2024, Vol. 23, No. 65

OPEN ACCESS

Lucie Zormanová
https://orcid.org/0000-0002-8004-8674
Uniwersytet Śląski w Katowicach
University of Silesia in Katowice
lucie.zormanova@us.edu.pl
https://doi.org/10.35765/hw.2024.2365.05
Data zgłoszenia: 28.11.2023
Data akceptacji: 09.02.2024
Data publikacji: 29.03.2024

Attitudes of Czech Teachers Towards the Use of Artificial Intelligence in Schools
Postawy czeskich nauczycieli wobec wykorzystania sztucznej inteligencji w szkołach

ABSTRACT

RESEARCH OBJECTIVE: The objective of this research study was to find out the subjective feelings of Czech teachers regarding the introduction of artificial intelligence into schools.

THE RESEARCH PROBLEM AND METHODS: The following research questions follow from the research objective: Are Czech teachers worried about the introduction of artificial intelligence into schools? Do Czech teachers see artificial intelligence as a tool that will help them? Do Czech teachers have experience with the use of artificial intelligence? What experience do teachers have with artificial intelligence? To achieve the research objective and answer the research questions, the in-depth interview method with primary and secondary school teachers was used.

THE PROCESS OF ARGUMENTATION: The first part of the article discusses the concept of artificial intelligence. The second part discussed the use of artificial intelligence in Czech schools. The third part presents the results of a research study was to find out the subjective feelings of Czech teachers regarding the introduction of artificial intelligence into schools.

RESEARCH RESULTS: As part of the research, it was found that some teachers are concerned about the advent of artificial intelligence and its use in education, especially that students will "misuse" AI to cheat and plagiarize. Most teachers see the application of artificial intelligence in schools as inevitable and realize that it is their task to teach students to use AI effectively. Teachers are also aware that with the implementation of AI into schools, the teaching system will also have to change.

CONCLUSIONS, RECOMMENDATIONS AND APPLICABLE VALUE OF RESEARCH: We can expect that teachers will consider artificial intelligence as a tool that helps them and makes their work easier. A big impetus will be the integration of artificial intelligence into tools that teachers commonly work with, such as Office 365 or Google Workspace. Artificial intelligence tools also have the potential to enrich e-learning technology.

→ **KEYWORDS:** **ARTIFICIAL INTELLIGENCE, CHATBOTS, SCHOOLS, TEACHERS, READINESS**

Suggested citation: Zormanová, L. (2024). Attitudes of Czech Teachers Towards the Use of Artificial Intelligence in Schools. *Horizons of Educations*, *23*(65), 31-41. https://doi.org/10.35765/hw.2024.2365.05

STRESZCZENIE:

CEL NAUKOWY: Celem tego badania było poznanie subiektywnych odczuć czeskich nauczycieli dotyczących stosowania sztucznej inteligencji w szkołach.

PROBLEM I METODY BADAWCZE: Z celu badawczego wynikają następujące pytania badawcze: Czy czescy nauczyciele obawiają się stosowania sztucznej inteligencji w szkołach? Czy czescy nauczyciele postrzegają sztuczną inteligencję jako narzędzie, które im pomoże? Czy czescy nauczyciele mają doświadczenie ze stosowaniem sztucznej inteligencji? Jakie doświadczenia mają nauczyciele ze sztuczną inteligencją? Aby osiągnąć cel badawczy i odpowiedzieć na postawione pytania badawcze, zastosowano metodę wywiadu z nauczycielami szkół podstawowych i średnich.

PROCES WYWODU: W pierwszej części artykułu omówiono pojęcie sztucznej inteligencji. W części drugiej poruszono temat stosowania sztucznej inteligencji w czeskich szkołach. W części trzeciej zostały przedstawione wyniki badania na temat subiektywnych odczuć czeskich nauczycieli dotyczących stosowania sztucznej inteligencji w szkołach.

WYNIKI ANALIZY NAUKOWEJ: W ramach badania odkryto, że niektórzy nauczyciele są zaniepokojeni pojawieniem się sztucznej inteligencji i jej wykorzystaniem w edukacji, zwłaszcza tym, że uczniowie będą „niewłaściwie wykorzystywać" sztuczną inteligencję w celu oszukiwania i dokonywania plagiatu. Większość nauczycieli uważa stosowanie sztucznej inteligencji w szkołach za nieuniknione i zdaje sobie sprawę, że ich zadaniem jest nauczenie uczniów efektywnego wykorzystania sztucznej inteligencji. Nauczyciele mają także świadomość, że wraz ze stosowaniem sztucznej inteligencji w szkołach będzie musiał ulec zmianom także system nauczania.

