

COMICS' DIDACTIC POTENTIAL – AN EDUCATIONAL TOOL OR A MEANS OF PUPILS' DEVELOPMENT?

Monika Mikulcová

Department of Pedagogy, Faculty of Arts, Comenius University in Bratislava (Slovakia)

Abstract

A global trend among young people of the current generations (mainly Z and Alpha) is difficulty with reading comprehension, communication, and managing emotions. This is also reflected in the results of international OECD assessments, e.g. PIRLS, PISA, and SSSES, over recent years. Challenges also appear in the assessment of students' thinking skills. Comics can serve as a way to engage people across different generations. Key questions include where, with whom, how, what type of comics, and most importantly why comics can be used. On the one hand, comics are an engaging tool applicable in education. On the other hand, they have significant potential for character education and personal development. University students, as future teachers, educators, or professionals shaping others' personalities, also need to understand the significance of comics. Depending on the didactic focus, graphic design, or author, these are some of the key considerations before implementing comics into educational or developmental processes. This article describes an unconventional seminar for students. It was held at a Slovak university for 43 student teachers. The goal was to create an educational comic with a focus on their field of study. The seminar participants demonstrated their creativity, openness, and commitment to innovation in education. The aim of this article is not to determine which process is more suitable; comics can be implemented in both, with attention to specific considerations in each. The condition was the use of generative artificial intelligence in the creation of the comic, as AI gets into life as well as school life relatively quickly. It should also be noted that digital platforms and generative AI can support the creation of comics. This article discusses challenges university students may encounter when creating their own comics and explores their perception of comics in relation to their future profession. The participants viewed the challenge not merely as creating a comic using AI, but as creating a comic for educational use that would not only spark learners' curiosity but also foster their critical thinking skills.

Keywords: *Comics, implementation, generative Artificial Intelligence - AI, reading comprehension, critical thinking.*

1. Introduction

In today's education system, the composition of pupils populations is changing significantly. The shifts across successive generations of learners represent a major transformation, not only in education and teaching but also in the very nature of thinking and learning. Teachers, in their daily practice, are constantly confronted with persistent challenges. Various international assessments conducted by the OECD highlight challenges faced by pupils, such as reading comprehension and the application of evaluative thinking. The latest OECD results (2023, 2024) from international assessments focused on measuring pupil literacy highlight the following findings:

- a) The 2022 OECD PISA (Programme for International Student Assessment) focused on mathematical, reading, and scientific literacy. For the purposes of this study, it is essential to highlight students' difficulties in reading comprehension, particularly in understanding specific texts.
- b) Most countries participating in the 2022 PISA assessment scored lower than they had in the 2018 PISA assessment;
- c) Most participating countries scored below the OECD average in reading literacy;
- d) On average, only 7% of students achieved the highest proficiency level in reading literacy (OECD Levels 5 or 6);
- e) The study assessed not only pupil's levels of creative thinking but also their levels of evaluative thinking;

- f) These young people's communication skills, as well as their ability to manage and regulate their emotions, are at risk.

Factors contributing to changes in education include not only curricular reforms, legislative changes, and shifts in a country's educational philosophy, but also teachers' own ways of thinking (Ali & Hermansyah, 2024; Mikulcová, 2024; Bonadeo & Raguseo, 2025; Mikulcová, 2026). Despite efforts to transform the education sector and implement changes aimed at positive development, the actual implementation process remains slow. The underlying reasons for these initiatives are largely the same—for pupils, for the future, and for the prosperity of the country. At the same time, however, it is important to recognize that pupils themselves are a key factor influencing the direction of education and the focus of individual curriculum reforms.

Today's students within the global education system—from preschool to high school—belong primarily to Generation Alpha and Generation Z. It is important to recognize that a new generational shift among students is currently taking place at certain educational levels. However, this phenomenon is often not adequately reflected in educational practice. It is evident that children from Generation Alpha are present in preschools, Generation Alpha predominates in elementary schools, and both Generation Alpha and Generation Z are already represented in high schools. Generation Z predominates on college campuses. Each generation possesses its own specific characteristics and priorities. In his research, McCrindle (2024) provides a comprehensive description of individual generations. He points out that generations closer in age to Generation Alpha tend to perceive it more positively than those who are more generationally distant from it (McCrindle, 2024).

