

DialogEduShift: Transforming Higher Education Teaching and Evaluation Approaches in the Era of AI ChatTools

Project No: 2023-1-PL01-KA220-HED-000167212

WP2 – National report

Rezekne Academy of Technologies, Latvia



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Introduction

Artificial intelligence (AI) technologies are developing rapidly and are beginning to play an increasing role in various industries, including education. AI tools such as chatbots can offer many benefits to higher education, including the ability to provide personalized learning experiences, support students with special needs, and improve learning efficiency (Dai et al., 2023).

AI chat tools have become a popular topic in higher education. These tools can help students and teachers improve their learning experience. UNESCO has published a report that describes various applications of AI chat tools in higher education. Some of the benefits of using AI chat tools include:

- Personalized learning: AI chat tools can provide personalized learning experiences to students by analyzing their learning patterns and providing customized feedback.
- 24/7 availability: AI chat tools can be available 24/7, which means students can access them anytime and anywhere.
- Cost-effective: AI chat tools can be a cost-effective solution for higher education institutions as they can reduce the need for human resources.
- Improved student engagement: AI chat tools can help students stay engaged in their learning by providing interactive and engaging content.
- Improved student retention: AI chat tools can help students stay engaged and motivated, which can lead to improved retention rates.
- Instant feedback: AI chat tools can provide instant feedback to students, which can help them identify areas where they need to improve.
- Reduced workload: AI chat tools can help reduce the workload of teachers by automating repetitive tasks such as grading and answering common questions.
- Increased accessibility: AI chat tools can help make education more accessible to students with disabilities by providing them with additional support (Crompton & Burke, 2023).

In addition to these benefits, AI chat tools can also help students develop critical thinking and problem-solving skills by providing them with challenging questions and scenarios. They can also help students learn how to communicate effectively and work collaboratively with others (Labadze et al., 2023).

To assess the current use of AI in higher education in Latvia, a survey was carried out with the participation of 10 experts in the field, 14 academics, and 5 university administrators participants.



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State-of-the-art desk research of current situation in Latvia

Latvia's higher education institutions are increasingly embracing the use of artificial intelligence (AI)-powered chat tools to enhance learning experiences, support student engagement, and optimize administrative tasks.

In 2020, the Latvian government published a report on the development of artificial intelligence (AI) solutions. The report was timely because the European Commission had called on EU member states to develop national AI strategies by mid-2019 (Ministru kabinets, 2020).

The European Commission, in cooperation with the expert group led by ECORYS consultants, has developed *Ethical guidelines for educators on the use of artificial intelligence (AI) and data in the teaching and learning process*, which has also been translated into Latvian. These guidelines provide both specific and general usage examples. They take into account considerations and requirements of an ethical nature and highlight new competences and important terms and methods in the field of education (European Commission, 2022).

On April 12, 2013, the Latvian Council of Higher Education published a statement on the use of artificial intelligence tools in higher education and research (Augstākās izglītības padome, 2023).

Also, during the year, since AI chat tools have been actively popularized, several conferences on artificial intelligence have been held in Latvia, for example:

- ChatGPT and educational transformations: technology, ethics, meaning, 21.04.2023 University of Latvia
- eTwinning Conference 2023: "Artificial Intelligence: Benefit or Challenge for Educators", 07.10.2023 Riga.
- "The future is now: are we ready for the AI revolution?", 13.10.2023 Riga Technical University
- LIKTA(I)2023 in focus on artificial intelligence and sustainability, 30.11.2023 Riga.
- The role of artificial intelligence and technology in the lives of people with disabilities, 8.12.2023 University of Latvia.

Analysis of survey results

A survey was distributed at the Rezekne Academy of Technologies in January 2024. A total of 29 participants completed the survey, 10 of whom indicated that they were experts in the field, 5 university administrators, and 16 academicians. Some respondents indicated that they represented multiple areas, for example experts in the field and academicians.