WNIOSKI, REKOMENDACJE I APLIKACYJNE ZNACZENIE WPŁYWU BADAŃ: Można zatem oczekiwać, że nauczyciele będą odbierać sztuczną inteligencję jako narzędzie, które im ułatwia pracę. Dużym impulsem będzie integracja sztucznej inteligencji z narzędziami, z którymi na co dzień pracują nauczyciele, takimi jak Office 365 czy Google Workspace. Narzędzia sztucznej inteligencji oferują również potencjał wzbogacania technologii e-learningowych.

→ **SŁOWA KLUCZOWE:** **SZTUCZNA INTELIGENCJA, CHATBOTY, SZKOŁA, NAUCZYCIELE, GOTOWOŚĆ**

Introduction

This research study focuses on the issue of the introduction of artificial intelligence into Czech schools, the readiness of the Czech educational system and Czech teachers for the use of artificial intelligence in schools. The aim of the research was to find out the subjective feelings of Czech teachers regarding the introduction of artificial intelligence into schools. To achieve the research objective and answer the research questions, the in-depth interview method with primary and secondary school teachers was used.

It is a question of how artificial intelligence will affect Czech education in the future, what new requirements will be imposed in connection with the extension of artificial

intelligence on pupils and teachers. Artificial intelligence is a topic that, on the one hand, evokes a positive response from Czech teachers, and on the other, understandable concerns (Kopecký et al., 2023). Therefore, as part of our research, we asked Czech educators what their personal view of artificial intelligence, its development and its active implementation was.

In the Czech environment, there is only one more comprehensive research on the topic of artificial intelligence in education (Kopecký et al., 2023), which is based on quantitative research. The aim of our research investigation is therefore to fill this apparent gap.

Artificial intelligence

Artificial intelligence (AI) is currently one of the most discussed topics in the field of IT. AI using the capabilities of algorithms fully imitates the human brain and human capabilities. It teaches, analyzes, creates various texts, evaluates data, looks for solutions to various problems (Kaplan, 2019), at a human level. And sometimes better, as it has more information and is more accurate and faster when making decisions (Cejnarová, 2018). However, it is not a robot with its own thinking, therefore the information generated by artificial intelligence may not always be true (Tłuczek, 2023).

AI responds based on available data, textual, image-based, etc. that it searches, sorts, connects, compares, and organizes to meet a specific request (Afzaal et al., 2021). AI does not think like a human (Gerrish, 2020), it just follows our instructions. It works with relevant data based on complex mathematical algorithms, and we can state that the more relevant data AI has, the more accurate its results and answers are (Spector i Ma, 2019). The accuracy of the generated results and answers also depends on the quality of the so-called text prompts – i.e. commands or instructions. The more precisely the prompts are formulated, the better the AI answers (Adams et al., 2021).

Potentially the largest breakthrough came with the advent of ChatGPT, designed for the generation, analysis and processing of sequential data (mainly texts) and operating on a "self-attention" mechanism, with which ChatGPT can understand the relationships between words in the text. Therefore, ChatGPT can generate text based on input data, answer questions and even have a conversation with users (Vanian i Leswig, 2023).

Introduction of AI in schools in the Czech Republic

Currently, Czech teachers are gradually incorporating the use of AI into their daily pedagogical work, using it in preparation for the lesson and incorporating it during lessons. AI also helps them simplify and streamline the process of evaluating students' independent work. According to research by the Pedagogical Faculty of Palacký University in Olomouc, 27.7% of Czech teachers use AI (GPT model) in preparation for teaching, 15.82%

in teaching. As part of this research, it was found that the majority of Czech teachers are convinced that AI belongs in today's schools and that teachers must learn to work with AI (81.7%). The research found that 45.5% of Czech teachers are convinced of the positive contribution of AI to education, while 61.4% of Czech teachers are convinced that humanity is not yet ready for the mass introduction of AI (Kopecký et al., 2023).

