

Supporting children's creative process in the context of developing their literacy in artificial intelligence

Apoyo al proceso creativo de los niños en el contexto del desarrollo de su alfabetización en inteligencia artificial

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ABSTRACT: Objective. Artificial intelligence (AI) tools are increasingly becoming important means of supporting individual creativity across various fields, including education. This paper presents research on the use of AI tools in artistic creation by 87 primary school children during creative workshops at a selected Slovak university. It evaluates the quality of the creative process using generative AI language models (ChatGPT and TalkAI), integrating children's prompts and comparing the results with authentic children's creations as part of the development of their AI literacy. Within this framework, the study also examines children's experiences, attitudes toward ethics, and their evaluation of AI as a creative tool. **Methodology.** The employed methodological tools – a questionnaire and semi-structured group interviews – to explore children's interaction with AI, their perceptions of AI authorship, attitudes toward the ethical use of AI in schoolwork, and their evaluation of AI-generated creative outputs compared with their own. The method of third-party evaluators in literary criticism was used to compare the quality of AI and children's texts. **Results and conclusions.** The findings show that fewer than half of the children use AI tools, and gaps were identified in their ethical assessment. The comparison revealed that children's texts demonstrated a higher degree of originality, while AI texts were more accurate in terms of form and language. **Original contribution.** This study highlights the current need to develop children's AI literacy, particularly in relation to the creative and evaluative use of AI.

Keywords: creative production; generative AI; AI language models; AI literacy; younger school-age children.

RESUMEN: Propósito: Las herramientas de inteligencia artificial se consolidan como medios clave para apoyar la creatividad de las personas en diversos ámbitos, incluido el aprendizaje. Este artículo presenta resultados de una investigación sobre la implementación de herramientas

de IA en la creación artística de 87 niños en edad escolar primaria en talleres creativos en una universidad eslovaca. Evalúa la calidad del proceso creativo mediante modelos lingüísticos generativos de IA (ChatGPT y TalkAI), integrando los prompts de los niños y comparándolos con sus obras originales como parte del desarrollo de su alfabetización en IA. En este marco, también examina experiencias, actitudes éticas y valoración infantil de la IA como instrumento creativo. **Metodología.** Las herramientas metodológicas utilizadas — cuestionario y entrevistas grupales semiestructuradas— aclararon la interacción de los niños con la IA, su percepción de la autoría de los textos generados por IA, actitudes éticas sobre su uso en tareas escolares y la evaluación de resultados creativos frente a los propios. Se utilizó el método de evaluadores externos de crítica literaria para comparar la calidad de textos de IA y los de los niños. **Resultados y conclusiones:** Los resultados demostraron que menos de la mitad de los niños utiliza herramientas de IA, y se detectaron carencias en su evaluación ética. En la comparación, los textos de los niños mostraron mayor originalidad, mientras que la IA destacó en precisión formal y lingüística. **Aporte original:** El artículo subraya la necesidad actual de desarrollar la alfabetización en IA infantil en el proceso creativo y evaluativo de la IA.

Palabras clave: producción creativa; IA generativa; modelos lingüísticos de IA; alfabetización en IA; niños en edad escolar primaria.

1. Introduction

The integration of artificial intelligence (AI) into the creative process can be observed at various levels and at the intersection of scientific disciplines, including pedagogy, media studies, ethics, the art sciences, literary studies, and related fields. In the context of AI integration, the creative process is partially replaced by the human factor, or rather, it is meaningfully complemented, expanded, or in some cases fully supplemented. Particularly in the development of machine learning, emphasis is placed on collaboration between humans and artificial intelligence in the creation of creative content. This collaboration is intended to provide new inspiration and ideas to experienced creators, as well as novel creative experiences to users with little or no prior experience (Yang *et al.*, 2022). As part of a syncretic approach to the literary or linguistic context of school teaching, AI writing tools are often employed to generate stories that integrate both students' own words and AI-generated text (Woo *et al.*, 2024). They exploit the specific advantages of AI language models such as ChatGPT (Generative Pre-trained Transformer), which are trained on extensive text data, enabling them to generate text that resembles human text through given instructions or prompts (Prabowo & Asmarani, 2025).

A distinctive area of AI application, involving varying degrees of collaboration between the author and the system, is the generation of poetic texts, regarded as one of the fundamental genre forms of electronic literature (Piorecký & Husárová, 2024). Within the domain of electronic poetry, a distinction is sometimes drawn between so-called *generative poetry* and *collaborative e-poetry*. In both cases, the machine plays a central role, whereby in the first case it creates the poem, and in the second it enables or facilitates collaboration between humans in the creation of a poetic work (Di Rosario, 2011). An illustrative example of AI employed as a creative artistic tool is *POEMPORTRAITS*, developed through the collaboration of E. Devlin, the Google Arts & Culture Lab, and R. Goodwin as an online collective artwork integrating artificial intelligence with unique human contribution. The project generates personalized poetic texts “poetic portraits” as part of a continuously evolving collective poem. Users contribute by entering a keyword into the AI system, which is processed by an algorithm trained on a corpus of 25 million words from 19th-century poetry, transforming these inputs into original verses. (Devlin, 2019). Other works and genres within generative literature are created in a similar way (Streitfeld, 2018).

The use of artificial intelligence in collaboration with humans in the process of creating literary texts is also evident in other forms of creative writing within the sphere of media practice. A Slovak example is the public broadcaster Slovak Radio, which in September 2024 introduced

a segment titled *Endless Stories (written by artificial intelligence) (Nekonečné príbehy (písané umelou inteligenciou))* as part of its program *Good Morning Slovakia (Dobré ráno Slovensko)*. Listeners are invited to submit ten words via email, from which artificial intelligence (the ChatGPT application) generates a two-minute story subsequently performed by live actors. In defending this format, the program's creators emphasize that in the processes of algorithm design, model training, and text generation, human creativity/imagination remains central to the production of works that AI systems can then analyse and emulate (STVR, 2024). A similar initiative is the *Digital Writer (Digitální spisovatel)* project (2020-2024) developed by Czech public radio on the *mujRozhlas* audio platform, which has experimented with various modalities of integrating AI into artistic creation. During the first phase of the series, short stories were generated exclusively by artificial intelligence using the GPT-2 and GPT-3 systems and subsequently read by Czech actors. In the second phase, Czech authors collaborated with artificial intelligence to create stories across diverse genres (Bumbálková, 2021). The third phase enabled listeners to explore the capabilities of GPT-4 in relation to radio production (Polák, 2023). The fourth phase, titled *Unraveled Mysteries (Rozlúštené záhady)*, sought to model the comprehensive integration of AI into all stages of creative work, representing a unique experiment within both Czech and international contexts. It combines ChatGPT and GPT-4 models with DeepL and Google Translate translators, and the Midjourney platform for visual content creation, to produce short stories in the mode of magical realism. The podcast format encompassed not only the stories themselves but also the title, the fictional persona of the presenter, and their professional background, all generated by AI. The human author's role was limited to editing and refining AI outputs to ensure genre quality. The stories in the form of a podcast also incorporate the "uncanny valley" concept, borrowed from computer games and robotics, with the aim of immersing listeners so fully that the fictional narratives might be perceived as entirely real (Vošalíková, 2024). The intention of the project is to evoke an aesthetic experience. Another experiment in creating stories using artificial intelligence within a media production was carried out by the BBC as part of the *BBC Writers project* (Metcalf, 2020).