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Survey data was collected online using Google Forms. The survey was translated into Latvian. The collected data was analyzed using MS Excel and SPSS software.

The survey respondents were evenly divided between 14 women and 15 men. When asked about their educational attainment, 8 participants held a doctorate degree, while 21 held a master's degree (Fig. 1).

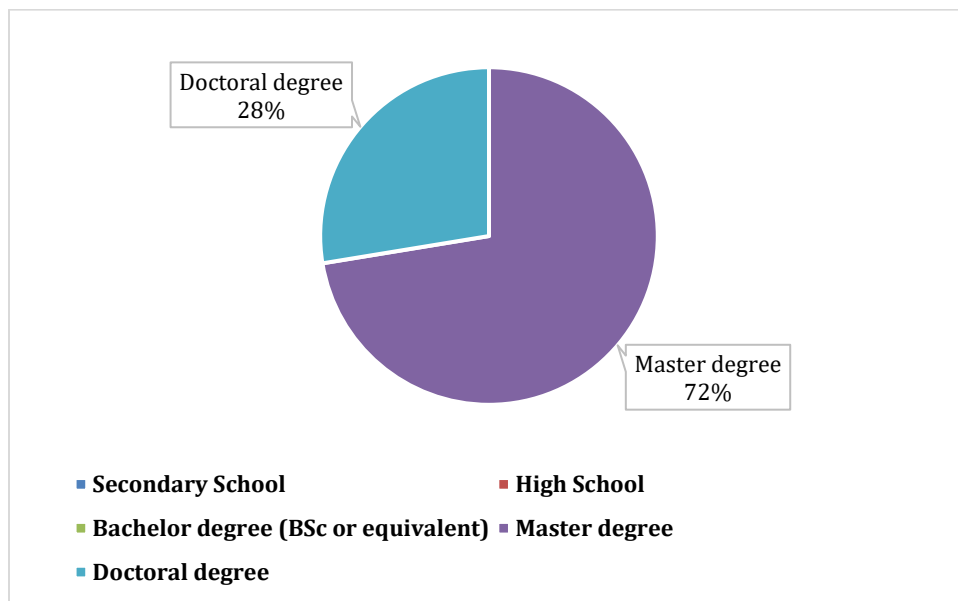


Figure 1. Education degree of participants

Findings of Experts in the field

The survey was completed by 10 experts in the field. The respondents were represented by 2 women and 8 men, with an average age of 37.2 years. The youngest participant was 27 years old and the oldest was 59. All experts held a master's degree.

The descriptive statistics also confirm that experts are indeed familiar with the proposed concepts of AI, as all average ratings on 5-point Likert scale are above 4.5 (Table 1).



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Table 1. Descriptive statistics about AI concepts

Are you familiar with these concepts?	Mean	Median	Mode	Standard Deviation
Artificial intelligence – AI	5	5	5	0
Generative Artificial intelligence – Generative AI	4.7	5	5	0.67
Data science	4.7	5	5	0.48
Machine learning	4.9	5	5	0.32
AI chatbot	5	5	5	0

Experts emphasize that AI is a computer program system that is capable of performing tasks that typically require human intellectual abilities, such as learning, understanding, drawing conclusions, understanding language, and even creative thinking. AI is based on machine learning, which allows a computer to learn from data, rather than being a string of software instructions. Experts widely use AI tools in their daily work, for example, to complete various tasks, test tool functions, perform IT tasks, create various written and visual materials, optimize equipment parameters, and automate work processes. Experts highly rated the use of AI tools in everyday life, with the lowest rating of 4.1 on a 5-point Likert scale, which is Sound and music generator (Table 2).