The introduction of AI into schools became a widely discussed topic together with the creation of the generative language model ChatGPT, which can produce essays, homework, seminar or qualification papers, is capable of more sophisticated searches, and can also help with programming (Bédi et al., 2023). It is the use of chat bots that is perceived by a large part of Czech teachers as a risk. Almost half of the teachers (47.6%) are convinced that chatbots are used by pupils to cheat, while 34% of Czech teachers have already discovered several pupils who misused ChatGPT to cheat, had it write their paper or other type of text homework for them (Kopecký et al., 2023).

Based on the reaction of Czech schools and Czech teachers, it might seem that AI entered schools only recently with the arrival of chatbots. However, AI is not limited only to chatbots, although they have caused educators to perceive AI as a risk, which is also confirmed by the research of the Faculty of Education of the Palacký University, in which it was found that 35.4% of educators are concerned about AI and its implementation (Kopecký et al., 2023). The use of AI tools in Czech schools began long before chatbots appeared. AI is used when taking photos with mobile phones, which modify the appearance of photos using various functions integrating artificial intelligence; within language translators (e.g. when communicating with Ukrainian pupils); when working with smart voice assistants (Siri, Alexa, Google Assistant, Bing Chat); when working with systems that generate images that match the textual description. The use of the term artificial intelligence dates to 1956, when the term was first used by the American computer scientist John McCarthy at a Dartmouth conference (Kurp, 2023). However, it was only with the discovery of chatbots that the Czech education system began to fear these tools and began to discuss the topic enthusiastically. The topic of AI is also being addressed by the Ministry of Education, Culture and Sports, which is about to submit a plan to support the use of artificial intelligence in education (currently there is only a draft version). The National Pedagogical Institute founded the website revize.edu.cz, which is devoted to the topic of introducing AI into schools, the institute creates podcasts KYBcast and DIGI IN that deal with artificial intelligence, offers teachers online webinars and face-to-face seminars dedicated to AI tools and introducing AI into schools. To support the implementation of AI in schools, the NPI has also introduced the function of a regional ICT methodologist who can visit the school and provide them with support, or an IT guru, which is a technician who will help with the connection of hardware, for example. All the measures mentioned above are provided to schools free of charge. In the spring of 2023, a working group was established within the NPI, which published recommendations for schools on how to work with AI in order to prevent its unethical use. The working group consists of representatives of the academic sphere, organizations dedicated to AI (e.g. AI for children) and also pedagogues from practice who already have practical

experience with introducing AI into teaching. The published recommendations contain general principles for working with AI in education. In the framework of this document, NPI recommends teachers to use AI themselves and thus learn about the possibilities of its use, try not to prohibit students from using AI, on the contrary, to introduce students to the possibilities of using AI. Within the document, NPI also emphasizes that teachers guide students to verify the information presented to them by AI (NPI, 2023).

The UP research showed that many teachers fear that students will abuse AI to cheat or plagiarize, or that teachers have even encountered students using AI tools to cheat or plagiarize (Kopecký et al., 2023). Even this risk of using AI is already being thought of today, which is why various applications have been created to detect plagiarism, e.g. Copyleaks, which is a plagiarism detection platform that checks the similarity between texts, across almost every language (Belova, 2023).

The European Commission also deals with the use of AI in education, and in 2022 it issued the document Ethical Guidelines for the Use of Artificial Intelligence within the European Union, which is to serve as a framework for the ethical use of AI in schools. This document, which is the result of activities implemented within the Action Plan for Digital Education (2021–2027), contains guiding questions that teachers should ask themselves in connection with the use of AI that provide orientation and stimulate pedagogical workers to think (Evropská komise, 2022).

The government of the Czech Republic is also addressing the issue of AI; it has published a conceptual government document, the National Strategy of Artificial Intelligence in the Czech Republic, which contains detailed recommendations regarding the use of AI in science and research, education, and industry. It deals with the impact of AI on the labor market, as well as the legal and social aspects of the use of AI and presents ethic rules for the use of AI (Ministerstvo průmyslu a obchodu, 2019).

How do Czech primary and secondary school teachers perceive the introduction of artificial intelligence in schools? – results of the research investigation

To find out how Czech school teachers perceive the introduction of artificial intelligence in schools, we decided to use qualitative research to find out the subjective feelings of teachers regarding the introduction of artificial intelligence in schools.

The research objective is to find out the subjective feelings of Czech teachers regarding the introduction of artificial intelligence in school.

The following research questions stem from the research objective:

- Are Czech teachers worried about the introduction of artificial intelligence into schools?
- Do Czech teachers see artificial intelligence as a tool that will help them?
- Do Czech teachers have experience with the use of artificial intelligence? What experiences do teachers have with artificial intelligence?

