Educational acceptance and use of artificial intelligence among Slovak high school students: an empirical study of attitudes, ethical risk perception and career intentions[*]

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Abstract

Artificial intelligence (AI) has become one of the most dynamically developing technological area in the educational environment in recent years. Chatbots based on large language models have become widely available and easy to use in a short time, which is fundamentally transforming the processes of learning, information search, problem solving and creative task completion. For secondary school students, these tools are not just technological novelties, but solutions that support everyday learning, which can influence learning strategies, motivation and future career choices. The educational application of AI is not an exclusively technological issue, but also a phenomenon with pedagogical, ethical and social dimensions: alongside the promise of usefulness and efficiency, dilemmas related to data protection, reliability, algorithmic bias and the changing role of human interactions

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appear [2].

Based on international research, the acceptance and use of AI are often interpreted in the context of technology acceptance models. The Technology Acceptance Model (TAM) places a central role on perceived usefulness and perceived ease of use, while the UTAUT model integrates the most important acceptance determinants in a unified framework [3]. In an educational context, learning motivation, digital competence, and technological confidence are closely related, but in the case of AI tools, classical acceptance frameworks need to be supplemented with issues of trust, risk perception, and use. In the context of generative AI, the need for a "human-centred" introduction that simultaneously addresses pedagogical benefits and security and ethical risks is particularly emphasized [2]. A particularly important research direction is how attitudes and experiences related to AI are related to students' future plans, primarily their interest in careers related to IT. Literature reviews point out that some of the research on AI education is technologically focused, and that pedagogical embeddedness and integration of user perspectives remain a challenge [4].

In the Slovak secondary school context, there have been relatively few large-sample studies that simultaneously analyze the frequency of AI use, the intensity of device use, ethical concerns, and career intentions. For this reason, an empirical analysis is warranted that examines students' attitudes towards AI not only in a descriptive manner, but also by exploring multivariate statistical relationships. The present study aimed to address this gap by conducting a large-scale survey of Slovak secondary school students (N = 714). The aim was to explore (1) the extent to which AI is embedded in students' everyday practices, (2) the extent to which "ecosystem-like" usage using multiple tools in parallel is typical compared to ChatGPT patterns, and (3) how AI knowledge and ethical concerns influence tool factors and the intensity of students considering a career. The methodology was a cross-sectional, online questionnaire survey. The main outcome variables were the general frequency of AI use, the tool use intensity index (Cronbach-$\alpha = 0.812$) based on the use of ten AI tools, and AI career intention. The explanatory variables were the number of known AI technologies, the number of ethical concerns, comfort with data management, and sense of preparedness. Gender differences were analyzed using Welch's t-test, tool intensity was analyzed using multivariate OLS regression (with robust standard errors), and career intention was analyzed using multinomial logistic regression.

The results show that AI use is widespread: more than four-fifths of students use AI at least occasionally. General attitudes towards technology are positive and the majority of students would support the educational integration of AI, but trust dimensions are ambivalent: there is significant conditional acceptance regarding data comfort, which is in line with international recommendations for the responsible and safe introduction of generative AI [2]. The structure of tool usage is highly concentrated: in addition to the dominance of ChatGPT, the average usage of the other tools examined is much lower, indicating a "platform-centric" pattern. This is pedagogically relevant because students' AI experiences and sense of AI-related

competence are often shaped by the user experience and limitations of a single tool, while conscious AI literacy – the ability, limitations, risks and appropriate choice of tools – requires a broader tool and task context [1].

Multivariate results showed that AI knowledge (number of technologies known) was a significant and strong positive predictor of tool use intensity (B = +0.057; p < 0.001), meaning that more informed students were more likely to use more tools and incorporate AI more intensively into their learning. In contrast, the number of ethical concerns significantly reduced the instrument intensity ($B = -0.049$; $p = 0.008$), suggesting that risk perception acts as an actual, measurable deterrent and not merely a "theoretical" belief. The gender difference was modest but significant($Welch\ t = 4.289$; $p < 0.001$; $d \approx 0.33$) and remained even after including control variables (B = +0.081; p = 0.027).

Based on the results of the multinomial model explaining career intention, the odds of positive AI career intention were particularly strongly increased by higher tool intensity (OR = 4.51; p < 0.001), interest in learning AI (OR = 7.90; p < 0.001), sense of preparedness (OR = 2.92; p < 0.001), and comfort with data management (OR = 1.88; p = 0.001). This overall picture suggests that career intention is not simply a "pro- or anti-AI attitude", but rather a phenomenon organized along the involvement–competence–trust axis: students imagine an AI-related future if (a) they have active experience, (b) they feel competent, and (c) they consider the technology to be safe/acceptable enough. This also fits with the logic of technology acceptance models, which posit that perceived usefulness and factors that support use can shape longer-term orientations through actual use [3].

The study provides an empirical basis for ensuring that AI integration in schools does not simply present itself as technological access, but rather consciously builds on the development of AI literacy, understanding the limitations of the tools, and transparent communication of data protection and ethical frameworks. International guidelines increasingly emphasize that the educational application of generative AI can be sustainable and socially acceptable. The present results suggest that developing knowledge and trust (data comfort) among students is not only important for responsible use, but may also indirectly play a role in strengthening student engagement and technological career orientation.

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