Table 2. Descriptive statistics about AI using

Have you used or encountered these AI tools in your daily life?	Mean	Median	Mode	Standard Deviation
AI chatbots	5	5	5	0
Image generator	5	5	5	0
Image/ video editor	4.3	5	5	1.34
Video generator	4.4	5	5	1.07
Sound and music generator	4.1	5	5	1.37
Computer vision	4.6	5	5	0.70

In the survey, three AI chatbots were offered: ChatGPT, Google Bard, and Bing Chat. All the experts surveyed use ChatGPT in their everyday work, while Google Bard and Bing Chat are used by six 6 participants (Fig. 2).



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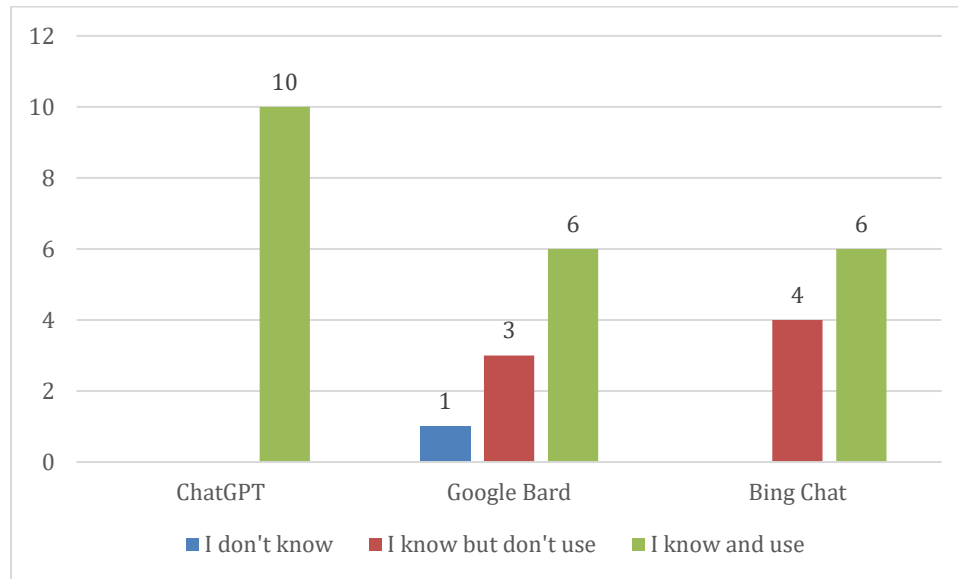


Figure 2. Using AI chatbots

On the question of whether AI technologies could help improve the study process in higher education, experts gave an average rating of 4.1 on a 5-point Likert scale, which means that the answer is rather yes (mean = 4.1, median = 4.00, SD = 0.57).

Experts believe that AI tools could help create unique practical tasks, solve everyday problems, but it should be borne in mind that it often makes mistakes or provides inaccurate information, find answers to questions faster, gather information, analyze data, provide a personalized approach to knowledge acquisition, automate processes, provide quick answers - virtual assistants, planning and organizing tools, data analysis, evaluate student work and provide feedback.

Experts believe that AI creates both opportunities (mean = 4.7, median = 5.00, SD = 0.48) and challenges (mean = 3.4, median = 4.00, SD = 1.51) for the education system.

Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

Strengths: Personalized learning experience, AI can tailor learning materials and methods to meet the individual needs of students, increasing learning effectiveness. Virtual assistants that provide 24/7 availability and additional learning support. AI can help with complex research, it can help students learn research skills and improve their problem-solving ability. AI can help automate tasks such as data analysis, application evaluation, and exam grading. This can free up teachers to focus on student support and supervision.



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Weaknesses: Using and relying on AI too often can start to interfere with the human thought process. Providing false information, so it is necessary to check all results. AI systems can be subjective, reflecting the dataset they are trained on. AI can create problems of inequality. With large amounts of data, data protection and privacy issues will intensify. Using AI systems requires new skills and knowledge from both students and faculty. The use of AI in education may raise ethical concerns such as privacy, discrimination and automated decision-making. Lack of human involvement, degradation of human abilities, how to ensure that with the spread of AI, people do not lose their cognitive abilities?