In the context of employing AI tools in creative and co-creative work, their impact on the very nature of creativity, originality, and the quality of literary production has become a subject of considerable attention among experts. Several studies highlight the potential of AI to serve as a supportive creative tool or collaborative assistant in the creative process (Anantrasirichai & Bull, 2022), or the potential to assist or even automate aspects of creative writing due to the increasing sophistication of artificial intelligence systems in producing human-like text (Prabowo & Asmarani, 2025). At the same time, AI is often perceived as a competitor to human originality and inventiveness. Expert studies warn against its use as a substitute for human creativity and suggest the need for ethical considerations, as AI blurs the boundary between human and machine creativity (Hall & Schofield, 2025). Concerns have also been raised that excessive reliance on AI during the writing process may lead to reduced originality (Hutson & Schnellmann, 2023). This issue is further evident in educational contexts. For example, in the use of ChatGPT to provide feedback on student poetry, some users reported concerns that frequent reliance on AI feedback could standardize their writing style rather than foster uniqueness (Hasmalani & Rustam, 2024). Such challenges are closely tied to the convergence of AI with the creative process at multiple stages. Current debates and research focus are, therefore intensively focused on whether, and to what extent, generative AI can genuinely replace human in creative writing where the boundaries of such replacement might lie (Kagalwala, 2020), and whether AI-generated texts can be regarded as original in the same sense as human creations. Some scholarly perspectives suggest that computer-generated artistic text, also known as digital art or cybertext, including poetic works, have advanced to the point where, with sufficiently refined algorithms, they may be indistinguishable from human-authored texts (Hopkins & Kiela; 2017; Porter & Machery, 2024). In the learning process, it is necessary to develop the ability to distinguish between virtually generated and real text and to clarify the complex issues involved in this process on the part of AI, including an explanation of its benefits and limitations. In terms of a comprehensive approach to the topic, it is also necessary to

teach students to understand the overall irreplaceability of humans as authors in the creative process, whereby creativity represents “a fundamental feature of human intelligence” (Boden, 1998, p. 347), “a unique human trait” (Dainys, 2024) with its potential, including authenticity, intrinsic motivation, choice, and intentionality, which are some of the characteristics that the so-called *artificial creativity of AI* (Runco, 2023) does not possess. However, its algorithmic tools can perform creative tasks, including engaging original combinations of poetic images (Dainys, 2024). This learning process focuses on developing students¹ *AI literacy*. The development of AI literacy is regarded as essential in education, particularly in fields connected to creativity. The ability to critically engage with AI tools, understand their structures, theoretical models, and limitations, and reflect on their ethical implications can foster creativity, whereas a lack of such skills risks constraining it (Černý, 2023). However, the fact remains that we perceive creativity as an irreplaceable activity linked to the human factor.

2. Reference framework. Children’s literacy in the field of AI

Experts are increasingly considering the integration of AI tools, particularly within the context of learning to work with *creative artistic tools* (art education), where such tools expand creative possibilities through AI, but also raise critical ethical questions concerning originality, authorship, and artistic integrity. These issues are closely tied to the broader need to cultivate *AI literacy* (Amini, 2025; Heaton, Low & Chen, 2024). However, the implications of *AI literacy* extend far beyond specialized art education, encompassing one of the fundamental competencies of future basic literacy skills. *AI literacy* is regarded as an organic component of *digital literacy for all citizens* in an increasingly intelligent society, with innovative pedagogical models emphasizing its development in early childhood (Yang, 2022; Su *et al.*, 2023), but also in other stages of education for children and young people (Casal-Otero *et al.*, 2023).

The definition of *AI literacy frameworks* for the learning stages of children and young people is becoming the subject of systematic scholarly attention. One of the first systematic review studies introducing a perspective on artificial intelligence literacy at the elementary school level identified that *AI literacy* encompasses a flexible conceptual understanding of digital literacy in terms of interacting and collaborating with artificial intelligence, computational thinking, critical data literacy, AI ethics (Yim & Su, 2025). Existing *AI literacy frameworks* are also systematically summarized in other meta-analytic contributions (Jia *et al.*, 2025), which propose a holistic framework with the dimensions of AI awareness, AI mechanics, AI impacts, and others with adaptations of the classic literacies (Ng *et al.*, 2021), which define four basic dimensions of *AI literacy* that should be taught: a) knowing and understanding AI; b) applying AI; c) evaluating and creating AI; and d) AI ethics. In addition to the basic knowledge and concepts needed to understand AI and its technological and ethical background, as well as how to apply these tools in different areas of life and for diverse purposes, the latest approach to AI literacy also emphasizes higher-level cognitive skills. These include the ability to critically evaluate AI, use it effectively and creatively in collaboration, and engage in prediction or design through AI applications. Ethical considerations are central, as AI literacy also contributes to the formation of socially responsible citizens, fostering the reliable, trustworthy, and equitable use of AI.

In May 2025, the OECD and the European Commission published a draft *framework for artificial intelligence literacy (AI Literacy)* aimed at *primary and secondary school students*. The framework outlines 22 competencies organized into four main domains:

- a) engage with AI,
- b) create with AI,
- c) manage AI, and
- d) design AI (OECD, 2025).

¹ At the same time, this problem also applies to other types of texts. For more on GPT-3’s ability to generate news article samples that human evaluators have difficulty distinguishing from articles written by humans, see also (Brown *et al.*, 2020).

These domains correspond to the document's definition of *AI literacy*, which is based on existing approaches developed by the EU AI Act, the OECD, UNESCO, and other organizations. *AI literacy* is described as a set of acquired qualities (knowledge, skills, attitudes, and competences) that enable "learners to engage, create with, manage, and design AI, while critically evaluating its benefits, risks, and ethical implications" (OECD, 2025, p. 6).

The competency framework revolves around key pillars – an active, engaged, collaborative, critical, ethical, creative, and responsible approach to AI tools, which overlap with the key areas mentioned above. At the same time, the dimension of creation using AI combines all these qualities. This includes the learner's collaboration with AI in the creative or problem-solving process, guiding and refining AI outputs through prompts and feedback, ensuring fair and appropriate content, and considering ethical issues such as content ownership, attribution, and responsible use of materials (OECD, 2025). This dimension also implies a conscious critical or evaluative approach on the part of the student, particularly in managing activities and providing reflective feedback on the quality of AI-generated output and on the appropriateness or fairness of fulfilling a given requirement (creative output). It is closely linked to making ethical and responsible decisions related to the creative process with AI, its results, and their use.