On the one hand, this is understandable, as Generation Alpha is one of the largest generations. Several authors (McCrindle, 2024; Wiegerová et al., 2024; Höfrová, Balidemaj & Small, 2024) discuss the characteristics of children and pupils belonging to this generation. In the educational context, we highlight several important aspects that underscore the need to include university students preparing for the teaching profession—that is, future teachers—in the education of children and pupils.

Above all, these students (as well as teachers in the classroom) should be aware of several important characteristics of Generation Alpha (McCrindle, 2024; Wiegerová et al., 2024; Höfrová, Balidemaj & Small, 2024), including the following:

- a) attention spans are significantly shorter;
- b) students have a strong need to engage actively and take initiative in the learning process;
- c) personal experience is essential, as it significantly influences pupils' motivation to learn;
- d) generative AI is rapidly entering the field of education;
- e) pupils' communication is largely virtual, while their reading comprehension skills are declining;
- f) pronounced anxiety-related personality traits are increasingly evident.

Recognizing that AI is entering not only the personal lives but also the educational environments of both pupils and teachers must be regarded as a key factor shaping the future of education. For this reason, university students preparing to become teachers—many of whom belong to Generation Z—must not only begin to understand both generations but also learn how to educate them effectively. Reading comprehension is essential for the development of pupils' critical and creative thinking skills, enabling them to become effective learners. Furthermore, as mentioned above, AI is and will continue to be an increasingly common part of young people's lives. The OECD (2025) emphasizes this trend by noting that a new domain to be assessed in PISA 2029 is “media and AI literacy,” with reading serving as the primary focus. This development compels us to think more globally and to prepare both future and current teachers to use AI effectively and leverage its potential to support student learning and education. For students, AI can often serve as a tool that enables them to engage with their future pupils in a creative, imaginative, and, above all, innovative manner.

When considering education and learning, it is essential to draw on Kolb's learning model (Kolb, Boyatzis & Mainemelis, 1999; Wiegerová et al., 2024; Annamalai & Bervell, 2025; Kronsted, Henley & Giguere, 2026; Wiegerová & Mikulcová, 2026). By emphasizing cyclicity and the learner's ability to engage at any stage and progress at their own pace through personal experience and individual abilities, this model can still be regarded as highly relevant today. Regardless of the level of education, this model can be regarded as one of the approaches on which the contemporary education system can rely. It is important to recognize that pupils are the key component currently undergoing change, and this is something that student teachers must also understand. One way to combine two dominant components—reading comprehension and AI literacy, both of which are now ubiquitous—is to teach students how to create and use comics in education, encouraging them not only to read comics but also to utilize them as part of the learning process. Both components can be perceived simultaneously as a challenge and an opportunity. Comics, in particular, can be approached didactically in ways that help address the problem of reading comprehension.

They may also present a challenge for the comic creators themselves—that is, student teachers—who may turn to artificial intelligence to assist them in creating educational tools tailored to specific pupils, groups, subjects, and other educational contexts. There are various types and forms of comics, as well as numerous authors who explore and work with comics (e.g., Yang, 2003; Wiegerová & Koutníková, 2017). However, this issue is not the primary focus of the present paper. Our aim is to highlight the benefits of comics, particularly in the context of education and in relation to Generation Z and Generation Alpha pupils. As mentioned earlier, these young people often struggle with emotional expression, reading comprehension, critical thinking, and reasoning skills. Comics, as a pedagogical strategy, have considerable potential in the education of contemporary pupils, provided that:

- a) it is designed as a comic strip rather than as a poster;
- b) it is developed in accordance with the principles of comic creation (i.e., it is not overloaded with text and includes graphics appropriate to the reader's—or learner's—age);
- c) it is designed to incorporate, for example, the principles of inquiry-based learning or other strategies that foster learners' curiosity, creativity, and critical thinking.