Opportunities: Fast implementation of simple tasks, generation of ideas, use of AI in the role of a consultant, a new way in which we can collectively engage in science, create new knowledge. Introduce administrative robots based on ChatGPT, which would facilitate the study process and the involvement of students and teachers in teamwork. Innovative learning methods: Integrating VR and AR offers new and exciting learning experiences. Improving access to education: AI can help make education more accessible to people around the world. For example, AI can be used to create online learning courses that are accessible to everyone. Provision of lifelong learning.

Threats: It is possible to write works without delving into the problem, excessive dependence on technology could lead to loss of knowledge and lack of human communication skills. AI systems can become so complex that it is no longer possible for humans to control them, which can threaten the quality and independence of education. Future directions for AI development are unclear. The use of AI can contribute to inequality in education. This can leave out people who don't have the ability or skills to work with AI. Job loss: AI can replace humans in workplaces, which can pose economic and social threats. Working with AI also takes time, namely training the preparatory AI so that it can provide the necessary answers. At first, you have to learn to use the possibilities offered by AI.

Findings of Academicians

The survey was completed by 16 academicians. The respondents were represented by 8 women and 8 men, with an average age of 46.00 years. The youngest participant was 28 years old and the oldest was 65.

10 lecturers with a master's degree and 6 with a doctorate degree participated in the survey.



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Academic staff rate their knowledge of AI concepts relatively high, the lowest average rating is Generative Artificial intelligence – Generative AI 3.38 on the 5-point Likert scale (mean = 3.38, median = 3.50, SD = 1.67) (Table 3).

Table 3. Descriptive statistics about AI concepts

Are you familiar with these concepts?	Mean	Median	Mode	Standard Deviation
Artificial intelligence – AI	5.00	5.00	5.00	0.00
Generative Artificial intelligence – Generative AI	3.38	3.50	5.00	1.67
Data science	4.25	4.00	4.00	0.69
Machine learning	4.56	5.00	5.00	0.63
AI chatbot	4.88	5.00	5.00	0.32

When asked about the daily use of AI tools, the answers show that only a part of the academic staff uses these tools. These tools are mostly used for testing and AI research, for example, checking the answers given to various questions, solving simple tasks, creating content, generating images, gathering information. See Table 4 for descriptive statistics.

Table 4. Descriptive statistics about AI using

Have you used or encountered these AI tools in your daily life?	Mean	Median	Mode	Standard Deviation
AI chatbots	4.63	5.00	5.00	0.81
Image generator	3.69	4.50	5.00	1.58
Image/ video editor	2.75	2.50	1.00	1.61
Video generator	2.63	2.50	1.00	1.59
Sound and music generator	2.38	2.00	1.00	1.50
Computer vision	2.88	3.00	1.00	1.59

In the survey, three AI chatbots were offered: ChatGPT, Google Bard, and Bing Chat. Most of the respondents use ChatGPT, while less use Google Bard and Bing Chat, although they know these tools (Fig. 3).