The starting point for developing *AI literacy* in children is their active involvement in learning about and with AI technologies (Yang, 2022). This involves creating interactive learning experiences in the creative and evaluative processes of AI and its outputs. It includes exploring and understanding how younger primary school children cognitively and affectively perceive AI and how they use it, in line with the pillars of AI literacy. In other words, this refers both to their knowledge (what they know and think about AI) and their attitudes (positive or negative towards AI), including an ethical view of AI as part of both the cognitive and emotional perspectives (Walan, 2024). In the learning process, it is especially important to build on students' initial experiences with AI tools, which shape their knowledge and emotional base, and then expand on these in further learning. Research findings shed light on how young children perceive AI. For example, Walan (2024) showed that primary school students, from a positive perspective, highlight AI's ability to assist with writing, its accessibility, its usefulness in dangerous situations, and its potential to support learning.

However, in connection with the current ethical issues surrounding the use of ChatGPT in education, which has both beneficial and concerning effects on the integrity and purposes of education (Farhi *et al.*, 2023) affecting all its levels and forms, it is important to examine students' attitudes towards the appropriateness of using AI tools to complete school assignments/tasks. This examination must be approached from an ethical perspective, as it relates to promoting children's moral integrity as well as originality and higher cognitive processes, which are central goals of education. The use of AI tools to support personalized learning also presents a pragmatic framework that, from the student's perspective, may take precedence over ethical concerns or the potential impact on their own thinking. At the same time, research (Ottenbreit-Leftwich *et al.*, 2023) shows that children aged 9 – 11, while recognizing the usefulness of AI, may also identify problematic aspects from an ethical standpoint. For instance, they noted that using AI to answer homework questions (such as through Siri) hindered genuine learning. Further qualitative research on 11- to 12-year-olds (Heeg & Avraamidou, 2025) found that children's conceptualizations of AI are shaped by their personal experiences. These findings suggest that children take a socio-cultural approach to AI, perceiving it as a supportive tool, while at the same time expressing selected ethical concerns, particularly about the risk of growing dependence on AI, which they fear could lead to laziness.

3. Methodology

In our contribution, we present the results of research focused on integrating AI tools into the artistic creation of a selected sample of younger school-age children. The study explored the generative process of combining pupils' words (prompts) with an evaluation of the resulting outputs in terms of creativity and their alignment with literary criticism criteria and compared these with the children's

authentic creative processes. Within this context, we also examined the extent to which AI tools can imitate text generated by children in the form of poetry composition. This reflects an effort to adapt to our purposes the current research demand for studies comparing the value of works created by humans with those produced by artificial intelligence (Hall & Schofield, 2025). In other words, it represents an attempt to reevaluate and capture the differences between the creative capacities of AI mechanisms in producing poetry and those of human authors (Cao, 2024). The distinction in our case is that the human creators are not professionals, but younger school-age students. The starting point of our research was to examine children's experiences with AI tools, their attitudes toward them, and, in particular, the ethical aspects of their use as creative instruments. Of special interest is the ethical question of how children perceive the authorship of AI-generated texts and their attitudes toward the appropriateness of using AI for school assignments. In the post-implementation phase, children created their own poetic works, which were then compared with AI-generated outputs. At this stage, our intention was to encourage children to adopt an evaluative approach, especially through providing feedback on AI-generated texts. This approach aligns with the broader goal of fostering *AI literacy* in children at the level of an active, engaged, collaborative, creative, ethical, critical, and responsible relationship with AI tools. The overarching aim of developing this literacy is to create meaningful learning experiences for children through creative activity.

Our research addresses the following questions:

1. What is the level of personal experience younger school-age children have with artificial intelligence tools?
2. What attitudes do younger school-age children hold toward the ethical aspects of using AI as a creative tool – the ethical dimension of AI evaluation?
3. What differences exist in text quality between outputs generated by artificial intelligence tools and those created by younger school-age children – the critical dimension of AI evaluation?

The research was conducted with a sample of primary school children participating in an informal educational program called *Prešov Children's University*, at a selected Slovak university from July 8 to 11, 2024, under the title *MúzAI writes poems*. A total of 87 children aged 6 – 11 took part in seven creative workshops: the largest group consisted of 9- and 10-year-old pupils (50), who came from various primary schools, mainly in the Prešov district of Slovakia. The gender distribution was nearly equal, with 42 girls and 45 boys.

A mixed quantitative-qualitative methodology was used to address the research problem. To explore children's experiences with artificial intelligence tools and their attitudes towards them, a questionnaire was administered in the field, complemented by semi-structured group interviews (Heeg & Avraamidou, 2025) (RQ1 and RQ2). Each group was interviewed with regard to its diversity, and the analysis of children's answers identified relevant data related to the phenomena under investigation. During the preparation of the questionnaire, the pupils were continuously asked about their understanding of individual questions and clarified them during group interviews. To examine differences between texts produced by AI and those created by children, a qualitative method involving third-party evaluation was employed. Two independent experts – E1 and E2² (expert assessor 1: E1, expert assessor 2: E2) assessed the texts (RQ3). The investigation of text quality aimed to stimulate both the students' own creative writing and the creative writing of AI tools. At the beginning of the creative phase of the meeting³, when the children took on the role of poets, they were engaged through the didactic method of clustering. The pupils, divided into groups, generated associations with the word SMARTPHONE, and then selected the three most frequently mentioned

² Expert reviewers: E1 is a Slovak literary scholar and critic, a judge in several literary competitions, and a leader of workshops on creative writing, interpretation, and the production of artistic and critical texts. E2 specializes in literature for children and young adults, conducts creative writing workshops, and is also an author of children's literature in Slovakia.

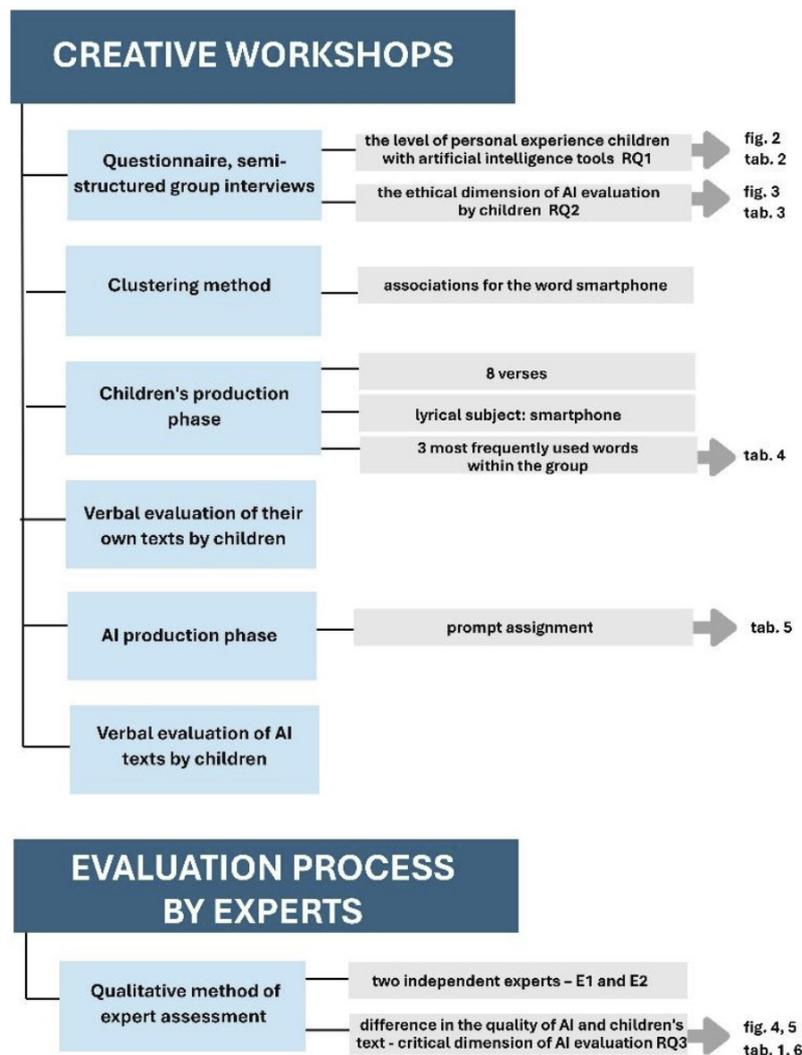
³ In our research, we used creative writing techniques described in M. Klimovič's publication *Tvorivé písanie v primárnom vzdelávaní* (2018).

