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DIGITAL LITERACY EDUCATION FOR THE 21ST CENTURY: NAVIGATION INFORMATION IN A CONNECTED WORLD

ALFABETIZAÇÃO DIGITAL PARA O SÉCULO 21: NAVEGANDO PELAS INFORMAÇÕES EM UM MUNDO INTERCONECTADO

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Abstract: The article discusses the problem of the gap between young people's digital skills and their ability to use the digital world in a safe and constructive way. The relevance of the work is to address this problem in the development of digital education for young people, which should include functional skills and promote the development of critical thinking, self-expression, and information analysis. In addition, it is important to build young people's cultural awareness and identity. By taking a comprehensive approach to digital education, young people will not only be able to address digital illiteracy, but also be empowered to participate constructively in the digital world and understand its norms and ethical principles.
Using a research-based approach that included semi-structured interviews, the article investigated digital literacy education in the context of the twenty-first century, focusing on digital devices used in both formal and informal digital spheres. The results showed how these devices help shape and develop young people's digital literacy. Digital competence, which includes the ability to evaluate available information and use interactive tools responsibly, is one of the key skills that help people to realise themselves and develop in modern society. The article also explores the use of digital learning tools that promote critical thinking among students. Specially created video blogs by university students proved to be educationally valuable and contributed to reflective processes and digital education. This approach contributes to a deeper understanding of digital literacy education and supports the idea of the importance of digital culture in actively engaging young people in the digital world. In conclusion, this article highlights the importance of developing digital education for young people, which provides them with the skills and competencies to use the digital world safely and constructively. This approach enables young people to realise their potential in a digital society and understand its norms and ethical principles.

Keywords: Media literacy. Critical thinking. Metacognitive process. Video blogging. Digital technology.

Resumo: O artigo aborda o problema da lacuna entre as habilidades digitais dos jovens e sua capacidade de usar o mundo digital de forma segura e construtiva. Vemos a solução para esse problema no desenvolvimento da educação digital para jovens, que deve incluir habilidades funcionais e promover o desenvolvimento do pensamento crítico, da autoexpressão e da análise de informações. Além disso, é importante formar a consciência e a identidade cultural dos jovens. Usando uma abordagem cientificamente fundamentada, incluindo entrevistas semiestruturadas, o artigo investiga a educação em alfabetização digital no contexto do século 21, com foco em dispositivos digitais usados em ambientes digitais formais e informais. Os resultados mostraram como esses dispositivos ajudam a moldar e desenvolver a alfabetização digital nos jovens. A competência digital, que inclui habilidades para avaliar as informações disponíveis e usar ferramentas interativas de forma responsável, é uma das principais habilidades que ajudam as pessoas a se realizarem e se desenvolverem na sociedade moderna. O artigo também investiga o uso de ferramentas de aprendizado digital que promovem o pensamento crítico entre os alunos. Os videoblogs criados por estudantes universitários provaram ser valiosos do ponto de vista educacional e promoveram processos de reflexão e educação digital. Essa abordagem promove uma compreensão profunda da educação em alfabetização digital e apoia a importância da cultura digital na participação ativa dos jovens no mundo digital. Concluindo, este artigo destaca a importância de desenvolver a educação em alfabetização digital nos jovens, o que lhes proporciona as habilidades e competências para usar o mundo digital de forma segura e construtiva. Essa abordagem permite que os jovens desenvolvam seu potencial na sociedade digital e compreendam suas normas e princípios éticos.

Palavras-chave: Alfabetização midiática. Pensamento crítico. Processo metacognitivo. Videoblog. Tecnologia digital.

1. Introduction

The development of critical thinking is one of the main goals of education systems. Policymakers, including those responsible for education, regularly support and promote the development of critical skills to ensure that people are able to act as independent citizens in a complex world (Castro et al., 2021). In the digital age, this goal is even more important, as it becomes an essential prerequisite for survival in a society saturated with a large number of media messages. The ease of access and the speed of information dissemination result in a significant volume of messages that need to be processed, sorted, and verified. From the point of view of state authorities, critical thinking education is considered the best way to counter the deliberate spread of false information, bigotry, and conspiracy theories in times of war (Dzhym, 2023).