2. Methods and results

This paper provides an overview of a pedagogical-didactic seminar conducted for future teachers. The research design was qualitative in nature. Within the framework of the qualitative approach, a pedagogical-didactic seminar incorporating workshop elements was developed and implemented. The main objective of this paper is to highlight the didactic potential of comics, with a particular focus on both schoolchildren and student teachers. The formulated research questions were intended to support the research potential of the seminar: 1) *How can student teachers effectively harness the educational potential of comics?* 2) *Do original comics have the potential to serve as educational tools and support the development of the target group—that is, specific pupils?* 3) *What are the actual benefits of comics for student teachers?*

Participants had the opportunity to become actively involved and temporarily take on the role of comic creators. Our aim was to provide insight into the perspectives of selected students who participated in creating their own comics. The target group consisted of 43 undergraduate students enrolled in various teacher education programs at a Slovak university. Participants assumed the role of creators of their own comics. The task required them to create a comic using generative AI, while the specific type of comic was left to their discretion. Since some students had little or no prior experience with comic creation or working with AI, their communication and collaboration proved particularly interesting. Each participant was enrolled in two teaching disciplines, and this specific characteristic enabled them either to focus on a single subject area or to identify interdisciplinary connections between them. Some of the students took advantage of the opportunity to test their original AI-generated comics in a simulated learning environment alongside other participants.

Figure 1. A collage of six examples of student work created using generative AI tools.



The participants' dual teaching qualifications suggest that they will be able to teach at both the elementary and secondary school levels, as well as in two specialized subject areas. The group was professionally diverse. From a subjective perspective, this diversity may be viewed as a factor that contributed to particularly interesting outcomes:

- a) the visual style;
- b) the subject matter;
- c) the potential for linguistic variation in comic creation;
- d) the potential for the interdisciplinary use or integration of comic content;
- e) the potential to encourage readers to reflect on and critically engage with the given topic.

The following questions need to be addressed: *Did the comics fulfill their educational and professional potential? Were they designed to support students' personal, cognitive, and affective development?*

It cannot be claimed that all the products created by the participants were comics. Some were high-quality posters; however, they lacked certain elements—most notably a narrative structure—that would classify them as comics. Although the participants provided AI prompts instructing the system to generate comics, it became evident from the individual prompts that the final outcomes depended heavily on the specific instructions given to the AI. There were also noticeable differences among various AI tools, particularly in the types of errors generated by individual systems and in the visual presentation of the outputs themselves. Since the participants were also studying different languages, the created products were produced, for example, in German, English, Hungarian, and Slovak. In terms of subject areas, the participants created comics suitable for use in subjects such as English, history, biology, civics, ethics, media literacy, mathematics, and others.

Five participants had the opportunity to present their comics to the rest of the group. Role-playing was used as a teaching strategy, with the comic creators assuming the role of teachers presenting their comics to the other participants, who in turn took on the role of students from the grade level for which the comics had been designed. This created an opportunity for both verbal and written feedback. Participants were able to record their impressions and opinions and share them with the group. Some participants noted that it was challenging to respond to students and teach in a more unconventional way. This teaching approach stimulated learners' curiosity but was also demanding for the teacher, who often had to improvise when students' responses took unexpected directions.

3. Discussion and conclusion

The OECD results cited above point to a major problem concerning students' reading comprehension, which, although gradually being addressed, continues to persist in most of the countries participating in the assessment. While comics inherently possess the narrative and textual value necessary for educational purposes, the amount of text they contain is noticeably smaller—often minimal or even absent. In our view, a well-crafted comic creates an ideal environment for students to:

- a) focus their attention on the comic's visual presentation—when a comic is age-appropriate and has the potential to engage learners through appealing and meaningful content, the likelihood that pupils will read the entire text or comic increases;
- b) pupils not only had the opportunity to read at their own pace, but also to improve their reading comprehension skills;
- c) as their reading comprehension improved, they were also able to enhance their analytical, critical, and creative thinking skills.

Generation Alpha is a generation that will use AI in everyday life—and, in many cases, already does. For this reason, it is essential that future teachers be able to use various digital platforms and AI tools more effectively than in the past. During informal conversations, participants frequently expressed satisfaction and pride in having successfully created a comic (even though, in some cases, it did not fully meet the didactic criteria of a comic). At the same time, they expressed even greater enthusiasm when, for the first time, they used AI tools to create materials that could be applied in their future teaching practice.

A key challenge in creating original comics is to design a comic that is visually distinctive and capable of immediately capturing the reader's attention through its uniqueness and its potential to provoke thought and reflection. The comic should stimulate students' thinking to such an extent that the teacher gradually assumes the role of a facilitator who supports learners' curiosity and creativity.