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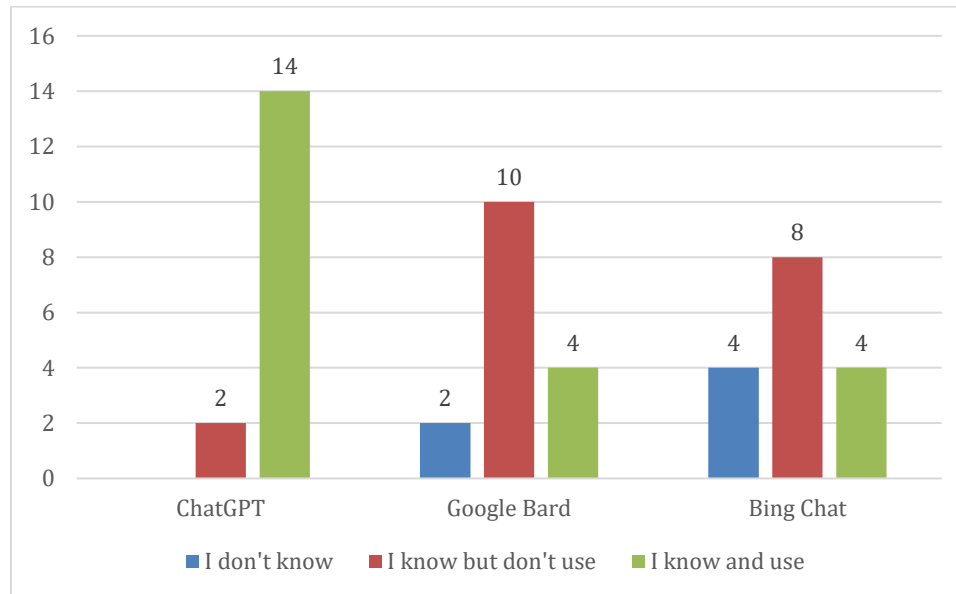


Figure 3. Using AI chatbots

On the question of whether AI technologies could help improve the study process in higher education, academic staff has rated average 4.13 on a 5-point Likert scale, which means that the answer is rather yes (mean = 4.13, median = 4.00, SD = 1.06).

Academic staff mention that AI tools can improve the quality of studies, support the creation of unique practical tasks, adapt learning content and methodology according to each student individually, evaluate student works, tests and assignments, provide immediate support to students by answering their questions and helping with problem solving outside the lecturer's working hours, analyze large amounts of data, create adaptive learning materials, identify existing research and existing knowledge, draw up study plans, generate new ideas.

Likewise, the academic staff also mention cases where they have used AI in their studies - for generating practical tasks, in language learning: machine translation, speech recognition, speech synthesis, spelling tools, text corpora, study program preparation, creating situation analysis, controlling student answers.

The academic staff were also asked questions about the use of AI in the study process, as the results of the survey show, the AI tools are not really used (Table 5). The teachers assess their knowledge and skills in working with AI tools as relatively weak (mean = 2.81, median = 2.50, SD = 1.28), but they would like to improve them (mean = 4.13, median = 4.50, SD = 1.20).



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Academicians believe that AI creates both opportunities (mean = 4.31, median = 5.00, SD = 1.34) and challenges (mean = 4.50, median = 5.00, SD = 0.89) for the education system.

Table 5. Descriptive statistics about AI in education process

AI in the education process	Mean	Median	Mode	Standard Deviation
AI tools in the assessment process	1.81	1.00	1.00	1.52
AI tools to create personalized learning approaches	2.13	1.50	1.00	1.41
Sufficient knowledge and skills for the use of AI technologies in the study process	2.81	2.50	2.00	1.28
The need to enhance your knowledge and skills in using AI technologies in the study process	4.13	4.50	5.00	1.20
AI creates opportunities for the improvement of the education/study process	4.31	5.00	5.00	1.34
AI poses challenges to the education/study process	4.50	5.00	5.00	0.89

Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

Strengths: Personalized learning experience, automated assessment systems, instant support and task solving, data analysis and forecasting, adaptive learning materials, fast information retrieval, problem solving, work optimization, large amount of information all together.

Weaknesses: Data confidentiality and privacy, reduction of human interactions, dependence on technology, misuse of technology, formulation of precise questions, need for critical thinking and verification of obtained information, because AI also tends to make mistakes or lack information. Students have a great opportunity to unfairly obtain information for tests and other tasks. Using and relying on AI too often can start to interfere with the thought process. Therefore, if AI is used in any kind of work, it is necessary to verify all results. Also, the academics expressed a rhetorical question: Will a person not "lose" his intelligence by relying only on AI?