The use of information society technologies implies the need to apply critical and analytical thinking about available information and responsible use of interactive tools. These

guidelines define the essence of digital competence: one of the eight key skills that contribute to people's self-realisation and personal development in modern society.

To address this issue, one of the proposals of digital education is to involve and engage individuals in the creation of media messages. This educational practice allows students to be authors, producers, and disseminators of information.

This article examines the use of digital tools for learning that stimulate the development of critical thinking among users of these tools. A study with students who created their first video blogs in a university environment revealed the educational value of this new type of web-based tool, which provides an opportunity to consider many reflective processes.

2. Theoretical framework and literature review

The development of critical thinking is recognised as a goal of digital education, but there is no consensus on how to teach it and what it means. Before exploring how digital tools can promote critical thinking, it is necessary to clarify what we mean by this concept.

Critical thinking involves complex thinking, which is usually associated with individual abilities and attitudes, such as open-mindedness, logical reasoning, independence of judgement, problem-solving, and critical evaluation of one's own beliefs (Chanunan & Brückner, 2023).

The concept of process in critical thinking is fundamental. According to (ElSayary, 2023), it is a deliberate intellectual process that effectively involves conceptualising, applying, analysing, synthesising, and evaluating data gathered through observation, experience, reflection, reasoning, or communication to guide one's beliefs and actions. Ultimately, this research emphasises that theoretical learning is not enough to develop critical skills (Bushman, 2022). This requires engaging in complex situations where analytical and evaluative practices are practised.

This work is based on the definition of critical thinking, which sees it as intelligent and reflective thinking aimed at making decisions about belief or action (Bolo Romero et al., 2023).

There is a controversial issue of distinguishing between skills and guidelines that help to define different aspects of critical thinking. In our opinion, the main critical thinking skills are:

1. Focus on the question.

2 Analysing the arguments

3. Formulating, resolving, clarifying, or objecting with questions.

4. Assess the reliability of the source.

5. Observation and evaluation.

6. Development and evaluation of the deduction.

7. Development of induction.

8. Formulating and evaluating value judgements.

9. Definition of terms and evaluation of the definition.

10. Recognition of preconditions.

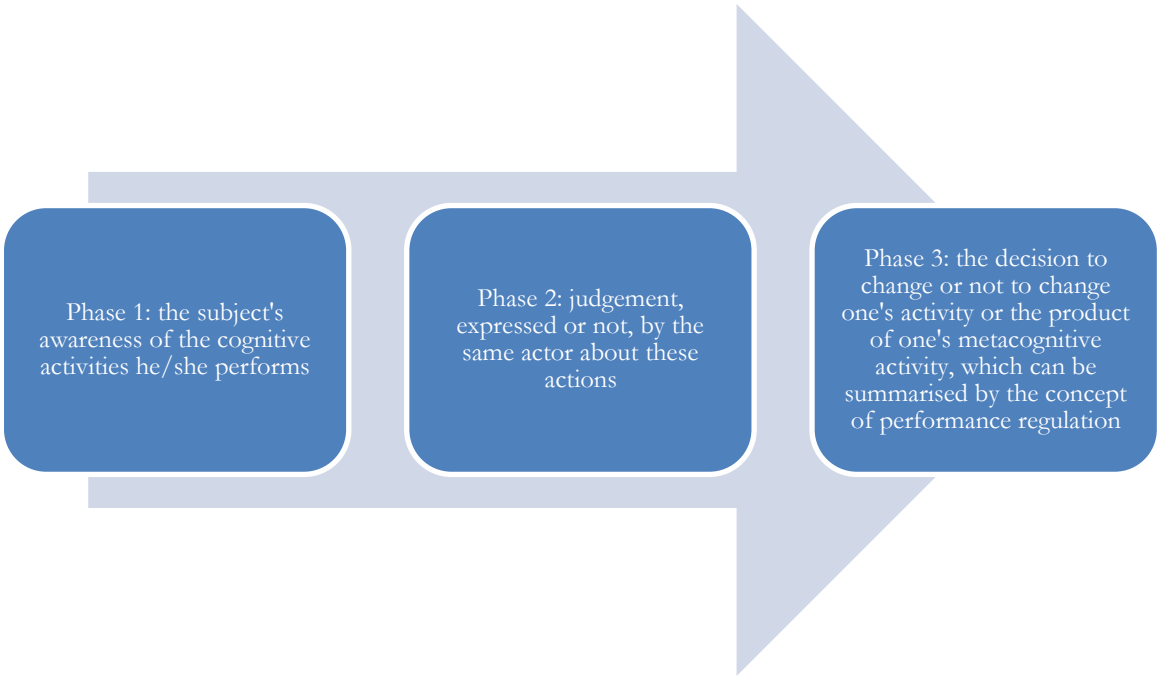
11. Attention to the stages of the decision-making process for action.