The persistent—or only gradually diminishing—shortcomings in the education of Generation Z and Generation Alpha remain a constant focus of attention for both professionals and researchers. On the one hand, this creates opportunities for the practical application of comics and the implementation of various workshops that may support specific stakeholders in education. On the other hand, an increasingly virtual and rapidly evolving environment is emerging, within which AI is becoming progressively

integrated into education. It is the responsibility of teachers to guide students in how to work with these technologies and avoid the potential pitfalls they may present. Generative AI, reading comprehension, and their application in comics open up a significant field of research for scholars across different countries, as these issues are global in nature.

Last but not least, we believe it is crucial to recognize that thorough preparation of both current and future teachers is essential today. This is necessary so that they can educate their students naturally and enthusiastically in their everyday practice, while effectively and innovatively fostering their potential. It is important to teach students not only to understand subject matter, but also to evaluate it, reflect on it critically and creatively, and engage with it in ways that foster personal growth—both in relation to themselves and to others, or, where appropriate, to society as a whole.

Acknowledgements

I acknowledge the use of ChatGPT Edu for text review. I would like to express my sincere gratitude to all the students who participated in the research seminar and created original and engaging comics using various AI tools.

References

- Ali, A. I., & Hermansyah, E. (2024). Quality assurance system policy in education: A comparative study between Indonesia and Finland. *Jurnal Penelitian Kebijakan Pendidikan*, 17(1), 45-56. doi: 10.24832/jpkp.v17i1.887
- Annamalai, N., & Bervell, B. (2025). Exploring ChatGPT's role in English grammar learning: A Kolb model perspective. *Innovations in Education and Teaching International*, 1-17. <https://doi.org/10.1080/14703297.2025.2451328>
- Bonadeo, F., & Raguseo, C. (2025). A community of practice for curricular reform and locally constructed knowledge. In L. A. S. Serrano, & G. M. M. Chirinos (Eds.), *ELT Women in Research: Evidence Based, Innovative, Original* (pp. 37-46). Honduras.
- Höfrová, A., Balidemaj, V., & Small, M. A. (2024). A systematic literature review of education for Generation Alpha. *Discover Education*, 3(125), 1-20. <https://doi.org/10.1007/s44217-024-00218-3>
- Kolb, D. A., Boyatzis, R. E. & Mainemelis Ch. (1999). Experiential learning theory: Previous research and new directions. In R. J. Sternberg & L. F. Zhang (Eds.) (2000), *Perspectives on cognitive, learning, and thinking styles*. NJ: Lawrence Erlbaum.
- Kronsted, Ch., Henley, M., & Giguere, M. (2026). Making sense together: participatory sensemaking learning cycles, and group roles. *Frontiers in Psychology*, 17, 1746763. doi: 10.3389/fpsyg.2026.1746763
- McCrinkle, M. (2024) *Perceptions of Generation Alpha. The unique context and characteristics of Gen Alpha*. Sydney.
- Mikulcová, M. (2024). Transformation and implementation of curriculum changes in Slovak primary schools. *Proceedings of EDULEARN24 Conference*, 10190-10197. doi: 10.21125/edulearn.2024.2465
- Mikulcová, M. (2026). Implementation of curriculum reform in Slovakia – Is there a real opportunity for high-quality STEM education? *Proceedings of INTED2026 Conference*, 2279. 1-6. doi: 10.21125/inted.2026.2279
- OECD. (2023). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. Paris: PISA, OECD Publishing. <https://doi.org/10.1787/53f23881-en>
- OECD. (2024). *PISA 2022 Results (Volume III): Creative Minds, Creative Schools*. Paris: PISA, OECD Publishing. <https://doi.org/10.1787/765ee8c2-en>
- OECD. (2025). *PISA 2029. Programme for International Student Assessment*. Paris: PISA, OECD Publishing.
- Wiegerová, A., & Koutníková, M. (2017). *Využití komiksů v podmínkách mateřských škol* [The use of comics in Preschool]. Zlín: UTB.
- Wiegerová, A., Kravcová, D., & Božik, R. (2024). *Partnerství v systéme duálneho vzdelávania* [Partnerships in the system of dual education]. Bratislava: APZD.
- Wiegerová, A., & Mikulcová, M. (2026). *Trendy hodnotenia žiakov stredných odborných škôl* [Trends in assessment of vocational school students]. Bratislava: APZD.
- Yang, G. (2003). *Comics in Education*. Retrieved May, 07, 2026, from: <http://www.humblecomics.com/comicsedu/history.html>