To achieve the research goal and answer the research questions, a qualitative method of in-depth interviews with primary and secondary school teachers was used.

The research group consisted of 5 teachers aged between 35 and 48 years. The first contact with the respondents took place by e-mail in which they were informed about the purpose of the research investigation and the topic of the interview, and later the date of the meeting was arranged. At the beginning of the meeting, the informants were introduced to the research in more detail, the preservation of anonymity and consent regarding the recording and subsequent processing of the interview for the purposes of the research investigation were agreed upon. The interviews were recorded on a mobile phone and lasted about 40 minutes. In some cases, we also used online interviews through electronic means of communication to collect and refine data. All data was digitized so that it could be archived on a computer and continuously analyzed.

Analysis of qualitative data

The analytical procedures used were based on open coding. The goal of open coding was the thematic dissection of the analyzed text. The analyzed interviews were thus divided into units, in this case words, sentences or paragraphs, determined by their meaning, the unit thus became a meaningful unit. A code has been assigned to each specified unit. The code was named according to what the given sequence was about, what phenomenon or theme it represented. Both technical terms and in vivo codes were used to indicate the codes. After the code hierarchy was created, the codes were categorized. Categorization is the process of grouping concepts that seem to belong to the same phenomenon (Strauss & Corbinová, 1999).

Using categorization, I identified three categories:

- fear of introducing artificial intelligence
- acceptance of artificial intelligence as a necessity
- artificial intelligence as help

We will describe the individual categories and clarify them on specific cases.

Fear of introducing artificial intelligence

The introduction of artificial intelligence evokes various feelings among educators, including apprehension and fear. Some teachers fear that the use of artificial intelligence will lead to the suppression of natural intelligence in students, as they will rely on artificial intelligence to solve their problems or perform tasks for them.

> Intelligence should be nurtured in schools and not the other way around...what will become of children who simply click and don't have to try harder? (respondent A)

> The problem is that if students will use it and it will write essays or all kinds of elaborations for them, they will not be able to think and form meaningful sentences and thoughts and work by themselves. (respondent B)

Many teachers are very worried about students "misusing" AI to cheat. As part of the in-depth interviews, teachers' concerns were revealed, especially regarding plagiarism.

> For many 'morally weaker children' there will probably never be a reason not to use AI for everything, when it's a thousand times easier. And so on onwards in their lives. These children may never write a paper, let alone a creative text, they will never look anything up by context in an encyclopedia. (respondent C)

Adopting artificial intelligence as a necessity

However, it is clear to most teachers that the introduction of artificial intelligence cannot be avoided, and therefore they try to embrace it. They realize that the task of education in the coming years will be to teach students to use AI as a normal tool, to explain to them the risks and pitfalls of using AI.

> Schools must prepare pupils and students for the changing work environment and, among other things, teach them to use new technologies appropriately and safely, including generative artificial intelligence. (respondent D)

> Well, it's like a calculator, the Internet or Wikipedia. You have to learn to work with it, use it and not blindly ban it. And in this sense also to assign tasks. (respondent E)

Teachers are also aware that along with the introduction of AI into schools, the system of teaching, testing and assignments will also have to change. Pupils will need to be assigned tasks that AI will not help them with or that AI will not do for them.

> We need to change the education system… the way we currently train students. If students learn only those skills that can be easily done by artificial intelligence, then they will no longer be needed on the labor market. That is why it is necessary to develop pupils primarily in such skills that artificial intelligence is no longer able to perform, only then will they be competitive on the labor market. So we can say that the advent of artificial intelligence actually helps us to raise the level of education in schools. (respondent E)

Artificial intelligence as an aid to teachers

However, some Czech teachers already today are not afraid of artificial intelligence, on the contrary, they aim to use it, because they see it as a tool that can help teachers in planning and implementing teaching. They see it as a tool that will help them reduce their workload and save time. They see it as a tool to make their work more efficient.