12. Interaction with other people (oral or written argumentation).

However, the evolution of critical thinking involves not only mastering thinking tools (such as analysis, evaluation, etc.) but also understanding how to behave in a given context (experiencing, speaking, etc.) (Aini, 2020). Critical thinking involves the development of intellectual skills and an awareness of a wide range of positions that are equal. It can be acquired through the implementation of challenges and solving complex problems. Thus, critical thinking is understood as a tool for dealing with the following challenging situations: clearly articulating a problem or position, seeking a reason, making an effort to be well-informed, using and citing only reliable sources, considering the global situation, focusing on one subject, getting rid of anxiety, considering and accepting different points of view, expressing openness, being prepared to reject certain proposals, seeking clarification, and an orderly approach to working with parts of a complex whole.

From this perspective, the concept of critical thinking can be easily compared and linked to metacognition. This concept refers to the ideas that a person has about the knowledge they possess and how they can construct and use it (Diamond, 2023). In this context, we emphasise the existing links between metacognition and critical thinking, as the former contributes to the latter's development (Arjaya et al., 2023). Thus, metacognitive activity can be divided into the following three phases (Figure 1):

Figure 1: Phases of Metacognitive Activity



Source: Authors' own development.

We see that critical thinking is a multifaceted concept that is the result of a dynamic process that mobilises objective skills.

All of the above critical abilities are necessary in the digital information society in order to understand the pervasive media universe, where the reliability of information becomes a risk (Amin et al., 2023).

Digital education in the learning environment plays an important role in training critical thinking, inspiring students to ask questions, make choices, build coherence, and question the validity and functioning of any message that can be considered as an "extract from reality" (information, evidence, document, etc.) (Kornytska et al., 2023). Digital education, initially perceived as content, now requires definition in terms (Kotze & Smuts, 2023), and today more and more works are used to define a set of skills used when using media in the digital age (Krymets, 2022). These skills, grouped under the term "digital literacy", involve an extension of the general skills associated with traditional literacy based on writing and reading (Siddiq et al., 2023). These include access to information, communication skills, and participation in content creation.

The concept of digital literacy is defined as the ability to understand and use digital technologies in everyday life, at home, at work, and in communities to achieve personal goals and develop one's skills and abilities (Tytova & Mereniuk, 2022). A narrow understanding of

digital literacy includes the skills and abilities needed to read, write, and participate on the internet (Vodă et al., 2022).

