

Enhancing Media Literacy And Critical Thinking Skills at a Slovak University:

Exploring Student Perceptions

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Abstract

This study explores students' perceptions of a university-level course on critical thinking and argumentation taught at the Faculty of Mass Media Communication, University of Ss. Cyril and Methodius, Slovakia. The research employed a qualitatively enriched semi-structured questionnaire that was completed by 18 first-year marketing students. The aim was to assess students' baseline knowledge, the course's impact on their critical thinking skills, and their perceptions of its practical benefits. Findings reveal that before the course, most students had only limited familiarity with concepts such as media literacy, cognitive biases, and source verification. Many did not regularly verify information or recognize manipulative media strategies. After completing the course, students reported noticeable improvement in identifying misinformation, using verification techniques, and applying critical thinking tools. They began systematically cross-referencing information, analyzing emotional and structural elements of media content, and recognizing common cognitive biases like anchoring, confirmation bias, and the bandwagon effect. Students found the ability to detect manipulation and disinformation particularly valuable, and many appreciated the introduction of philosophical razors as decision-making tools, though these were less commonly applied in practice. Despite these improvements, some students noted challenges in consistently applying critical thinking skills in everyday contexts due to emotional reactions or ingrained biases. Although the small sample limits generalizability, the study highlights the importance of integrating practical critical thinking education into university curricula. The results suggest that targeted instruction can significantly enhance students' analytical capabilities and media awareness, equipping them to navigate an increasingly complex digital environment more effectively.

Keywords

Media literacy; Critical Thinking; University; Students; Perceptions.

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Aprimorando a literacia midiática e as habilidades de pensamento crítico em uma universidade eslovaca:

explorando as percepções dos estudantes

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Resumo

Este estudo investiga as percepções de alunos sobre um curso universitário de pensamento crítico e argumentação, ministrado na Faculty of Mass Media Communication da University Ss. Cyril and Methodius, Eslováquia. A pesquisa usou um questionário semiestruturado com abordagem qualitativa, respondido por 18 estudantes de marketing do primeiro ano. O objetivo foi avaliar o conhecimento prévio dos alunos, o impacto do curso em suas habilidades críticas e a utilidade prática percebida. Antes do curso, a maioria tinha pouca familiaridade com conceitos como letramento midiático, vieses cognitivos e verificação de fontes. Muitos não verificavam informações nem identificavam estratégias manipulativas da mídia. Após o curso, os alunos relataram avanços na detecção de desinformação, uso de técnicas de verificação e aplicação de ferramentas de pensamento crítico. Passaram a analisar melhor o conteúdo midiático, reconhecendo vieses como ancoragem, confirmação e efeito manada. A habilidade de identificar manipulações foi considerada especialmente útil. Vários estudantes também valorizaram o uso das “navalhas filosóficas” como apoio à tomada de decisões, embora nem sempre fossem aplicadas no cotidiano. Alguns relataram dificuldade em manter o pensamento crítico de forma consistente, devido a reações emocionais ou preconceitos arraigados. Apesar do número limitado de participantes, o estudo destaca a importância de incluir o pensamento crítico de forma prática nos currículos universitários. Os resultados indicam que o ensino direcionado pode melhorar significativamente a análise crítica e a consciência midiática dos estudantes.

Palavras-chave

Literacia midiática; Pensamento crítico; Universidade; Alunos; Percepções.

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Critical evaluation of information is a cognitively demanding process that plays a central role in understanding media literacy, involving not only questioning the reliability of sources but also analyzing the context, intent, and emotional impact of the content we consume. Studies suggest that younger individuals, particularly those between 18 and 24 years old, demonstrate stronger critical thinking and media literacy skills than older generations. They are more accustomed to verifying information from multiple sources and are less likely to share unverified content. In contrast, older age groups often struggle with distinguishing between reliable and unreliable information, showing a lower tendency to question or critically assess what they encounter online. This gap may be due to less exposure to digital tools and a limited understanding of how information is manipulated in online spaces (Petranová; Vrabec, 2015).

The dominance of social media as a primary news source, especially for younger users, further highlights the importance of critical thinking. While many young people are aware of the need to evaluate information carefully and tend to trust reputable sources, they are also confronted with emotional manipulation, information overload, and the spread of disinformation. Algorithms often reinforce existing beliefs, making it harder to think independently and critically. In this environment, critical thinking becomes more than a cognitive skill—it is a form of self-defense. Strengthening these abilities across all age groups through education and awareness is essential for navigating today's media landscape, resisting manipulation, and making informed decisions.

Evidently, there has been an increasing demand on researching critical thinking, particularly in relation to its role in education, media literacy, decision-making, and resistance to misinformation in the digital age. The PISA 2024 findings highlight that the development of creative and critical thinking is a key competency for the 21st century, influenced not only by students' individual characteristics—such as academic proficiency and socio-economic background—but also by the school environment and teachers' attitudes (OECD, 2024; UNESCO, 2024). International comparisons show that schools which systematically foster reflective and creative thinking achieve better outcomes in innovation, collaboration, and complex problem-solving (OECD, 2024). Numerous studies have been conducted in both Europe and Slovakia to investigate the implementation of media literacy and its impact on education, particularly in relation to developing critical thinking skills.