Opportunities: Quick implementation of simple tasks, generation of ideas, use of AI as a consultant, wider opportunities to use technologies, creative and innovative tasks, new approaches.

Threats: Preparation of works without delving into the problem, the academic staff must transform the tasks, lack of added value to the works. The meaning of the preparation of essays, press releases, as well as theoretical parts of study theses/bachelor theses/diploma theses/master's theses should be evaluated. The possibility for an individual to think critically, to rely only on IT solutions, while at the same time not



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understanding the processes in the development of which the individual participates in, may decrease. When writing theses and applying AI solutions, a person stops analyzing in depth, does not develop his own individual approach to developing a solution, does not focus on the nuances and characteristics of the problem, does not develop new, unique solutions. In some cases, you can stop thinking with fantasy, generate normal text, stop thinking figuratively. The AI solution can undeniably serve as an advanced search or data processing tool for the necessary information, but education in general is the orientation of a person to think critically, to process the obtained information himself, to analyze, learn and develop these described activities, with the aim of potentially creating the new, unique.

Findings of University Administrations

The survey was completed by 5 university administration representatives. The respondents were represented by 4 women and 1 man, with an average age of 44 years. The youngest participant was 30 years old and the oldest was 55.

3 university administration representatives with a master's degree and 2 with a doctorate degree participated in the survey.

University administration representatives staff rate their knowledge of AI concepts relatively high, the lowest average rating is Generative Artificial intelligence – Generative AI 3.00 on the 5-point Likert scale (mean = 3.00, median = 3.00, SD = 2.00) (Table 6).

Table 6. Descriptive statistics about AI concepts

Are you familiar with these concepts?	Mean	Median	Mode	Standard Deviation
Artificial intelligence – AI	4.40	5.00	5.00	0.89
Generative Artificial intelligence – Generative AI	3.00	3.00	1.00	2.00
Data science	4.00	5.00	5.00	1.73
Machine learning	4.20	5.00	5.00	1.79
AI chatbot	4.40	5.00	5.00	0.89

The representatives of the university administration did not mention examples where they encounter or use AI tools on a daily basis, but the descriptive statistics shows the relatively high indicators by using AI tools on a daily basis (Table 7). The highest rated is the use of AI chat tools, image generator and image/video editor (mean = 4.00, median = 5.00, SD = 1.73), and self-service portals are mentioned as an example.



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Table 7. Descriptive statistics about AI using

Have you used or encountered these AI tools in your daily life?	Mean	Median	Mode	Standard Deviation
AI chatbots	4.00	5.00	5.00	1.73
Image generator	4.00	5.00	5.00	1.73
Image/ video editor	4.00	5.00	5.00	1.73
Video generator	3.60	4.00	5.00	1.67
Sound and music generator	3.60	4.00	5.00	1.67
Computer vision	2.80	3.00	1.00	1.79

In the survey, three AI chatbots were offered: ChatGPT, Google Bard, and Bing Chat. However, only ChatGPT is used (Fig. 4).