It is important to distinguish between two closely related expressions that are regularly used in the academic literature: "digital" literacy sometimes appears to be "media" literacy due to the overlapping skills used (Alsoud, 2021). However, these concepts are enriching each other as more and more 'new media' use digital technologies (Wojciech, 2021). However, it is possible to distinguish the difference by noting that digital literacy involves educating young people to become media consumers who are able to critically evaluate the products they use, while digital literacy involves preparing young people to participate in digital media in an informed and safe way and with ethics. We emphasise that the issue of critical attitudes towards media remains a key one in the digital age, and 21st-century digital education requires cognitive and metacognitive skills, not limited to the technological dimension of media.

A video blog is a popular digital tool that represents a scientific object at the crossroads of mass media and digital technologies.

Vlogging is defined as "a specific arrangement involving an online consultation on a thematic video" (Ng, 2023). Video blogging has evolved away from artistic standards and technical limitations. However, it stimulates bloggers to create their own vision of the world and manipulate different forms of information transmission. In the literature, this format is often associated with three adjectives: multimedia, interactive, and delineated. Although these features form their own points of view, they develop a comprehensive information system for managing and creating the structure of the story.

Video blogging is multidisciplinary in nature, as it requires a combination of journalistic, documentary, and film aesthetic know-how, includes elements of semiotics, and requires digital skills (Orozonova et al., 2021). It is an object that can be viewed from a technical, aesthetic, human, and social point of view. The author of a video blog has a variety of tools for experimentation and improvement.

Video blogging projects in higher education institutions in Ukraine have shown that creating a blog contributes to the development of students' writing, oral expression, and digital skills. They learn about the process of creating a digital document, the principles, and rules of online distribution, as well as the concepts of author, publisher, administrator, and copyright (Ostanina, 2023).

Video blogging was originally developed based on media writing, which used video, sound, and textual production. It later evolved into digital writing, which means the use of digital technologies in writing. It combines the technical aspect with the semiotic aspect, which is confirmed by recent research on the principles of digital writing, also known as "screenwriting" (Saienko et al., 2023).

On this topic, (it is noted that) the possibility of being an author requires active self-awareness, a certain willingness to distance oneself, and the ability to investigate. This allows the person involved in situations to examine their own position and the position of others.

Video blogging requires the designer to adapt and reflect in the writing process. For example, the author must take into account the needs of Internet users. The plan of a video document may take precedence over the author's idea. A video blog designer performs the functions of a documentary director, editor, illustrator, and online broadcaster. Therefore, a director of this format needs to have a reflective and critical attitude to his or her implementation.

Researchers such as (Gibson & Smith, 2018) believe that digital education is becoming more effective in active learning activities, in particular, using such tools as video and multimedia. Pedagogy should be student-centred, so that students develop cognitive and metacognitive skills. Thus, (Iskakova et al., 2023) considers critical thinking as a complex cognitive process, just like creative thinking, problem solving, and decision making, which require "higher-level cognitive skills". Teaching critical thinking is partly based on the development of metacognitive activities that allow students to strengthen their self-monitoring strategies and acquire genuine critical autonomy (Mubarak, 2023).

The notion of controlling one's behaviour and the context one experiences is particularly relevant in the case of a vlog. Its creation is a process that consists of stages similar to any process of writing or, more broadly, producing content. According to the psychocognitive and psycholinguistic approaches, this process goes through three main phases: 1) planning or conceptualising, 2) putting into context or formulating, and 3) revising or self-monitoring.

Considering the connection between writing and metacognition, we believe that metacognitive skills are predominant in video blog design. Below is a description of these skills (Table 1):

Table 1: Description of the Metacognitive Skills of Video Blogging

Activities	Metacognitive skills
Awareness	See your blog's weaknesses and strengths
Judgement.	Selecting the best strategies to address the difficulties encountered in this achievement
Regulation	Adjusting your own actions to achieve the desired goal

Source: authors' own development.

This work (Lara Nieto-Márquez et al., 2020) has developed an analytical grid that highlights digital production activities and metacognitive operations in the context of media content production. It is from this grid that the study of the skills mobilised among the students who created the video blogs in the presented work was conducted.