Research has shown that critical thinking is vital for navigating the complexities of media content, especially in an age where misinformation and fake news are prevalent. Media and information literacy plays a critical role in developing the knowledge, mindset, and skills necessary for individuals to assess, critically

evaluate, and ethically use information (Shah *et al.*, 2024; Al-Zou'bi, 2021; Gilmour, 2024; Halpern, 2024; Andersson, 2021).

Pedagogical approaches such as intercultural competence (Namsaeng; Ambele, 2025; Gómez-Rodríguez, 2018; Soboleva; Lomakina, 2018), active learning (Kusumoto, 2018; Nelson; Crow, 2014), problem-based learning, and project-based learning (Liedtke Thorndahl; Stentoft, 2020; Birgili, 2015; Seibert, 2021;), and team-based learning (Drummond, 2012; Espey, 2018; Aristin; Purnomo, 2022) have been identified as effective methods to enhance critical thinking by fostering analytical skills, open-mindedness, and collaborative decision-making.

Online learning environments, including computer conferencing and virtual projects, also support active student participation and critical engagement with content (Bullen, 2007; Susanti *et al.*, 2025). Also, the use of digital tools, such as Online Test Pad and Critical Thinking Technology (TFRT), has a positive impact on the development of critical thinking, fostering creativity and independence, and improves decision-making skills (Meirbekov *et al.*, 2022; Norboyeva; Xurramova, 2022).

However, discrepancies in how critical thinking is conceptualized and taught in different educational contexts, particularly in higher education, highlight the need for clearer definitions and more consistent teaching strategies (Franco *et al.*, 2018).

The literature also identifies key abilities and dispositions required for effective critical thinking. Lai (2011) outlines essential skills such as examining arguments, drawing conclusions, solving problems, and reasoning, along with dispositions like open-mindedness and a desire for well-informed decision-making. McPeck (1990, in Lai, 2011) further emphasizes the need for domain-specific knowledge to support critical thinking. However, some researchers argue that critical thinking skills can be generalized across disciplines and do not require specific domain knowledge (Lai, 2011), while others observe that students may apply CT skills effectively in some contexts but struggle in others (Willingham, 2008).

In Slovakia, research on the development of critical thinking has been conducted across primary, secondary, and tertiary education levels. In the Slovak and Czech environments, several researchers have examined critical thinking in the contexts of teacher training and media literacy, highlighting gaps and potential improvements (Kačínová, 2020; Petranová, 2011; Vermešová, 2021; Brečka *et al.*, 2022; Petrasová *et al.*, 2019; Kolláriková *et al.*, 1995), and self-regulation of learning and metacognitive processes (Hrbáčková, 2009), development of key competencies (Turek, 2003), systemic and creative thinking (Königová, 2007), working with texts and the development of critical thinking (Gavora *et al.*, 2008), development of critical thinking and creativity (Zelina; Zelinová, 1990), assessment of the level of critical thinking and argumentation among students of teacher training programs (Kosturková, 2013; 2014; 2016), and the use of coaching techniques to enhance critical thinking in university settings (Theodoulides *et al.*, 2020).

To sum up, these studies highlight the need for a more systematic approach to developing critical thinking in Slovak higher education, ensuring students are better prepared for the complexities of the modern world.

Research methodology

The research aimed to assess not only how students perceived the one-semester course on Critical Thinking and Argumentation but also to evaluate the effectiveness of the course in enhancing their critical thinking skills. The course, which covered topics such as media literacy, distinguishing between credible and disinformation media, manipulation in cyberspace, cognitive biases, and philosophical razor principles, sought to equip students with the tools to analyze and evaluate information more thoughtfully and analytically. Through a questionnaire distributed at the end of the semester, the research aimed to gather comprehensive insights into students' cognitive and behavioral development throughout the course. Additionally, the study sought to understand the overall impact of the course on their attitudes toward media consumption and critical thinking skills.

Data

All the data was collected during December 2024, with 37 students at the Faculty of Mass Media Communication of the University of Ss Cyril and Methodius in Trnava, Slovakia, participating in the research and a total of 18 students completed the questionnaire. Thus, the research sample consists of first-year students of marketing communication who enrolled in a one-semester course on Critical Thinking and Argumentation. The research sample is not representative and is relatively small; therefore, the findings of the study cannot be generalized to a broader population. However, they are considered valid within the context of the specific group of students involved in the study, providing valuable insights into their experiences and perceptions of the course. These results may offer a basis for further research with larger and more diverse samples to explore the broader applicability of the findings.

A methodological tool adopted in this paper was a semi-structured questionnaire consisting of 19 questions. Apart from closed questions, the questionnaire was enriched with a certain qualitative data capture. Adding some 'qualitative-ness' to quantitative data can create richer and more meaningful results – particularly useful for capturing the personal opinions, views, and experiences of respondents (Adejimi *et al.*, 2010). The questionnaire was anonymous and participation was voluntary. It was distributed via a group team in the MS Teams environment. Fourteen questions were closed and five questions were open-ended.