⁴ The keywords for each group are listed in Table 4: Selected associations with the word "smartphone" for individual groups of respondents.

words to be incorporated in their own poems. In the production part, the younger school-age children composed an eight-line poem in which the lyrical subject was a smartphone, and the requirement was to include the three words within the poem⁴. In the subsequent stages of the workshop, the same creative task was completed using AI tools, specifically freely available versions of Open AI – ChatGPT (GPT-4o) and TalkAI, to generate texts.

At first, the prompt was identical to the assignment given to the children. A condition was then added, specifying that the text should be written as if authored by a child aged 8 – 10. Our aim was to observe how the texts differed once the author's age was defined. As part of the text evaluation, expert reviewers also assessed whether freely available AI tools can generate authentic artistic texts resembling those written by primary school children. We assumed that AI tools would not be able to accurately mimic children's speech, a limitation also highlighted in studies on the impact of AI on children's creativity (Newman *et al.*, 2024). Regarding the overall procedure, it should be noted that the technical aspects of the children's interaction with AI tools during the workshop were managed by a researcher to ensure that the prompts were consistent with the tasks assigned to the students in each group. The children were part of the interaction with AI tools and added words that had to be used in the poem. This procedure was chosen to enable a comparison of the texts created by the children and the texts generated by AI tools, which was carried out by expert evaluators in the second phase of the research process after the workshops. Another factor is the number of groups, as it can be assumed that each group would formulate the assignment differently, which would also make the comparison process impossible.

Figure 1. Phases and methodological framework of the research process



Source: Created by the authors.

Figure 1 shows the phases of the research process as they occurred in sequence, within which the selected quantitative and qualitative methods were used. For each point, we also provide references to graphs and tables in which the results are processed and which are described in more detail in the analysis.

The evaluation of the students' texts and those generated by artificial intelligence was based on the criteria of contemporary literary criticism (Klapáková, 2020). Given the level of knowledge and experience of the child authors, neither the contextual component (literary, social, or historical context of the work) nor the non-literary component (authenticity, dependence or independence on external reality, potential, proportionality) was taken into account. The literary component was assessed primarily in terms of *creativity and inventiveness*, which are among the most frequent concerns in literary criticism, particularly regarding the lack of originality in texts. Since this category is also linked to the literary experience of the critic, the assessment of the degree of inventiveness was based on the expert opinions of two literary critics. The texts were evaluated using a three-point scale (1 = low, 2 = medium, 3 = high). The overall impression of the text was complemented by its *linguistic and formal qualities*, which were also considered in the evaluation and noted by the children when assessing both their own texts and those generated by AI. Table 1 lists the analytical dimensions of evaluation, which are based on current standards of literary criticism and can be replicated for other types of literary texts in which their quality is assessed.

Table 1. Analytical dimensions of evaluating literary texts and AI texts⁵

Category	Rating scales and their criteria
Invention – degree of creativity, originality of the text	1 – Use of clichéd expressions; lack of authenticity of the child author; absence of poetic brevity, metaphor, and imagery; absence of intertextual references; superficiality; literalness. 2 – Presence of elements of individual personal style; evidence of contextual thinking and perception of the world; more conscious task processing; attempt to create an artistic text. 3 – Focused attention in text creation; topicality; effective use of intertextual references; clear progression toward a point; high degree of originality and inventiveness of the text; demonstration of individual personal style; use of imagery and metaphor; creation of a coherent and meaningful text.
Formal and linguistic components of the text	1 – Random rhyme; absence of rhythm and melody in verse; failure to comply with the assignment – scope; limited vocabulary; semantic illogicality; vocabulary inappropriate for the author's age; incomprehensible expressions; grammatical errors; typos; absence of text composition. 2 – Basic or average vocabulary; attempt at rhythm; frequent use of grammatical rhyme; initial signs of text composition. 3 – Evidence of compositional structure; rhythmic quality; deliberate use of free and bound verse; rich vocabulary; logical text structure; consciously composed text; text revisions and corrections.

Source: Created by the authors.

4. Analysis of results

The starting point for stimulating the children's creative process was to clarify their experiences with literary texts from the perspective of readers. The pupils read aloud short excerpts from the works of Slovak poets K. Bendová, Š. Moravčík, D. Dziak and L. Šafránová. During a semi-structured interview, they were able to identify rhyme, locate and define verse, and briefly list the competencies of an author-poet, with particular emphasis on excellent language skills and a high degree of imagination. All children who participated in the creative workshop had prior experience with poetic texts as readers, which we consider essential for creating their own texts and subsequently evaluating them in

⁵ Evaluation criteria adapted from Klapáková, 2020.

⁶ However, specialized and long-term research (not just one meeting) is needed to examine the connections between a child's literary experience as a reader and as a creator of texts. The current position of children in the age of mass media, the variety of artistic forms used to depict themes, and the guidance provided in selecting literary texts with regard to their artistic quality are also reflected in the Slovak context in the publication (ne)SAMOZREJMÉ KAPITOLY z literatúry pre deti a mládež by R. Rusňák, D. Dziak, and P. Dziaková (2024), which is based on realities closely aligned with the sample of children studied.

comparison with AI-generated texts⁶. Before engaging the children's creative process with artificial intelligence, we also aimed to determine their level of experience with these tools (RQ1). The results showed that the group of children we worked with regularly interacts with digital technologies: 67% of children owned a smartphone, and nearly half (46%) had some experience with AI tools. At the same time, 28% had never used AI, and 26% reported not knowing what artificial intelligence is. Regarding specific AI tools, we provided the children with three options for freely available chat systems (ChatGPT 4o, TalkAI, and HIX.AI) while also allowing them to add their own suggestions. Most children (26%) reported using ChatGPT, 5% chose TalkAI, and 2% selected HIX.AI. Meanwhile, 16% could not recall the exact name of the tool they had used, and some (2%) identified platforms such as YouTube and Smartbooks as forms of artificial intelligence (Table 2).