> I use artificial intelligence myself, and I'm pleasantly surprised at what it can do, either create or answer. Chatbot has proven itself for me in teaching the creation of the Earth's magnetic field. I prompted the chat to create a text for me on the topic of the formation of the Earth's magnetic field. First, it generated a long text that almost no one understood. Therefore, I then specified that it be described in the language of a fifteen-year-old child. It was already shorter and more comprehensible to someone, and I then used this text in my teaching. That's where AI is a big help. (respondent E)

> A chatbot can be turned into an assistant, as it is able to generate a lesson based on what the teacher wants to discuss. In addition, it can suggest to the teacher, for example, three variants of how the subject matter can be discussed. This is where I see the greatest advantage of using artificial intelligence in teaching; that finally teachers can make the differentiation in teaching, the graded tasks. That they no longer have to come up with each task themselves, spend a lot of time on it. That they already have an assistant for this activity, a robot, who is also very skilled at these tasks, and fast. It makes the teacher's work fantastically easier, leads to greater efficiency and, moreover, reduces the time spent on preparations. The saved time can then be devoted to more pleasant or important activities in which artificial intelligence cannot replace teachers. (respondent D)

As part of the research, it was found that teachers believe that a chatbot can also be a great helper for beginning teachers, that it can provide them with many ideas for teaching, help them create teaching materials that are appropriate for the age of the students. The chatbot can show the teacher how to explain the subject matter and concepts to students in a comprehensible and age-appropriate manner. It can offer teachers various tasks for pupils on the topic of the lesson.

> It can be a great helper for beginning teachers, because it can show the teacher how to explain different concepts to students of different ages. (respondent D)

Conclusion

This research study focuses on the issue of the introduction of artificial intelligence into Czech schools, the readiness of the Czech educational system and Czech teachers for the use of artificial intelligence in schools.

The aim of the research was to find out the subjective feelings of Czech teachers regarding the introduction of artificial intelligence into schools. To achieve the research objective, the in-depth interview method with primary and secondary school teachers was used.

As part of the research, it was found that some teachers are afraid of the advent of artificial intelligence and its use in education, because they believe that the use of artificial intelligence will lead to the suppression of the natural intelligence of students, that students will start to completely rely on artificial intelligence when solving tasks and completing assignments. Many teachers are also worried about students "misusing" AI to cheat and plagiarize. However, it is clear to most teachers that the introduction of

artificial intelligence cannot be avoided and therefore they try to accept it, realizing that their current task is to teach students to use AI as a common tool, to explain to them the risks and pitfalls of using AI. Teachers are also aware that with the introduction of AI into schools, the system of teaching, testing, and assignments will also have to change. Students will need to be assigned tasks that AI cannot help them with or create for them. However, there are also teachers who see AI as a tool that can greatly help teachers in the planning and implementation of teaching and are already working with chatbots today, as they realize that this artificial intelligence tool significantly helps them reduce their workload, save time and make them more efficient their work, their teaching.

Based on the results of the research study, we formulated the following recommendations for pedagogical practice:

1. Teachers should look for ways to make the best use of AI tools in their pedagogical work, to integrate these tools into teaching and combine them with other teaching methods. Artificial intelligence can help teachers with the creation of educational materials, images, photos, movies. The teacher can use it to create various texts, quizzes, exercises. At the same time, AI can help teachers increase their own work productivity by taking over those less creative activities for teachers, especially administrative tasks.
2. Teachers should familiarize pupils and students with ethical rules when using AI tools in their work. Teachers should also agree with pupils and students on the rules for the use of digital technologies at school.
3. Teachers should guide pupils and students to develop skills in using AI tools. At the same time, however, it is important that teachers guide pupils and students to be able to use artificial intelligence tools creatively, but also critically. It is important to lead pupils and students to realize that the outputs of artificial intelligence are frequently factually incorrect, and therefore it is necessary to place interest in the original sources. Teachers need to teach pupils and students to assess the reliability and objectivity of sources.
4. Teachers should adapt teaching methods, assignments and evaluation of pupils' and students' performance to the developments in the field of AI. Where possible, they should consider replacing written work with other forms of output. When evaluating pupils' and students' written works, they should place more emphasis on the process of their creation and also on the presentation of pupils'/students' writings.
5. Teachers should also familiarize themselves with the artificial intelligence tool Plag.ai, which helps detect plagiarism in the text. This tool uses advanced machine learning algorithms to compare user text with text on the internet and detect any similarities.
6. Educators should also use AI tools to create differentiated assignments and individual study plans that adapt to the pace and learning style of each pupil and student.