The questions were formulated to be simple and easy to understand. Most of

the questions were mandatory, with the option to choose one or more answers. In qualitative research, it is appropriate to use a combination of open, closed, and semi-closed questions in interviews and questionnaires (Gavora *et al.*, 2010).

Research highlights that combining both open and closed questions allows for the collection of richer, more detailed insights, while closed questions provide structured, quantitative data to support the findings (Semyonov-Tal; Lewin-Epstein, 2021; Hansen; Świdarska, 2024). Among the answer choices, there was also an *Other* option, where respondents could express their opinions or provide their responses. All the questions were mandatory.

After receiving responses from the participants, we noticed that a small percentage of respondents did not answer some of the open-ended questions, meaning that the opinions and perceptions of some of the students could not be taken into account. Of the 37 students in the course, only 18 completed and submitted the questionnaire – yielding a response rate of less than 50% –and this relatively small sample was used for the research.

The essence of qualitative research lies in the in-depth exploration of a topic by utilizing a large amount of data collected from a small number of individuals. The collected data was analyzed and interpreted inductively (Hendl, 2005). When conducting qualitative research, the researcher, in searching for meanings and striving to understand the current situation, creates a detailed description of what has been recorded and observed (Hendl, 2005).

Finally, the outcome of a qualitative study is highly detailed and descriptive – it typically includes explanations of the context, the participants, and the activities being studied (Merriam, 2002). Qualitative research takes a naturalistic approach, meaning researchers examine subjects within their real-world environments, aiming to understand or interpret phenomena based on the meanings that people assign to them (Denzin; Lincoln, 2000).

The current research focuses on the views and perceptions of students within the class, which serves as their natural environment. Creswell (2013) characterizes the researcher's role in qualitative research as an active participant in the study process. In this study, the researcher served as a crucial instrument in gathering data and played a key role in interpreting the results. Several studies provide comprehensive examples of how qualitative methods can be utilized to evaluate the effectiveness of critical thinking courses, offering valuable insights for educators and researchers in the field, implementing semi-structured interviews, questionnaires, or thematic analyses of student feedback, let us mention studies by Bowen (2022), Sullivan *et al.* (2024), and Batdi *et al.* (2024).

In line with the research aim, we sought to answer the following research questions:

RQ 1: How extensive was the students' knowledge of media literacy and critical

thinking prior to the course?

RQ 2: To what extent and in which areas did students' critical thinking improve after completing the course?

RQ 3: How do students perceive the course and how do they evaluate the practical benefits of the course?

Results

The questionnaire contained 19 questions, 14 of which were closed and the remaining 5 were open-ended in which respondents could share their opinions or provide their responses. The questions in the questionnaire can be roughly divided into three thematic areas – media literacy and source verification, cognitive biases and critical thinking, and students' opinions and their perception of the completed course on critical thinking and argumentation. The semi-structured questionnaire, which included both closed and open-ended questions, was evaluated using a qualitative, descriptive approach. Rather than applying statistical analysis, the focus was placed on understanding the participants' perceptions, opinions, and experiences. Closed-ended questions were interpreted descriptively to identify general trends or recurring patterns in responses. Open-ended answers were analyzed through thematic analysis, involving the identification of key themes and categories that emerged from the data.

This approach allowed for a deeper insight into the respondents' subjective views and contributed to a more nuanced understanding of the research topic. As Braun and Clarke (2006) note, thematic analysis is a flexible and accessible method for identifying, analyzing, and reporting patterns within qualitative data, making it especially suitable for exploring perceptions and experiences in educational research.

The first four questions explored how often and in what ways students verify online information. Before the course, most students verified information occasionally or not at all. After the course, they reported using various techniques such as consulting multiple sources, checking context, the authorship, and using fact-checking tools. Some students also discussed news with others or cross-checked through videos, URLs, or expert opinions. A few still relied on intuition or did not verify at all.

When asked how often they verify news online, students mostly reported doing so only when in doubt or when the topic seemed important. Most felt their ability to identify misinformation improved after the course.

The next questions addressed cognitive biases, critical thinking, and media manipulation. Most students were unfamiliar with cognitive biases before the course but learned to recognize several types, such as confirmation bias, anchoring, and the bandwagon effect. Many felt this knowledge improved their media literacy and ability to avoid manipulation, though a few reported no noticeable impact.

Regarding media manipulation, students acknowledged encountering it

before the course, mainly through emotional content or misleading visuals. After the course, most felt more capable of recognizing such tactics. An external lecture on manipulation had little reported effect.

Finally, students were asked about philosophical razors – tools for critical reasoning. Most had not heard of them before, and while some found them helpful for simplifying decisions or assessing news, others did not apply them in practice.

