive voices can be observed from the perspective of the multimodality with which they are produced and replicated online. Multimodality is a term derived from psychology and adopted in language research to designate the integrated use of different semiotic resources in communicative dynamics. In this way, the representations of intentions, meanings, and significations of each user can be shared in different forms and with different purposes on the internet, even implicitly.

The production of different meme typologies represents modes of expression of various groups on the internet, through narratives, meanings, and discourses that coalesce (Oliveira et al., 2022). Moreover, the representation of intentions and contexts can exert effects across different domains, which can aid the critical examination of social themes and content, as well as curricular issues, creating reflective and critical educational experiences.

When asked about evaluating the veracity of messages circulated through memes in their everyday practices (Figure 6), 72.7% reported checking the origin and truthfulness of the information. Meanwhile, 13.6% stated that they do not check, and another 13.6% said they check sometimes. However, it is possible to assess that these behaviors are often related to belief systems and not necessarily to the production of factual truths. Many circulating memes are created to resonate with the discursive and subjective field of many individuals, even when detached from factual accuracy. This creates a locus for the contestation of narratives regarding what constitutes truth, particularly through the language of memes in the political sphere.
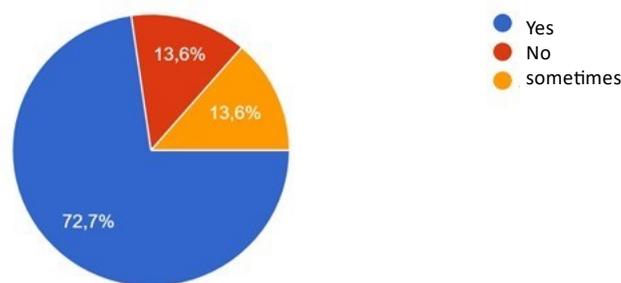

Figure 6. Evaluation of information contained in memes.
Source: Questionnaire (Google Forms) (2023).

Associated with humorous situations, many memes can thus materialize processes of misinformation, as the different formats of humor and comedy affect us in highly individual ways. They can be easily accepted uncritically simply because they mobilize playful and laughable experiences, yet they may decontextualize discourses and socially relevant information, which could otherwise be coherent for certain groups.

In this context, pre-service and in-service teachers can develop pedagogical practices and didactic strategies grounded in digital literacy to critically and reflectively appropriate these forms of language. While often humorous, many memes operate within the discursive field of disseminating harmful content and producing misinformation, which has been detrimental to many social groups and to the exercise of citizenship.

When asked about the types of memes they most frequently share (Figure 7), the responses revealed that the majority of participants (40.9%) preferentially share memes that express their everyday problems. This behavior indicates that memes have been used as a way to narrate, either critically or humorously, the tensions and challenges faced in the daily life of teacher training. In this context, memes not only entertain but also function as devices of symbolic mediation, capable of articulating emotions, critiques, and reflections on the formative process. Thus, their recurrent use underscores the importance of recognizing these productions as potential pedagogical resources and legitimate expressions of critical engagement with reality.
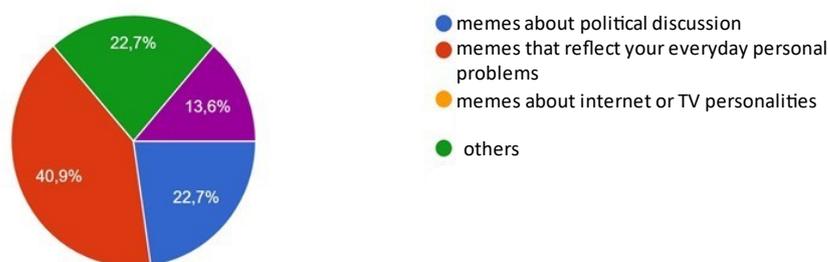
What types of memes do you usually share the most?

Figure 7. Types of Memes in Circulation.
Source: Questionnaire (Google Forms) (2023).

According to Chagas (2020), memes can also play a persuasive role by garnering support for a particular ideological current, stimulating collectively performed actions within the flexible and interactive digital ecosystem, or facilitating a regular process of socialization through public debate. This understanding can help recognize that memes circulating across different environments can generate meanings, subjectivities, and singularities regarding issues that directly influence our habitual practices and communication flows.

Moreover, for the majority of individuals, memes function as modes of representation that synthesize their intentions, emotions, and ways of expressing themselves in everyday communication. The data in Figure 8 indicate that 68.2% of research participants substitute phrases and words with memes. These findings also highlight the importance of acknowledging the growing role of memes as a language that extends beyond social media, and consequently, the need to implement didactic strategies aligned with this communicational dynamic, recognizing both its limitations and the necessity for critical and reflective problematization.