How to teach with artificial intelligence is a question for all educational fields and subjects. We are now in the initial stages of development, and the potential for the development of artificial intelligence is not yet exhausted. However, it is certain that pupils and students need to be guided to acquire AI competencies that will be increasingly important for their future careers. However, we already see that the labor market is changing, we perceive robotization, which has been replacing many work activities for a long time. Therefore, we rightly believe that many professional tasks and activities that humans do today will be performed by artificial intelligence. However, the involvement of artificial intelligence also brings a new impetus to the labor market. Already today, there are a number of forecasts regarding fields that will change fundamentally. There are many such forecasts, and naturally we cannot know which ones will come true or if there will be other twists and turns in the development along the way.

References

Adams, C., Pente, P., Lemermeyer, G., & Rockwell, G. (2021). Artificial Intelligence ethics guidelines for K-12 education: A review of the global landscape. In I. Roll, D. McNamara, S. Sosnovsky, R. Luckin, & V. Dimitrova (Eds.), *Artificial Intelligence in education. AIED 2021* (pp. 224–249). Springer.

Afzaal, M., Nouri, J., Zia, A., Papapetrou, U.F., Wu, Y., Li, X., & Weegar, R. (2021). Generation of automatic data-driven feedback to students using explainable machine learning. In I. Roll, D. McNamara, S. Sosnovsky, R. Luckin & V. Dimitrova (Eds.), *Artificial Intelligence in education*. *AIED 2021* (pp. 157–178). Springer.

Bédi, B., ChatGPT-4, Chiera, B., Chua, C., Cucchiarini, C., Ní Chiaráin, N., Rayner, M., Simonsen, A., & Zviel-Girshin, R. (2023). *ChatGPT-Based learning and reading assistant: Initial report*. https://doi:10.13140/RG.2.2.12715.82721

Belova, P. (2023). Способы автоматизации сравнительного анализа текстов при выявлении признаков плагиата в экспертизах по делам о нарушении авторских и смежных прав [Methods for automated comparative analysis of texts when detecting signs of plagiarism in expert case examinations of copyright and related rights infringement. *Юрислингвистика* [*Legal Linguistics*], 27, 94–98. https://doi.org/10.14258/leglin(2023)2717

Cejnarová, A. (2018). Umělá inteligence: v budoucnosti to bez ní nepůjde. *Visions*, 2, 8–9. https://www.visionsmag.cz/upload/visions-2-2018.pdf

Evropská komise. (2022). *Etické pokyny pro využívání umělé inteligence a dat ve výuce a vzdělávání pro pedagogy*. Úřad pro publikace Evropské unie. https://data.europa.eu/doi/10.2766/355

Gerrish, S. (2020). *Jak myślą inteligentne maszyny* (F. Fierek, Trans.). Wydawnictwo Naukowe PWN.

Kaplan, J. (2019). *Sztuczna inteligencja. Co każdy powinien wiedzieć* (S. Szymański, Trans.). Wydawnictwo Naukowe PWN.

Kopecký, K., Szotkowski, R., Voráč, D., Krejčí, V., & Dobešová, P. (2023). *České školy a umělá inteligence – výzkumná zpráva*. Pedagogická fakulta Univerzity Palackého v Olomouci, Centrum prevence rizikové virtuální komunikace.

Kurp, F. (2023). *Sztuczna inteligencja od podstaw*. Helion.

Ministerstvo průmyslu a obchodu. (2019). *Národní strategie umělé inteligence v České republice*. https://amps.cz/wp-content/uploads/2019/04/Národní-strategie-umělé-inteligence-v-České--republice-ma_KORNBADHFXVN.pdf

NPI. (2023). *Revize RVP EDU.CZ: Doporučení pro využívání umělé inteligence na základních a středních školách*. https://revize.edu.cz/ke-stazeni#ai 2023

Spector, J.M., & Ma, S. (2019). Inquiry and critical thinking skills for the next generation: From artificial intelligence back to human intelligence. *Smart Learning Environments*, *6*, 8. https://doi.org/10.1186/s40561-019-0088-z

Strauss, A., & Corbinová, J. (1999). *Základy kvalitativního výzkumu*. Albert.

Tłuczek, M. (2023). *Jak sztuczna inteligencja zmieni twoje życie*. Helion.

Vanian, J., & Leswing, K. (2023, March 13). *ChatGPT and generative AI are booming, but the costs can be extraordinary*. CNBC. https://www.cnbc.com/2023/03/13/chatgpt-and-generative-ai-are-booming-but-at-a-very-expensive-price.html

Source of funding
Lack of funding sources.

Disclosure statement
No potential conflict of interest was reported by the author(s).