Also, students were asked to write whether they had used any of the philosophical razors in real life and, if so, to describe a specific situation. Below are the most relevant responses. Ten out of 18 students stated that they had not used any philosophical razors in real life, nor could not recall doing so, or were unsure.

The majority of respondents mentioned using Occam's Razor: "When I'm stressed and start imagining all sorts of extreme scenarios about how something might turn out, I stop and usually apply Occam's Razor, which helps me calm down".

One respondent stated: "A friend stopped replying to me. I could have come up with various conclusions, like that she was mad at me, something happened to her, she fainted, or her phone died. I leaned towards the conclusion that maybe someone called her (which often happens to me, and then I leave the message unread) or that someone asked her something while she was near her phone".

Another respondent also leans towards using Occam's Razor in real life: "I haven't consciously used them much, but I know I used Occam's Razor, for example, when I heard a sound, and I attributed it to the simplest explanation".

One respondent admitted not using philosophical razors yet, but "...I believe I will use this knowledge".

In the final set of questions, students expressed their own opinions, ideas, and comments about the course they completed and the specific topics taught.

In the question where students were asked to select from multiple options regarding how their critical thinking had improved after completing the course, the responses were relatively evenly distributed. The statements "I am able to form my own opinions instead of blindly accepting what is presented to me" and "I am able to make more informed and rational decisions (i.e., better decision-making)" were each selected by five students. Four respondents indicated that they had developed greater resistance to manipulation. Two students each selected the options "I have improved in verifying and assessing the truthfulness of the information" and "I have improved in recognizing manipulation and biases". No respondent selected the remaining options available.

In the following question, respondents were asked to write in their own words which skills and knowledge from the course helped them most in recognizing disinformation and fake news in the media, and in applying critical thinking in everyday life. The most relevant responses are provided exactly as given. Two responses indicate that the most valuable insights were related to cognitive biases. Several responses

focus on manipulation and manipulative techniques in the media. One respondent stated that what they appreciated most about the course was the “overall focus on identifying hidden manipulation techniques, or how easily an obviously false message can be created and spread”. Additionally, the respondent mentioned that the course helped them realize how to engage in discussions with people who are passionate about their opinions.

One of the respondents stated that through the course, they realized “how politicians use communication to manipulate others”.

The largest group of respondents focused on the knowledge gained in the area of media literacy, which they consider to be the most beneficial aspect of the course. From all the responses, the most relevant ones are as follows: “... for example, insights on how to recognize disinformation, what to look for in media reports”; “how fake websites can be distinguished from real ones based on their tone, writing style, titles, sources, etc.”; “the use of long headlines in articles, how politicians use communication to manipulate”; “... in the media, it is definitely knowledge about how disinformation is written (lots of exclamation marks, shock value, emotions) and in everyday life, the most important realization was that cognitive biases exist”.

In the second-to-last question, the respondents were asked to write down which of the following areas they consider obstacles to applying critical thinking in everyday life. For seven respondents, cognitive biases are an obstacle, meaning how our brain deceives us. The same number of students – seven – indicated that emotional reactions, such as strong emotions like fear, anger, disgust, or excessive enthusiasm, prevent them from thinking critically, as these emotions can cloud their judgment. Surprisingly, no one considered time pressure, which often leads us to simplify complex problems, to be an issue.

In the last open-ended question, respondents were asked to write in their own words what other topics or areas they would like to see included in a critical thinking and argumentation course. Three respondents expressed interest in topics focused on argumentation: “I would like to cover logical fallacies”, and two others would like to learn “... how to argue correctly and maintain an overview of the situation, how to effectively and calmly convince an opponent of my opinion”. Another respondent would like to learn “more about cognitive biases and manipulation, those were very interesting lessons”. There were also suggestions to broaden the scope of critical thinking by including insights from psychology: “Maybe something related to psychology, if it connects with critical thinking,” or politics: “... topics related to politics”. One respondent commented on the methodological aspect of the course: “The topics and areas were broad enough, but maybe I would add more interactive exercises for students, where they could become aware of various thinking errors and similar issues”. Another respondent added to this statement: “More practical activities, for example, giving us several tasks to work on, and by doing them, we

would see if we were thinking critically”.

Discussion

The study offered an examination of respondents' viewpoints on the content and implementation of a university-level course on critical thinking and argumentation. It illuminates their attitudes toward the verification of information, recognition of manipulative techniques, and the application of different critical thinking tools. The outcomes of the research focused on these issues reveal several noteworthy findings. Not only was the course effectiveness and its embedding within the study programme highlighted, but also the need for systematic course enhancement, development, and curriculum improvement was evident.

The results of this study confirm that structured education in critical thinking and media literacy can significantly enhance students' ability to recognize misinformation, identify cognitive biases, and critically assess information sources. As noted by Orhan (2023), there is a positive and balanced relationship among high critical thinking dispositions, new media literacies, and high fake news detection abilities. However, Luo *et al.* (2022) argue that only a small amount of empirical data confirms that new media literacy helps adolescents detect misinformation.