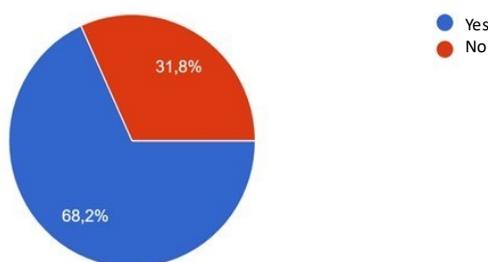Do you usually replace phrases or words in a conversation with a meme?

Figure 8. Memes and representations of meaning.
Source: Questionnaire (Google Forms) (2023).

Developing teachers' digital competencies through engagement with the language of memes can be essential not only for the didactic appropriation of memes but also for creating formative experiences that support understanding the effects of misinformation and misleading narratives in the digital environment. Critical reading of a meme requires fact-checking and information analysis to prevent the adoption of narratives that produce misinformation or deviate from the factuality of circulating information.

Therefore, the ability to interpret memes critically, make intertextual connections, and understand correlations of meaning is crucial. Figure 9 presents inferences indicating that 81.8% of research participants reported feeling better informed when they understood the meaning or context of a meme. This reinforces that memes are not merely forms of entertainment but also "means of communication" and information, capable of propagating narratives that generate meanings and interpretations. To maximize the informative value of memes, pre-service teachers can develop critical reading and translation competencies grounded in digital literacy practices. This involves the ability to identify cultural, linguistic, and contextual references that are often embedded in the playful online content produced by memes.

Do you feel more informed when you understand the meaning or context of a meme?
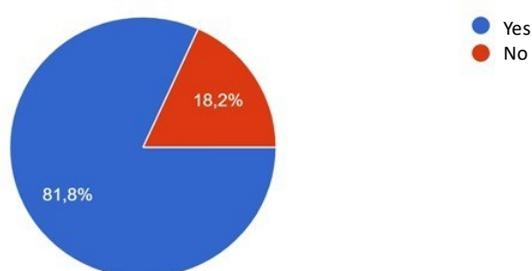

Figure 9. Memes and Meanings.
Source: Questionnaire (Google Forms) (2023).

Knobel and Lankshear (2019), Chagas (2024), and Oliveira et al. (2021) emphasize that memes represent a set of sociocultural experiences 'lived' by social media users. Therefore, to understand their meanings, memes must be read socially and culturally, requiring a repertoire developed through media education and digital literacy. Accordingly, the data presented and analyzed in this study are highly relevant for reflecting on teacher education today, as they highlight the growing significance of meme-mediated communication in contemporary contexts, which is not always integrated into school curricula and pedagogical practices.

From this perspective, through the experience developed with undergraduate students—future teachers— it was possible to observe that memes are integrated into their everyday languages, in their social and recreational uses of digital media. Nonetheless, recognizing them as learning objects, generative themes for authorship, and didactic resources enabling cybercultural inclusion to promote formative processes grounded in authorship and interactivity remains a significant challenge.

Final considerations

Among the main conclusions drawn from the results of this research, we highlight the following: Memes can be used as pedagogical resources that support collaborative learning, authorship, and interaction between students and teachers. Their dynamic and multimodal nature enables the construction of meaning from everyday experience, providing a learning environment that is closer to the students' language and to the digital reality in which they are immersed. Furthermore, the study shows that continuing teacher education is essential for teachers to be able to use memes effectively in their pedagogical practices. The development of computational thinking and digital literacy can enhance teachers' repertoires, enabling the appropriation of meme culture and digital culture as potential pathways for promoting innovative didactic strategies.

Considering the central question of this work, focused on analyzing what pedagogies are constructed through the language of internet memes and how they affect the production of meaning in teacher education, we conclude that memes, as a key language of digital culture, can mediate pedagogies and multiliteracies,

serving as a critical approach grounded in a meaningful understanding of the technological, media, and communicational changes that transform modes of interaction in our time. For this to occur, teacher education must move away from a unidirectional model centered exclusively on the teacher and instead address the diversity of languages, interactivity, and multiliteracies, thereby reducing the distance between digital culture, the multimediatic context, and school life.

In addition, the research reveals that memes offer multiple didactic possibilities: they can foster active learning experiences by inviting students to reflect critically and socially on relevant issues through the production of their own content; they can be used to promote interaction between students and teachers, as they represent an informal, accessible, and democratic form of communication; they may also enhance engagement with the school curriculum, functioning as informational units materialized in a format based on synthesis, embedded in playful and humorous experiences; and their informality and wide circulation make them effective tools for promoting democratic communication and for strengthening affective and cognitive bonds between students and teachers.

Nevertheless, these potentialities demand a critical and reflective awareness of the limitations of this language in mobilizing skills and competencies to articulate diverse educational contexts. Despite such limitations, it is possible to conclude that memes challenge teacher education within the digital culture context, while also mediating the development of didactic strategies and digital competences that foster learning situations based on online authorship, content curation, interactivity, and collaborative learning. Therefore, memes simultaneously challenge teacher education and provide concrete opportunities for the construction of innovative educational practices that engage with digital culture and stimulate more interactive, collaborative, and meaningful learning processes for learners in formation.

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