In the questionnaire, we also asked children about their reasons for using AI. In addition to entertainment (31%) and school-related tasks (15%), some of them also mentioned the opportunity to learn something new (2%). Another 2% of children also mentioned writing books and generating ideas for poems and stories. However, nearly half of the children (49%) did not answer this question.

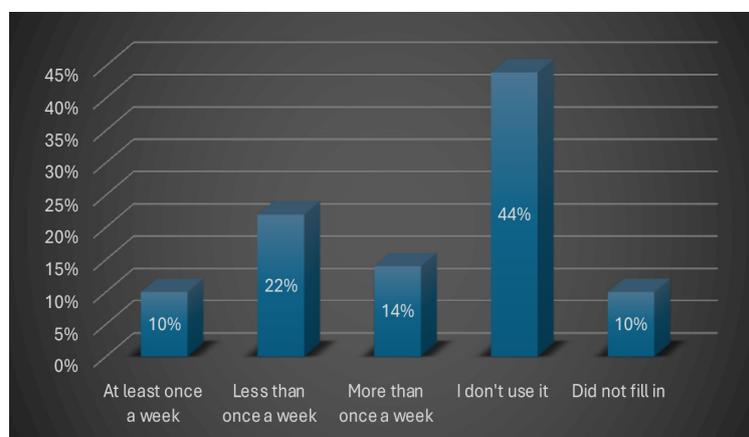
Table 2. The experiences of younger school-age children with artificial intelligence tools

	Frequency	Percentage share
Has experience with AI tools:	40	46%
ChatGPT	23	26%
TalkAI	4	5%
HIX.AI	2	2%
YouTube, Smartbooks as AI	2	2%
Can't remember the name	14	16%
No experience	24	28%
Does not know what AI is	23	26%
Total	87	100%

Source: Created by the authors.

Evaluating the frequency of AI use among the selected group of respondents (Figure 2), most children (22%) use AI less than once a week, 14% use it more than once a week, and 10% of children indicated using it at least once a week. Meanwhile, 44% of children selected the option "I do not use it", and 10% did not answer the question. The experience of this group of students with artificial intelligence tools is therefore still in the initial familiarization phase; regular use cannot yet be assumed.

Figure 2. Frequency of artificial intelligence use among primary school children



Source: Created by the authors.

Of particular interest was determining the level of awareness among children regarding the ethical aspects of using AI as a creative tool, specifically their evaluative attitude toward the authorship of AI-generated texts and the appropriateness of using AI for school assignments (RQ2). This was explored using a specific questionnaire item based on a practical example: “I enter a task into *Chat GPT* and it creates a text for me. Can I sign it as the author; just like in the book we read a moment ago? Is it my idea that the computer came up with?” Most students (63%) identified AI itself as the author of texts generated by artificial intelligence, 16% believed the author is the internet user (themselves), and 21% selected “other” adding “I don't know” (Table 3).

Table 3. Younger school-age children’s responses to the authorship of AI-generated texts

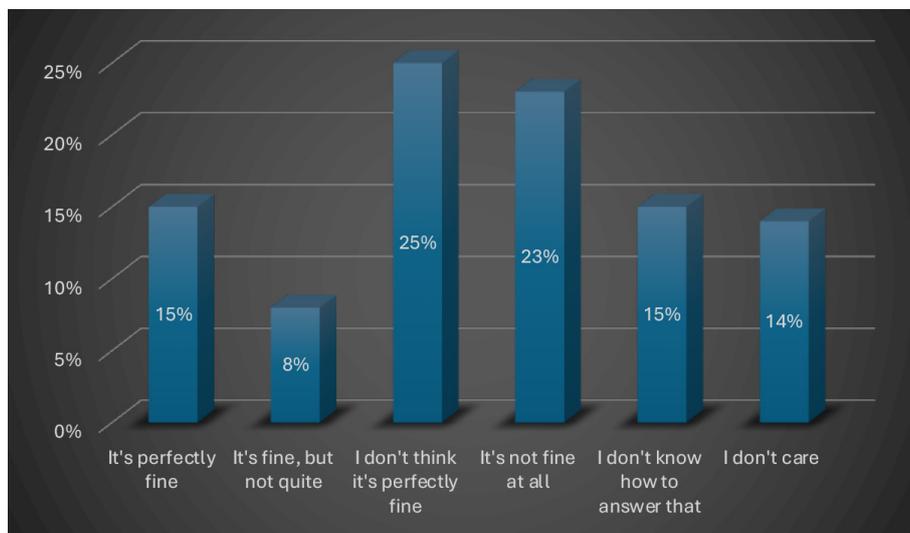
	Frequency	Percentage share
Me – internet user	14	16%
AI – ChatGPT	55	63%
Other	18	21%
Total	87	100%

Source: Created by the authors.

Regarding the use of AI tools to complete school assignments, attitudes that rated the practice as ethically wrong predominated. A total of 48% of students stated on a scale that such use is not acceptable (answers: “It is not fine at all” – 23%, and “I don't think it is completely fine” – 25%). In contrast, 23% of students reported no problem with using AI, although some expressed doubts (answers: “It is completely fine” and “It is fine, but not entirely”). A significant proportion of children (29%) have not formed an opinion or expressed indifference on this issue (answers: “I don't know” and “I don't care”) (Figure 3). The results point to ambiguous awareness among children about the ethics of using AI tools, which must be viewed in the context of the proven lower level of experience, or rather no experience, of most children with these tools, as well as their perception of them primarily as a source of entertainment. It can be assumed that if we worked with a group of pupils who regularly use AI, the results regarding ethical approaches would differ.

At the same time, a brief discussion with children on this issue indicated that the ethics of using AI-generated texts, including proper attribution of authorship, is an important topic that requires development in primary school students as part of AI literacy. The importance of developing media literacy is justified because we consider it better to educate children in this area from the outset,

Figure 3. Children’s attitudes toward the use of AI tools for school tasks



Source: Created by the authors.

when they do not yet have much experience with AI tools, so that they do not use them randomly and intuitively, but in a targeted manner. As a result, the effectiveness of the creative process and the ethical use of AI tools can be increased. To achieve the basic dimensions of AI literacy, as outlined in the theoretical part of this paper, systematic work is needed in both school and extracurricular settings.

The focus of the research problem (RQ 3) was to stimulate the children's own creative production. The results of the clustering method for the word *smartphone* were used in the creation of their poems. Table 4 lists the most frequently used words selected by students in seven groups. The word *games* became one of the key words in five groups, likely reflecting the high frequency of smartphone use for gaming. The synonym *mobile phone* appeared in three groups, and the word *videos* appeared in two groups.

Table 4. Selected associations with the word smartphone for individual groups of respondents

Group name	Selected words (number of votes)
Dark blue	entertainment (12), games (11), videos (10)
white	chat (10), Google (10), apps (10)
yellow	addiction (12), games (9), mobile (9)
olive	games (11), apps (10), chat (10)
gray	games (11), tool (9), videos (9)
green	games (8), mobile (6), text messages (5)
turquoise	mobile (9), Google (8), Wi-Fi (6)

Source: Created by the authors.