Regarding practical tools for critical thinking development, students claimed to have acquired tools such as fact-checking, analyzing emotional content, and applying philosophical razors in decision-making. Notably, participants reported the usefulness of these skills beyond academic settings, indicating the real-world applicability of what they learned. These findings highlight the potential of targeted courses to develop analytical thinking within university curricula and contribute to the broader goal of fostering informed and discerning individuals. Although the research on the effectiveness of Google Fact Check reveals that while it retrieves fact-checks for only a limited number of false claims, the results are generally reliable and influenced by claim wording, emotional tone, and source characteristics (Yang, 2024). In terms of learning, activities such as scenarios, problem-solving, decision-making, and literary analysis promote thinking and active engagement over rote memorization (Alagözlü, 2006; Orhan, 2021).

While the study's limitations – including a small sample size and a response rate below 50% – reduce the generalizability of the findings, they nonetheless offer valuable qualitative insights into how students perceive the value and practical benefits of critical thinking education. These findings also pave the way for further research focused on the long-term impact of such courses, their applicability in various educational contexts, long-term retention or consistent application of the acquired skills, particularly in non-academic contexts such as social media or personal decision-making, or the involvement of more diverse and larger populations.

Additionally, further studies could investigate how emotional responses continue to affect the practical use of critical thinking tools despite improved theoretical understanding.

Conclusion

The first research question aimed to find out how extensive the students' knowledge of media literacy and critical thinking was before the course. Before participating in the course, the majority of students had limited familiarity with media literacy and critical thinking concepts. Approximately half of the respondents occasionally verified information from online sources, while one-third never verified sources. Furthermore, most participants had heard of cognitive biases but lacked a clear understanding of their implications, while others were entirely unfamiliar with them. This indicates a baseline of minimal knowledge and awareness of critical thinking tools and media literacy among students.

The second research question explored to what extent and in which specific areas the students' critical thinking improved after completing the course. All in all, the course resulted in significant improvements across several dimensions. Most students reported a marked enhancement in their ability to identify misinformation and fake news, with others noting slight improvement. Students adopted systematic verification methods, such as cross-referencing information with independent sources and analyzing content for emotional appeals and structural cues. Cognitive biases, such as anchoring and confirmation bias, were recognized and practically applied by the majority of respondents. These advancements demonstrate the effectiveness of the course in fostering analytical skills and critical evaluation of media content.

The third research question focused on students' perceptions of the course and their evaluation of the practical benefits of the course. Research results indicate that students identified cognitive bias awareness and media literacy techniques as the most impactful skills gained during the course. Practical knowledge, such as recognizing emotional manipulation and the hallmarks of disinformation, was frequently mentioned. Tools like philosophical razors provided a structured approach to decision-making and filtering irrelevant information, although their application was less common. Students also valued insights into media manipulation and strategies for discerning credible sources, which they applied in both academic and everyday contexts.

The findings of this study align with broader research indicating the importance of incorporating critical thinking education into academic settings. Students' progress in recognizing misinformation and employing analytical tools reflects the efficacy of the targeted approach and course content. The focus on practical application,

including exercises in cognitive bias recognition and media manipulation detection, proved critical in achieving these outcomes.

The study also revealed persistent challenges. Despite improvements, some students reported difficulties in consistently applying critical thinking tools, such as philosophical razors, in everyday life. Emotional responses and cognitive biases remain barriers to fully effective critical thinking, as noted by the participants. Furthermore, while the small sample size provided valuable insights into the experiences of a specific group of participants, the generalizability of the findings is limited. Future research should aim to replicate this study with larger and more diverse populations to validate the results and explore additional variables, such as cultural or institutional factors influencing media literacy development.

The findings demonstrate that students initially possessed limited familiarity with critical thinking frameworks and media literacy techniques. However, after completing the course, they showed considerable progress in verifying information, recognizing manipulative strategies, and applying critical thinking in various contexts. Tools such as cognitive bias identification and philosophical razors proved to be particularly effective.

The course addressed critical gaps in media literacy education by equipping students with practical skills to navigate a complex and often deceptive media environment. Despite the small and non-representative sample size, the study underscores the value of integrating critical thinking into higher education curricula. Therefore, the results provide a foundation for further research into the long-term benefits of such programs.

In conclusion, the study emphasizes the necessity of integrating critical thinking and media literacy education into university curricula. Continued exploration and refinement of these educational approaches will be essential for fostering critical, informed citizens in an increasingly complex digital world.

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References

ADEJIMI, A.; OYEDIRAN, O. S.; OGUNSANMI, E. B. Employing qualitatively enriched semi structured questionnaire in evaluating ICT impact on Nigerian 'construction chain integration'. **The Built & Human Environment Review**, v. 3, n. 1, p. 49-62, 2010. Disponível em: <https://tinyurl.com/mv9ajxu2>. Acesso em: 11 abr. 2025.

ANDERSSON, L. It's Critical: The Role of Critical Thinking in Media and Information Literacy. **Media Education Research Journal**, v. 10, n. 1&2, 2021. DOI: <https://doi.org/10.5281/zenodo.5763719>.