Thus, the hypotheses of this paper are as follows:

1) students mobilise digital writing, navigation, and organisation skills at the information, technical and social levels;

2) students develop metacognitive skills, in particular, significant mobilisation of awareness, judgement, and regulatory operations.

3. Research design and methods

In order to gain a deeper understanding of the conditions of generating and communicating educational content in video blogs, a scientifically based approach was applied, including semi-structured interviews. To test the hypothesis, nine students from three different Ukrainian universities were involved, who developed video blogs as part of their master's thesis in journalism. This particular field was chosen due to its autonomy and media literacy among students. It was important that the students shared responsibility for the technical and scripting aspects of the project, as well as their ability to merge the content and technical aspects of the video blog into a single concept.

In these conditions, four students had the opportunity to choose the topic of their first video blog and work alone. The other five were involved in co-production, working in pairs on a topic suggested by their teachers. Each of the students interviewed was involved in all stages of the vlogging process, from forming an initial idea to gathering information, including taking photos and videos in the field, editing and editing the material, and sharing their work on a website. None of them had any professional programming experience, and the students used simple digital editing software to produce their video blogs. Some of them

had basic skills in video, photography, and sound recording, and most had experience with multimedia.

A questionnaire containing eight questions was used to collect data, covering two aspects - challenges and aspects of the work process, as well as resources available to address them. The average interview duration was approximately 40 minutes. All interviews were recorded and transcribed, and a categorical thematic analysis was conducted. As a result, all statements related to the metacognitive and organisational aspects of the work process were identified. Particular attention was paid to the students' comments, in which they could express their achievements, explain their strengths and weaknesses, intentions, beliefs, and behaviour during the work. The criteria of form (choice of words, sentences, messages) and content elements (ideas and words presented) were used to interpret and classify the collected material.

4. Results

Overall, students had a clear understanding of the challenges involved in creating a video blog. Their observation was based on the sense of success they felt when they "interpreted the story" (p1) and "built a story that looked a bit like a spider's web" (p3).

The freedom of creativity, which is considered more important than in "traditional media", was a source of motivation: "There's more freedom to create and it's something new to think about in advance" (p 2); "You can really enjoy yourself, do what you want and it's much more exciting than traditional media" (p 7).

Students also took into account the relational and social aspects of their creative work. They were aware of collaborative work and resource sharing, who they could contact, and interlocutors who shared their expertise in the field they were researching: "What I keep as a memory is first of all the meetings (p 4) we had to gather all the information for this web documentary, so there was a lot of testimonials" (p 6).

Most people feel that their experience of creating a video blog has given them a better understanding of different aspects of media, such as sound, text, photos, and animation. Some point out the relationships between different audiovisual content formats. Video blogging allows you to combine different elements, such as text, sound, and video, and choose what works best in each situation: "What's interesting about video blogging is that

it's looked at in its entirety, not on top of each other. We think about text, sound, video, mix it all together and choose what works best for each situation" (p 5).

The students believe that through ingenuity and perseverance, they were able to successfully complete their project. They have become more confident and have acquired skills in editorial work and self-control. They are also learning to manage their time and make choices that matter: "We realise that drinking is not easy either, we learn to make editorial choices, we meet people (p 9) we learn from editing, we learn from self-control because you have to be patient [...] And then you also learn to manage..." (p 9).

In general, working on a video blog requires different skills from students, such as writing, navigation, and organisational skills. These skills are used dynamically depending on the information, technical, and social aspects of the work (Table 2):

Table 2: Frequency of Manipulations Related to Digital Skills in Creating a Video Blog

Manipulation	Digital skills			Together
	Shooting	Navigation	Organisation.	
Information	38	44	36	118
Social.	42	32	24	98
Technical	66	20	19	105
Together	146	96	79	321

Source: Authors' own development.

In the survey, students focused their attention mainly on the information dimension (118 cases), compared to the technical (98 cases) and social (105 cases) dimensions. This can be explained by the fact that we mainly interviewed students majoring in journalism.