The production phase of writing poems took the children an average of 15 minutes. A total of 84 students created texts⁷. Part of the meeting involved a creative assignment using AI tools, specifically the freely available versions of Open AI – ChatGPT (GPT-4o) and TalkAI. In seven groups of students (divided by age), four texts were generated based on the assignment given to the children. Initially, the AI prompt was identical to the children's assignment, and later a condition was added specifying that the text should be written as if authored by a child of a certain age, corresponding to the average age of the children in each group (Table 5). In total, the AI generated 28 texts.

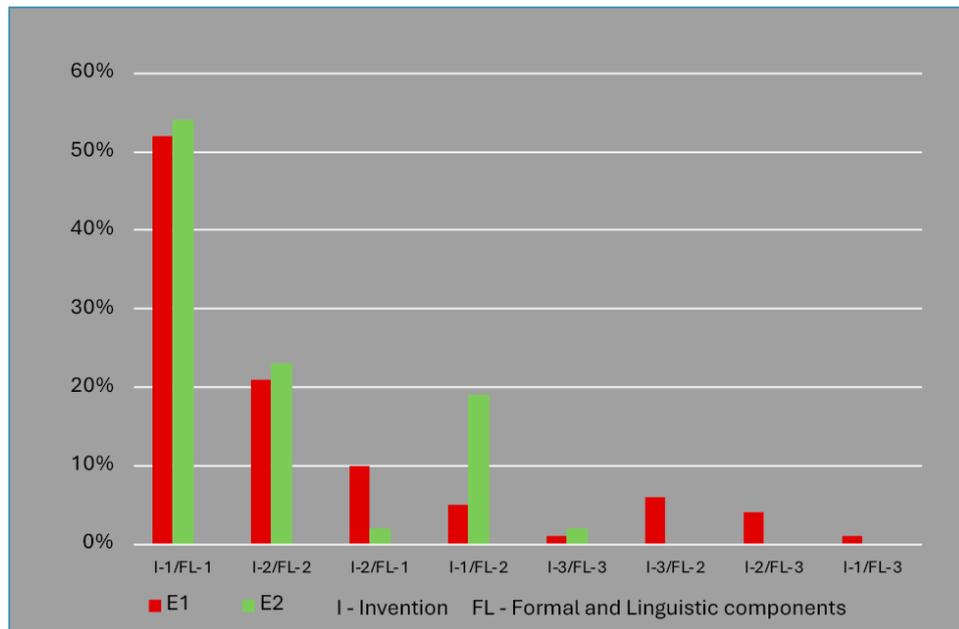
Table 5. Prompts entered by the AI tool in individual groups

Group name	Prompt
Dark blue	Write an 8-line rhyming poem about smartphones, using the following 3 words: games, entertainment, videos. Write an 8-line rhyming poem about smartphones, using the following 3 words: games, entertainment, videos. Write as if you were an 8-year-old child.
White	Write an 8-line rhyming poem about smartphones, using the following 3 words: chat, Google, apps. Write an 8-line rhyming poem about smartphones, using the following 3 words: chat, Google, apps. Write as if you were a 9-year-old child.
Yellow	Write an 8-line rhyming poem about smartphones, using the following 3 words: addiction, mobile, games. Write an 8-line rhyming poem about smartphones, using the following 3 words: addiction, mobile, games. Write as if you were a 9-year-old child.
Olive	Write an 8-line rhyming poem about smartphones using the following 3 words: chat, apps, games. Write an 8-line rhyming poem about smartphones using the following 3 words: chat, apps, games. Write as if you were a 10-year-old child.
Gray	Write an 8-line rhyming poem about a smartphone using 3 words: videos, games, tool. Write an 8-line rhyming poem about a smartphone using 3 words: videos, games, tool. Write as if you were an 8-year-old child.
Green	Write an 8-line rhyming poem about smartphones, using the following 3 words: games, text messages, cell phone. Write an 8-line rhyming poem about smartphones, using the following 3 words: games, text messages, cell phone. Write as if you were a 9-year-old child.
Turquoise	Write an 8-line rhyming poem about a smartphone using the following 3 words: wifi, google, mobile. Write an 8-line rhyming poem about a smartphone using the following 3 words: wifi, google, mobile. Write as if you were a 10-year-old child.

Source: Created by the authors.

As part of a comparison of the qualitative level of texts generated by artificial intelligence tools and those created by primary school children according to the criteria of literary criticism (RQ 3), Figure 4 shows the evaluations of expert reviewers E1 and E2 of the pupils' texts. The Figure presents the percentage distribution of different values for the degree of *invention* (I), *formal and linguistic components* (FL) on a scale of 1 – low, 2 – medium, and 3 – high (criteria are listed in Table 1).

Figure 4. Evaluation of children's texts E1 and E2



Source: Created by the authors.

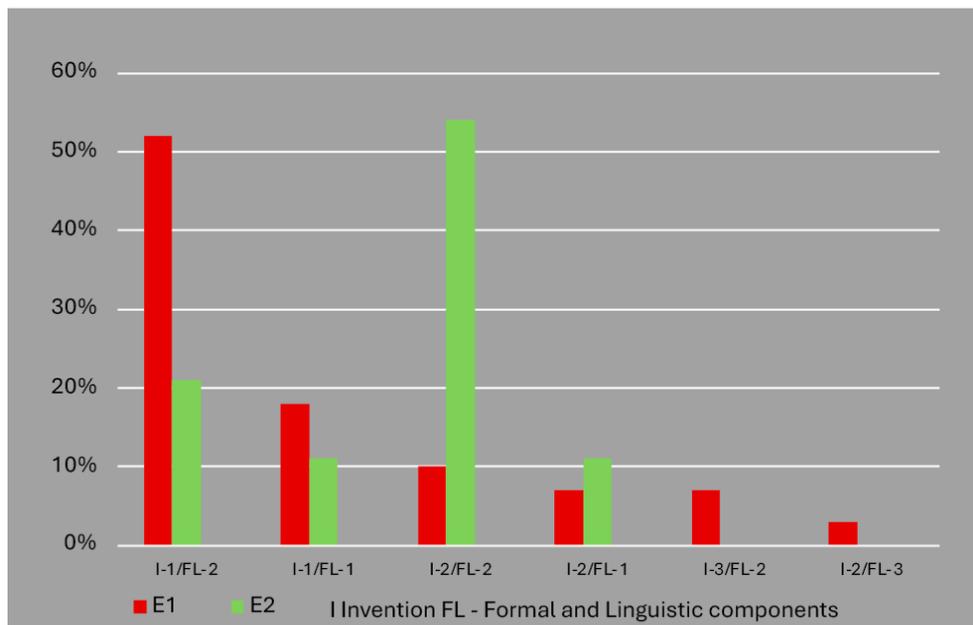
The largest group of texts was rated by expert assessors as lacking creativity and showing a low level of linguistic and formal components (I-1/FL-1) (E1: 52%, E2: 54%). Overall, the evaluation of the children's texts covered the entire scale, though most scores ranged between 1 and 2, with only two children receiving a score of 3 for both content and form. E2 attributes this variation to the individual development of the children, which is also linked to their evaluative abilities. Many children failed to complete the task (they did not adhere to the required number of verses or rhymes), their poems lacked logical coherence, and in some cases, the genre was not respected (e.g., three texts resembled a list of characters from computer games rather than poems). Critics awarded the I-2/FL-2 rating to texts that demonstrated effort, reflection on word meaning, compositional awareness, and the expression of ideas. The best text was a poem with a solid compositional structure that conveyed a small narrative. However, according to the expert evaluators, none of the texts displayed strong innovation. The children primarily relied on their core vocabulary, showed a marked lack of artistic devices, and struggled to create imagery and metaphors.