ARISTIN, N. F.; PURNOMO, A. Improving Critical Thinking Skill Through Team-Based Projects, Is It Effective? **Journal of Education Research and Evaluation**, v. 6, n. 4, p. 586-594, 2022. DOI: <https://doi.org/10.12785/jere.o6o4o8>.

BATDI, V.; ELALDI, Ş.; ÖZÇELİK, C.; SEMERCI, N.; & ÖZKAYA, Ö. M. Evaluation of the effectiveness of critical thinking training on critical thinking skills and academic achievement by using mixed-meta method. **Review of Education**, v. 12, n. 3, e70001, 2024. Disponível em: <https://bera-journals.onlinelibrary.wiley.com/doi/pdf/10.1002/rev3.70001>. Acesso em: 11 abr. 2025.

BIRGILI, B. Creative and Critical Thinking Skills in Problem-Based Learning Environments. **Journal of Gifted Education and Creativity**, v. 2, n. 2, p. 71-80, 2015. Disponível em: https://www.researchgate.net/publication/282690377_Creative_and_Critical_Thinking_Skills_in_Problem-Based_Learning_Environments. Acesso em: 05 abr. 2025.

BOWEN, R. S. Student perceptions of “critical thinking”: insights into clarifying an amorphous construct. **Chemistry Education Research and Practice**, v. 23, n. 3, 2022. Disponível em: <https://pubs.rsc.org/en/content/getauthorversionpdf/d2rp00097k>. Acesso em: 11 abr. 2025.

BRAUN, V., CLARKE, V. Using thematic analysis in psychology. **Qualitative Research in Psychology**, v. 3, n. 2, p. 77-101. DOI: <https://doi.org/10.1191/1478088706qpo630a>. 2006. Acesso em: 12 abr. 2025.

BREČKA, P.; VALENTOVÁ, M.; LANČARIČ, D. The implementation of critical thinking development strategies into technology education: The evidence from Slovakia. **Teaching and Teacher Education**, v. 109, 103555, 2022.

BULLEN, M. Participation and critical thinking in online university distance education. **The Journal of Distance Education/Revue de l'Éducation à Distance**, v. 13, n. 2, p. 1-32, 2007. Disponível em: <https://www.jofde.ca/index.php/jde/article/view/5/8>. Acesso em: 05 abr. 2025.

CRESWELL, W. J. **Qualitative Inquiry and Research Design: Choosing Among Five Approaches**. Thousand Oaks, CA: SAGE Publications, 2013.

Critical Thinking and Generative Artificial Intelligence. **UNESCO. International Bureau of Education**. [2024]. Disponível em: <https://www.ibe.unesco.org/en/articles/critical-thinking-and-generative-artificial-intelligence>. Acesso em: 10 abr. 2025.

DENZIN, N., LINCOLN, Y. (eds.): **Handbook of Qualitative Research**. London: Sage Publications, 2000.

DRUMMOND, C. K. Team-based learning to enhance critical thinking skills in entrepreneurship education. **Journal of Entrepreneurship Education**, v. 15, n. 1, p. 57-63, 2012. Disponível em: <https://www.abacademies.org/articles/teambased-learning-to-enhance-critical-thinking-skills-in-entrepreneurship-education-1968-4882-15-1-57.pdf>. Acesso em: 11 abr. 2025.

ESPEY, M. Enhancing critical thinking using team-based learning. **Higher Education Research & Development**, v. 37, n. 1, p. 15-29, 2018. DOI: <https://doi.org/10.1080/07294360.2017.1341477>.

FRANCO, A.; VIEIRA, R. M.; TENREIRO-VIEIRA, C. Educating for critical thinking in university: The criticality of critical thinking in education and everyday life. **ESSACHESS Journal for Communication Studies**, v. 11, n. 2, p. 111-126, 2018. Disponível em: <https://www.essachess.com/index.php/jcs/article/view/338>. Acesso em: 05 abr. 2025.

GAVORA, P., a kol. **Ako rozvíjať porozumenie textu u žiaka** [How to Develop Text Comprehension in Pupils]. Nitra: ENIGMA, 2008.

GAVORA, P. *et al.* **Elektronická učebnica pedagogického výskumu** [Electronic Textbook on Educational Research]. Bratislava: Univerzita Komenského, 2010. Disponível em: <http://www.e-metodologia.fedu.uniba.sk>. Acesso em: 11 abr. 2025.

GILMOUR, T. L. Critical thinking and Media Literacy in an Age of Misinformation. **Thinking Skills and Creativity**, v. 39, 100782, 2021. DOI: <https://doi.org/10.1016/j.tsc.2021.100782>.

GÓMEZ-RODRÍGUEZ, L. F. Implementing Critical Thinking Tasks to Fostering English Learners' Intercultural Communicative Competence in a Genre-based Learning Environment. **English Language Teaching**, v. 11, n. 12, 2018. Published by Canadian Center of Science and Education. Disponível em: <https://www.ccsenet.org/journal/index.php/elt/article/view/73409>. Acesso em: 06 abr. 2025.