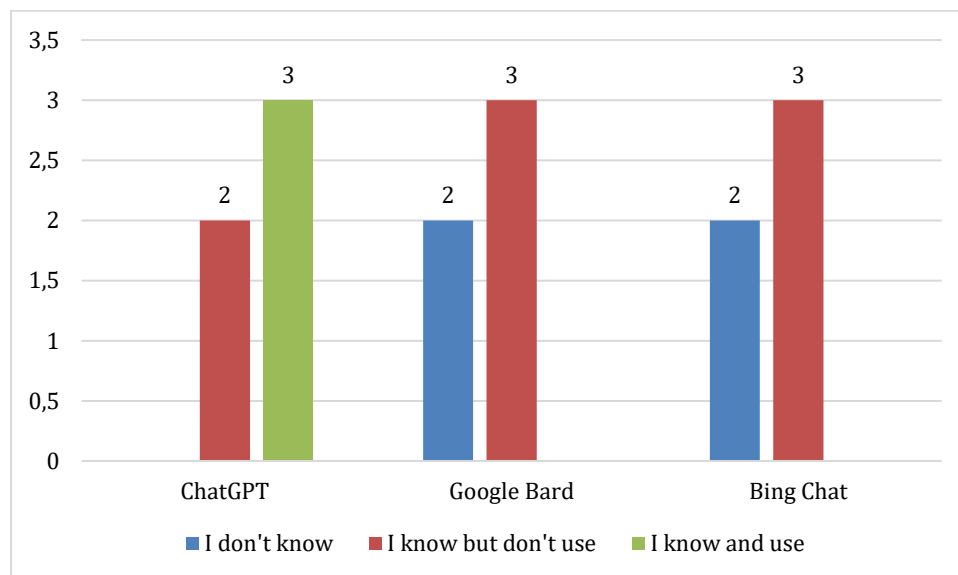


Figure 4. Using AI chatbots

On the question of whether AI technologies could help improve the study process in higher education, representatives of the university administration agree, everyone has rated with rather yes.

The representatives believe that AI will allow to diversify tasks, provide new competences, allow more prompt access to the information you are looking for and choose the most suitable one from it, incl. engineering solutions, will improve the quality of design works and reduce the bureaucratic burden.



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Academics believe that AI creates both opportunities (mean = 4.60, median = 5.00, SD = 0.55) and challenges (mean = 4.20, median = 4.00, SD = 0.84) for the education system.

Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

Strengths: Expands information retrieval capabilities.

Weaknesses: To be evaluated critically, respectively, to be tested, students often do not think anymore, people will become more and more lazy, they will not want to do anything themselves, they will even less communicate with each other.

Opportunities: Perhaps it is a "saving" tool for "lazy" students, but for diligent students it is an essential opportunity for self-improvement and expansion of knowledge horizons.

Threats: Using AI without controlling it.

Conclusions

In conclusion, the survey conducted in Rezekne Academy of Technology in January 2024 provided valuable insight into the perspective of experts in the field, academics, and university administrators on the integration of AI in higher education. Analysis of the survey results revealed several key findings.

Expert Perspectives

The experts admitted that they were well versed in AI concepts. Descriptive statistics showed that experts widely use AI tools in their daily work, with special emphasis on the capabilities of AI in various tasks. The survey highlighted the positive attitude of experts that AI tools can improve the education/study process.

Academician Perspectives

Academics, generally positive about AI, however showed a slightly lower level of knowledge about AI concepts compared to experts. Academic staff note that AI tools are less frequently used in day-to-day operations, mainly for testing, research, content creation and information gathering. Despite the challenges, academics recognized the opportunities offered by AI in improving the study process, emphasizing its potential in the creation of unique tasks, personalized learning and research support.

University Administration Perspectives:

Representatives of the university administration showed a good understanding of AI concepts. Their daily use of AI tools was less prominent, but AI chatbots were the most used, mostly on self-service portals.



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The university administration expressed optimism about the potential of artificial intelligence to improve the study process, anticipating benefits in diversifying tasks, providing new competencies and improving information availability.

Common Themes Across Perspectives:

Strengths identified included personalized learning experiences, automated assessment systems, and the potential for quick implementation of tasks.

Weaknesses encompassed concerns about data confidentiality, reduction of human interactions, and the need for critical thinking in the face of AI's potential errors.

Opportunities highlighted AI's role in expanding information retrieval capabilities and providing a tool for self-improvement.

Threats included the risk of overreliance on AI leading to decreased human effort and potential negative impacts on communication and critical thinking.

The findings suggest a need for targeted training programs to enhance knowledge and skills related to AI tools, particularly among academic staff. Universities should consider leveraging AI to improve personalized learning experiences, automate routine tasks, and support academic research. Ongoing discussions and strategies should address the ethical considerations and potential pitfalls associated with AI integration in education.

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