Figure 5 presents the results of expert evaluators' assessments of 28 AI-generated texts. The evaluation methodology was identical to that used for the children's texts: degree of invention (I) and formal and linguistic components (FL), rated on a three-point scale: 1 = low, 2 = medium, 3 = high (see Table 1 for criteria). E1 rated more than half of the texts as having a low degree of invention and average linguistic and formal components (52%, rated I-1/FL-2). E2 assessed the texts as mostly average, particularly in terms of their formal and linguistic aspects (54% rated I-2/FL-2), noting: "*In terms of content, I initially rated*

⁷ Three students did not create texts for various reasons, including low writing literacy, a cancelled attempt, and lack of interest in participating in the activities.

them mainly at level 2, but I gradually lowered this, as all the AI texts looked very similar despite using different words." Although the AI texts showed fewer clichés and formal errors, they also lacked the ability to create imagery. Regardless of whether the author's age was indicated, the texts contained illogical connections, awkward or overly complex words, and dysfunctional similes (e.g., "Videos make me laugh a lot. Because without him, I would feel like a bird without the key to fame. I learn more from him than from passion for books."). In no case did the expert evaluators identify a text they considered authentic in terms of child authorship, nor did they observe any significant differences between texts when the author's age was specified.

Figure 5. Evaluation of AI texts E1 and E2



Source: Created by the authors.

When comparing children's texts with those produced by artificial intelligence, literary experts found that the children's work displayed a higher degree of originality. While there were clear differences among the children, the AI-generated texts were strikingly uniform – "cut from the same cloth" – and failed to achieve level 3 on the evaluation scale for either content or form. In terms of poetic imagery, both the children and the AI produced at most one poetic image across eight verses. According to Expert 2: "The children created better rhymes, except in cases where the texts did not rhyme at all. Artificial intelligence often produced apparent rhymes, inventing words of its own simply to make them rhyme." Several children struggled to follow the formal requirements of the task, which specified eight rhymed verses. In contrast, the AI consistently adhered to the eight-verse format. However, AI texts were marked by semantic illogicalities, whereas the children's texts contained grammatical errors and typographical mistakes. Notably, unlike the AI texts, the children's work occasionally included humour (perhaps unintentional in some cases), an element absent from the AI-generated poems.

Children were also involved in evaluating the quality of AI-generated texts in comparison with their own, which encouraged relevant feedback and reflection on the outcomes of AI creation. We view this as an indicator of the development of their AI literacy. During the workshop, pupils evaluated their own texts as well as texts created by AI tools in a group interview. Their assessment was based on their own literary experience as well as their level of experience with AI tools. In the case of pupil evaluation, this involved verbal assessment recorded during interviews without any specifically defined criteria as defined by literary

criticism. Younger school-age children were not yet able to assess inventiveness; instead, they focused on rhyme adherence and grammatical correctness. These aspects also dominated their verbal evaluations of AI-generated texts: “*There are mistakes. Some sentences don’t make sense. It’s written in a way that’s hard to understand. I don’t get it.*” According to the child critics, the poems did not use childlike language, even when an age requirement was specified: “*This doesn’t look like something an 8-year-old would write at all.*” In most cases, when comparing their own texts with those generated by AI, the children gave more positive evaluations to their own work: “*Our poems were much better.*” They also noticed differences between the outputs of individual systems: “*I like what the chat came up with; the other one is worse.*” (note: comparison of the quality of ChatGPT and TALK AI). Interestingly, even the texts the children in each group liked the most were rated by expert assessors only as average or below average (I-1/FL-2, I-2/FL-2, I-2/FL-3, I-3/FL-2, I-3/FL-3; in two cases, I-1/FL-1).

The following table 6 summarizes the results, highlighting significant differences between the texts created by children and those generated by AI tools based on the assessment of expert reviewers.

Table 6. Comparison of characteristics of texts created by children and AI tools

Younger school-age child	AI – ChatGPT, TALK.AI
- Authentic language with regard to the author’s age: children’s speech, presence of a childlike aspect,	- Low level of authenticity with regard to the author’s age: absence of childlike language and childlike aspects,
- Higher degree of originality; differences in texts related to the author’s individual development,	- Low level of originality: AI texts are almost identical,
- Grammatical rhymes predominate,	- Apparent rhymes: formal, illogical connections; semantic illogicality,
- Presence of humorous elements: childlike authenticity and playfulness,	- Absence of humour,
- Inability to create figurative or metaphorical language; absence of artistic means,	- Absence of figurative language; average linguistic and formal component of the text,
- Lexis from the core vocabulary,	- Complicated words; dysfunctional similes,
- Failure to comply with the assignment (number of verses, rhyme, other genres),	- Strict adherence to the assignment (number of verses),
- Grammatical and stylistic errors; typos,	- Lower degree of clichés and formal errors,
- Thinking about the meaning of words; a unified idea.	- Semantic illogicality.

Source: Created by the authors.

5. Discussion

Our results allow us to discuss the quality of children’s and AI-generated texts separately in terms of invention and formal and linguistic components, enabling comparison with the findings of other authors.

In terms of *invention*, children’s texts exhibited *greater variability* and individual differences among authors, whereas AI texts were significantly *more uniform*. This finding aligns with Anantrasirichai and Bull (2022), who report that AI-generated texts demonstrate a certain degree of creativity and linguistic competence but lack stylistic diversity. Although children’s texts often did not reach a high level of artistic imagery (frequently lacking metaphors and poetic abbreviations), they were rated as more authentic and more “childlike”. This observation is supported by Newman *et al.* (2024), who note that AI cannot faithfully reproduce a child’s speech and, consequently, cannot replicate their authentic perspective on the world. This aspect of authenticity is significant because, according to Piorecký and Husárová (2024), originality and inventiveness distinguish a true work of art from a technically proficient but impersonal text.

Another key difference was that AI generated highly similar texts, whereas the children displayed natural diversity, which can be interpreted as a manifestation of individual development. Our data therefore supports the claim by Hamroyev, Kalandarova and Abdullayev (2024), that overreliance on AI can lead to homogenization of creativity. In contrast, children demonstrated a tendency toward spontaneous, albeit formally imperfect, solutions that incorporated elements of individual style.

In terms of *formality and language*, AI was more precise in adhering to the task. It strictly maintained the number of verses, followed the basic rhyme structure, and did not produce typos or grammatical errors. This aligns with the observation that AI can accurately fulfill the specified parameters of a prompt and generate consistent output (Woo *et al.*, 2024). Conversely, the children often struggled to meet the technical requirements (e.g., producing eight verses or maintaining regular rhymes). Their texts included grammatical errors and incomplete composition. However, these shortcomings were offset by spontaneity, humor, and occasional playfulness, which made the texts more authentic and engaging. This finding corresponds with Klimovič (2018), who emphasizes that creative writing in primary education should prioritize the development of individual expression and authenticity over mere formal perfection.