HALPERN, B. Critical Awakening: Enhancing Students' Agency through Critical Media Literacy. **Educational Research and Development Journal**, v. 27, n. 1, p. 14-34, 2024.

HANSEN, K; ŚWIDERSKA, A. Integrating open-and closed-ended questions on attitudes towards outgroups with different methods of text analysis. **Behavior research methods**, v. 56, n. 2, p. 4802-4822, 2024. Disponível em: <https://link.springer.com/article/10.3758/s13428-023-02218-x>. Acesso em: 12 abr. 2025.

HENDL, J. **Kvalitativní výzkum** [Qualitative Research]. Praha: Portál, 2005.

HLADÍKOVÁ, V. Transformation of Thinking and Education Under the Influence of Internet Communication. **Ad Alta: Journal of Interdisciplinary Research**, v. 8, n. 1, p. 99-103, 2018.

HRBÁČKOVÁ, K. Autoregulace procesu čtenářského rozvoje žáků na 1. stupni základní školy. **Pedagogická orientace**, v. 19, n. 4, p. 74–91, 2009. Disponível em: <https://www.pedagogickaorientace.cz>. Acesso em: 06 abr. 2025.

KAČINOVÁ, V. The Topic Of Media-Disseminated Mis-Information And Dis-Information As An Integral Part Of General Education In Slovakia. **Media Literacy and Academic Research**, v. 3, n. 1, p. 18–31, 2020.

KOLLÁRIKOVÁ, Z., GAVORA, P., LAPITKA, M., MEREDITH, K. S., & STEELE, L. **Výchova ku kritickému mysleniu-teória a prax**: zborník na pomoc učiteľom základných a stredných škôl. Bratislava: Štátny pedagogický ústav, 1995.

KÖNIGOVÁ, M. **Tvořivost – techniky a cvičení** [Creativity – Techniques and Exercises]. Praha: Grada Publishing as, 2007.

KOSTURKOVÁ, M. Schopnosť študentov učiteľských odborov argumentovať [The Ability of Students in Teacher Education Programs to Argue]. **Učiteľ na ceste k profesionalite**. Prešov: FHPV PU a Škola plus, 2013, p. 46–54.

KOSTURKOVÁ, M. Úroveň kritického myslenia študentov odboru vychovávateľstvo [The Level of Critical Thinking of Students in the Field of Education and Training]. **Lifelong learning – celoživotní vzdělávání**, v. 4, n. 1, p. 45–61, 2014.

KOSTURKOVÁ, M. **Kritické myslenie v edukačnej praxi na Slovensku** [Critical Thinking in Educational Practice in Slovakia]. Prešov: Prešovská univerzita, 2016.

KUSUMOTO, Y. Enhancing critical thinking through active learning. **Language Learning in Higher Education**, v. 8, n. 1, p. 45–63, 2018. Disponível em: <https://www.degruyter.com/document/doi/10.1515/cercles-2018-0004/html>. Acesso em: 06 abr. 2025.

LAI, E. R. **Critical Thinking**: A Literature Review. Research Report. Pearson, 2011.

LUO, Y. F.; YANG, S. C.; KANG, S.: New media literacy and news trustworthiness: An application of importance-performance analysis. **Computers & Education**, v. 185, 104529, 2022. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0360131522001002>. Acesso em: 11 abr. 2025.

McPECK, J. E. **Critical thinking and subject specificity**: A reply to Ennis. *Educational Researcher*, v. 19, n. 4, 10–12, 1990.

MEIRBEKOV, A.; MASLOVA, I.; GALLYAMOVA, Z. Digital education tools for critical thinking development. **Thinking Skills and Creativity**, v. 44, 101023, 2022.

MERRIAM, B., S. and Associates: **Qualitative Research in Practice**. Examples for Discussion and Analysis. San Francisco: Jossey-Bass, a Wiley Company, 2002.

NELSON, L. P.; CROW, M. L. Do Active-Learning Strategies Improve Students' Critical Thinking? **Higher Education Studies**, v. 4, n. 2, p. 77-90, 2014. DOI: <https://doi.org/10.5539/hes.v4n2p77>.

New PISA results on creative thinking. Can students think outside the box? Policy paper. **OECD**. [2024]. Disponível em: https://www.oecd.org/en/publications/new-pisa-results-on-creative-thinking_b3a46696-en.html. Acesso em: 10 abr. 2025.

NORBOYEVA, S. M.; XURRAMOVA, S. M. Q. Characteristics and steps of using technology for the development of critical thinking in students. **European International Journal of Multidisciplinary Research and Management Studies**, v. 2, n. 3, p. 60-70, 2022.

ORHAN, A. Fake news detection on social media: the predictive role of university students' critical thinking dispositions and new media literacy. **Smart Learning Environments**, v. 10, n. 29, 2023. Disponível em: <https://link.springer.com/article/10.1186/s40561-023-00248-8>. Acesso em: 11 abr. 2025.