Skills related to writing are used the most (146 cases). The social aspect of writing is particularly prominent in students' experiences (66 cases), which underlines the importance of addressing human issues in content. Establishing contact with reality can be seen as the basis for students' knowledge, and this "reality" can have different aspects, either considered in isolation (documentary approach) or in the context of the environment with which students have to work (co-authors, recipients of a vlog).

The metacognitive skills noted are largely related to students' perceptions of themselves as learners as well as vloggers: "I really listen, I am open-minded, I am interested in everything! This is how I will learn" (p 1). Their comments also related to the tasks they

had to complete and their perceptions of the goals, characteristics, and challenges of a vlog: "For me, a vlog is an interactive, linear story and requires the participation of the Internet user" (p 3).

There was a significant number of cases related to the stage of awareness (250 cases) compared to the stages of judgement (84 cases) and regulation (60 cases) (Table 3):

Table 3: Frequency of Statements Related to Metacognitive Skills in Creating a Video Blog

Activities	Metacognitive skills
Awareness	250
Judgement.	84
Regulation	60
Total	393

Source: Authors' own development.

This result does not seem surprising, as we believe that metacognition may be limited to the first stage and may not always generate a large number of judgements and adjustments. However, regulatory activities did not occur frequently compared to awareness-raising activities. In other words, students did not always make decisions based on possible judgements about their tasks or products. These results can be explained by the fact that the subjects performed their work in a standardised university context in which they did not always feel able to intervene.

5. Discussion

The idea behind the paper centres on the recognised educational value of using digital tools to stimulate critical thinking among students. The study identified two main hypotheses, which were fully supported by the results: the first hypothesis was that students develop digital writing, navigation, and organisation skills on the information, technical and social levels; the second hypothesis indicated that students develop metacognitive skills, focusing on awareness, judgement, and regulatory operations.

The initial results of the study confirm the importance of using digital tools for active learning and the development of critical thinking. The students who had the opportunity to create their own video blogs became more skilled in using IT technologies, were able to better navigate the information space and organise their thoughts. Thus, this study supports the first hypothesis. In this context, it is worth noting that metacognitive skills are an

important element of critical digital literacy (Giannikas, 2022). In fact, they constitute a significant part of critical thinking, which guides and controls the basic skills and strategies associated with it (Kartini & Jubhari, 2021). These metacognitive skills are important in enabling students to cope with the variety of situations, sometimes problematic, that arise in the digital world they have learned (Siddiq et al., 2023).

In addition, it should be noted that the skills activated during video blog creation had much in common with the abilities and attitudes reflecting critical thinking (Pieshev et al., 2022). In this regard, the study compared the actions of creating video blogs with 5 out of 12 abilities and 7 out of 12 critical thinking attitudes.

First and foremost, vlog design requires the need to "take care to clearly state the problem or position" (Guideline 1) in informational, technical, and social texts from their documentary perspective. Authors should "use reliable sources and cite them" (Guideline 4). They should "take into account the global situation" (Guideline 5), especially in relation to all stages of vlogging, for example, the appropriate use of visual, audio, or textual material. Vloggers should "take care to keep in mind the original meaning" of their project (Guideline 7), which is the author's perspective on reality. They should "keep the focus on the main topic" (Guideline 6), both their own attention and that of the audience for which the vlog is intended.

The study also showed that students developed their metacognitive skills. They became more aware of their judgements and could regulate their actions and learning processes (Tsekhmister et al., 2022a). This confirms the second hypothesis and indicates a significant development of metacognitive skills among students. Furthermore, the analysis of the results shows that students tend to "take a position and change it when the facts justify it" (Guideline 10). Making a web documentary actually encourages constant adaptation. This situation was repeatedly mentioned in the comments collected in the study: "I was thinking every time how I could do it" (p 1); "We had to try several times to create an infographic or a homepage or something like that because we were constantly learning" (p 9).