AI fulfilled the task precisely, whereas children selectively interpreted and adapted it to their own ideas. This difference reflects distinct logics of the creative process: while AI “executes” the prompt, a child engages in an internal dialogue with it, expanding, partially ignoring, or reordering the individual phases of creation. A child’s creative process is dynamic and involves a set of skills, including the ability to define a creative task, gather relevant information based on personal interests and prior knowledge, produce outputs, and evaluate them against the task. Researchers have identified personality traits such as problem-finding ability and openness to experience as commonly associated with creative individuals (Newman *et al.*, 2024). In contrast, artificial intelligence (AI) systems are designed to make informed decisions based on the information and data on which they have been trained (Zhang, Liao & Bellamy, 2020). While these systems can be programmed to consider multiple variables and weigh different options, their decisions are ultimately constrained by the available information (Mittelstadt, Russell & Wachter, 2019). In other words, although AI can provide valuable support in the writing process, it cannot fully replicate the complex interplay of emotions, experiences, and thoughts that underpins human creativity (Hutson & Schnellmann, 2023). In their final form, AI-generated texts are essentially better or worse imitations of human creativity, as they may provide readers or users with a desirable aesthetic experience but do not allow the author’s personality to emerge.

A comparison of the two categories suggests that AI *is a suitable tool for supporting the formal and linguistic aspects of a text*, where it can ensure consistency and technical accuracy. In contrast, inventiveness and authenticity remain the primary strengths of child authors. These findings align with Hutson and Schnellmann (2023), who argue that AI can generate formally correct and rhythmic text but cannot convey the deeper subjective and emotional dimensions of creativity.

In both the evaluation and creative processes, it is also necessary to consider the evaluator’s literary experience and knowledge of the criteria for assessing artistic texts, as these enable accurate judgments of quality. For this reason, our study relies primarily on evaluations by expert reviewers rather than children or the lay public, who often assess only on a like–dislike scale without providing necessary justification. In this context, it would be valuable to investigate how an artistic text generated by AI changes after refining the prompt and to examine the qualitative differences between the resulting versions.

Experts also point out that different degrees of interaction between human creators and AI-NLG tools influence the quality of creative writing to varying extents (Whoo *et al.*, 2024). More active approaches, involving a participatory model where both humans and AI collaborate in creation, tend to achieve better results (Yang *et al.*, 2022). An experiment with a specific tool, Poem Machine, which generates poem suggestions that students from a selected sample

of Finnish lower secondary schools could edit, showed that these suggestions functioned as affordances or models for the students. At the same time, the AI-generated prompts encouraged experimentation with various poetic elements. The results also indicated a relationship between the number of revisions made to the original AI-generated proposal and the quality of the students' final poems, suggesting that the AI collaboration tool both inspires and supports students throughout the writing process, allowing poems to develop progressively from initial drafts (Kangasharju et al., 2022). As a direction for future pedagogical intervention, it would therefore be possible to develop or expand the method we applied to integrate generative AI-NLG tools into students' creative writing (in this case, poetry) through the use of keywords (prompts) to enhance collaboration with the system. In this way, it would be possible to attempt to more significantly influence the quality of the resulting student output, and the development of skills associated with the creative process of poetic composition.

6. Conclusions

Our study contributes to research on the quality of creative and literary works produced by AI, aiming to address persistent limitations in this area. Most existing studies focus on the technical aspects of artificial intelligence language models and their capacity to generate text, with less attention given to the literary and aesthetic qualities of the output (Prabowo & Asmarani, 2025). In our study, the literary qualities and degree of originality or inventiveness of AI-generated texts, as well as their formal and linguistic components, were assessed by two independent literary critics. At the same time, these evaluations were compared with authentic children's texts, produced during creative workshops as part of an informal educational activity – a summer academy in Slovakia. The study also examined how users, in this case, younger school-age children, perceive artificial intelligence used to generate text, an issue that has received relatively little attention (Yang *et al.*, 2022).

The current generation of primary school-age children is gradually becoming familiar with artificial intelligence tools, and it can be expected that, with the rapid development of digital technologies, their approach to searching for and creating texts will evolve accordingly. Our research has shown that freely available, unpaid versions of AI tools are not yet capable of producing authentic children's texts, a finding also verbally confirmed by a group of children, highlighting the uniqueness of their creative process. Although it can be assumed that higher-tier AI versions might generate texts with much better results in terms of originality, the aim is not to suggest replacing human authors with AI tools. Rather, the focus is on developing competencies that enable children to become both creative and critical readers of AI-generated outputs, with a foundational understanding of literary evaluation criteria. In creative writing, the process itself, not the final product, in this case a poem, is central, as it allows children to develop creative thinking and approach other literary content critically. The same principle applies to AI research, which relies on predetermined algorithms to generate texts, with improvements depending on the quality of the underlying data.

The difference remains in production time, which no human can match; however, with appropriately selected and used AI tools, many processes can be accelerated. The study of children's creativity and language will also be gradually and more thoroughly integrated into the field of artificial intelligence, raising new questions for researchers, such as how to teach children not only to work effectively with AI tools but also to know when to refrain from using them, allowing them to develop their creative potential through other means. These approaches should become an integral part of developing AI literacy in children, which experts define as a set of competencies that enable individuals to critically evaluate AI technologies, communicate effectively, and collaborate with them (Long & Magerko, 2020), with an added emphasis on ethical use and AI knowledge (Ng *et al.*, 2021). Indicating children's ethical approach to AI tools in the context of creative work was an equally important aspect of our research.

Overall, our study contributes to understanding how children, albeit from a limited research sample in primary education, perceive artificial intelligence, with an emphasis on developing their *AI literacy* in selected aspects, specifically within the context of Slovak education, an area that has not yet been explored, in line with other research trends (Walan, 2024). The perception and expectations of younger students regarding AI technologies, as shown by Druga *et al.* (2019), may be influenced by their environment, with low socioeconomic status and cultural background potentially creating challenges in AI acquisition. These difficulties are often due to pupils' limited interactive experience with AI technologies. This was also observed in the context we examined; however, the socioeconomic status of the pupils was not assessed, which represents a limitation of the study and simultaneously highlights an area for further investigation, ideally within a more representative research environment. Our research on Slovak primary school pupils also found that nearly half of the sample does not use or is unfamiliar with generative AI tools. Therefore, the development of *AI literacy* should focus on creating opportunities for children to learn about AI, helping to overcome the technological divide, an urgent challenge for various formal and informal education systems in a broader geographical context.

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8. Contributions

Roles	Author 1	Author 2
Conceptualization	x	x
Formal analysis	x	x
Fundraising		
Project management	x	x
Research	x	x
Methodology	x	x
Data processing	x	x
Resources	x	x
Software	x	x
Supervision	x	x
Validation	x	x
Data visualization	x	x
Writing - original draft	x	x
Writing - review and editing	x	x

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