ORHAN. A. Critical thinking dispositions and decision making as predictors of high school students' perceived problem solving skills. **The Journal of Educational Research**, v. 115, i. 4, p. 235-245, 2021.

PETRANOVÁ, D. Rozvíja mediálna výchova v školách kritické kompetencie žiakov? [Does media education in schools develop pupils' critical competences?]. **Communication Today**, v. 2, n. 1, p. 66-83, 2011.

PETRANOVÁ, D.; VRABEC, N. **Mediálna gramotnosť dospelaj populácie v SR** [Media Literacy of the Adult Population in Slovakia]. Research Report. Trnava: FMK UCM, 2015.

PETRASOVÁ, A.; BERNÁTOVÁ, R. KRUSZEWSKA, A. Level of critical thinking in primary education teacher master students. **INTED2019 Proceedings**, v. 13, p. 1234-1238, 2019.

SEIBERT, S. A.: Problem-based learning: A strategy to foster generation Z's critical thinking and perseverance. **Teaching and Learning in Nursing**, v. 16, n. 1, p. 85-88, 2021. DOI: <https://doi.org/10.1016/j.teln.2020.12.002>.

SEMYONOV-TAL, K; LEWIN-EPSTEIN, N. The importance of combining open-ended and closed-ended questions when conducting patient satisfaction surveys in hospitals. **Health Policy OPEN**, v. 2, 100033, 2021. Disponível em: <https://www.sciencedirect.com/science/article/pii/S2590229621000046>. Acesso em: 12 abr. 2025.

SOBOLEVA, A. V.; LOMAKINA, A. J. Critical thinking as a premise for the intercultural competence development. **Language and Culture**, v. 11, 2018, p. 104-111. Disponível em: <https://journals.rudn.ru/lang/article/view/21678>. Acesso em: 11 abr. 2025.

SULLIVAN, A. M., *et al.* Do we teach critical thinking? A mixed methods study of faculty and student perceptions of teaching and learning critical thinking at three professional schools. **Medical Teacher**, v. 46, n. 11, p. 1494-1501, 2024. Disponível em: <https://www.tandfonline.com/doi/abs/10.1080/0142159X.2024.2316862>. Acesso em: 11 abr. 2025.

SUSANTI, A.; RACHMAJANTI, S.; SURYATI, N.; ASTUTI, U. P. Online Project-Based Learning and Critical Thinking Skills: A Case Study in Tertiary Education. *In: International Joint Conference on Arts and Humanities 2022 (IJCAH 2022)*, p. 992-1002. Atlantis Press, March 2023. DOI: https://doi.org/10.2991/978-94-6463-038-4_110.

THEODOULIDES, L.; NIKLOVÁ, M.; LIPTÁKOVÁ, K.; NAFOUSSI, G.; HAVIAR, M. Fostering critical thinking in higher education through a coaching approach: theory and practical applications. **Journal of Educational Research**, v. 58, n. 2, p. 123-139, 2020. DOI: <https://doi.org/10.1016/j.jedures.2020.06.004>.

THORND AHL, K. L.; STENTOFT, D. Thinking Critically About Critical Thinking and Problem-Based Learning in Higher Education: A Scoping Review. **The Interdisciplinary Journal of Problem-based Learning**, v. 14, n. 1, March 2020. DOI: <https://doi.org/10.7771/1541-5015.1238>.

TUREK, I. **Kritické myslenie** [Critical Thinking]. Banská Bystrica: MPC, 2003.

VERMEŠOVÁ, J. **Pravdivosť informácií na internete** [Truthfulness of information on the Internet]. [Bachelor's Thesis]. Trnava: FMK UCM, 2021.

WILLINGHAM, D. T. Critical thinking: Why is it so hard to teach?. **Arts Education Policy Review**, v. 109, n. 4, 21-32, 2008.

ZAINAL SHAH, N.; SAHOL HAMID, N.; MARIADASS, M. E.; AB. AZIZ, N. S. Fostering Critical Thinking Skills in Tertiary-Level Students for Media and Information Literacy. **International Journal of Advanced Research in Education and Society**, v. 6, n. 3, p. 107-123, 2024. Disponível em: <http://myjms.mohe.gov.my/index.php/ijares>. Acesso em: 06 abr. 2025.

ZELINA, M.; ZELINOVÁ, M. **Rozvoj tvorivosti detí a mládeže** [Development of Creativity in Children and Youth]. Bratislava: SPN, 1990.

ZOU'BI, R. The impact of media and information literacy on acquiring the critical thinking skill by the educational faculty's students. **Thinking Skills and Creativity**, v. 39, 100782, 2021. DOI: <https://doi.org/10.1016/j.tsc.2021.100782>.

YANG, Q., CHRISTENSEN, T., GILDA, S., FERNANDES, J., OLIVEIRA, D., WILSON, R., & WOODARD, D. Are Fact-Checking Tools Helpful? An Exploration of the Usability of Google Fact Check. **arXiv preprint arXiv:2402.13244**, 2024. Disponível em: <https://arxiv.org/pdf/2402.13244>. Acesso em: 11 abr. 2025.

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