Finally, "taking into account others, their level of knowledge and degree of intellectual maturity" (Guideline 12) is part of the social dimension of vlogging. We can relate this to the ability to write, select and organise vlog content with the participants in the production and the target audience in mind. One of the students interviewed in the study reported that he "had to meet people from a different culture [...] so it was challenging" (p 7).

In terms of critical thinking skills, it seems that assessing the "credibility of a source" is one of the journalistic aspects of creating a video blog. According to our study, students also need to "interact with other people" (skill 12). In our study, p5 refers to the need to "spend time researching, to be able to talk to people, to spend time building relationships with them". Students were also asked to 'focus on the question' (skill 1) as part of their project, which was seen by students as a long-term endeavour: "we thought, we ate, we breathed the vlogs, it was almost our baby" (p 6). Students also had to "resolve clarifying questions" (skill 3) and "formulate and evaluate value judgements" (skill 8) to form their own view of the document.

All of the above results confirm the hypotheses of the paper. However, it should be noted that the study has its limitations. In particular, it was carried out with a limited number of university students, and therefore its results cannot be generalised to the entire student population. In this context, we note the work of (Tsekhmister et al., 2022c), which investigates in more detail the impact of digital tools on the development of critical thinking and metacognitive skills.

Given the above, it can be concluded that the use of digital tools stimulates the development of critical thinking and metacognitive skills among students. A related study (Tsekhmister et al., 2022b) similarly points to the potential of digital tools to improve the learning process.

For Drigas et al. (2023), it is the combination of critical skills and attitudes that actually underpins critical thinking. It is only attitudes that shape what constitutes 'critical thinking' (Pieshev et al., 2022).

Thus, this study sought to show that creating a video blog among newcomers to this field is the first step in acquiring the critical thinking skills necessary to navigate the hypermedia world and to acquire proper digital literacy.

6. Conclusion

This paper identifies the educational potential of video blogging for journalism students. It is noted that this type of media contributes to the manipulation of different ways of digital writing and awareness of aspects of this writing, thereby enhancing digital literacy. The use of critical thinking skills and guidelines makes it possible to aggregate disparate

knowledge of digital literacy and engage students in reflecting on their own perceptions of reality while stimulating their creativity.

This study has identified how students use their cognitive resources to create digital content that reflects their digital literacy. The study reveals that the requirements for this achievement are not limited to technical aspects, as it may seem when using digital technologies. Information and social aspects are also important in this work.

In terms of the potential for using a vlog to develop critical skills, creating a vlog offers interesting opportunities for two reasons. First, it promotes critical thinking and digital literacy by engaging students in challenging situations. Secondly, this activity encourages students to apply complex thinking strategies related to metacognition.

However, the study has its limitations. The sample of students we used was limited, which does not allow us to generalise the results of the study. In addition, the interviews may contain inaccuracies, as students do not always reflect on their cognitive processes related to creating a video blog. It should also be noted that we interviewed only journalism students. A study on other less specialised students who use vlogging for digital literacy education is really promising. We still do not know how much the creative aspect of creating a video blog contributes to the authors' reflections on digital literacy.

The main interest of this paper lies in the choice of the object of study - video blogging as a tool for digital literacy education, which is hardly studied in the scientific literature. In addition, this article offers reflections on the need to teach digital technology users a critical and analytical approach to creating and perceiving information.

There are several promising areas for further research in this area. First, further research could be conducted on the impact of video blogs on the digital literacy of journalism students, in particular in terms of different types of content and topics. Secondly, it is worth investigating how the process of creating a video blog itself affects students' creativity and their ability to convey information to the audience in interesting and original ways. It is also possible to analyse how the perception of digital literacy changes after the video blog is published and the audience receives feedback and comments. All of these areas of research can add to our knowledge of the use of video blogs in the educational process of students of different specialities and contribute to the further development of this approach.

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