Possible Impacts on Education Provision of the Transformative Role of Artificial Intelligence in Education: Current Student and Teacher Perspectives

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Abstract

This article explores the potential effects of Artificial Intelligence (AI) on education provision, focusing on perspectives from present students and academic staff. By synthesizing insights from scholarly literature and empirical research, it examines possible impacts on education provision concerns related to AI implementation in education, including general knowledge about AI, data privacy, usage of it during the learning/teaching process, access, student autonomy, transparency, and accountability. The study investigates the current views and issues surrounding (AI) in education through the analysis of two survey questionnaires—one administered to students and another to academic staff. The surveys aim to discern perspectives on AI's potential benefits and its implications for changes in educational structures, qualifications, delivery methods, teacher training, and ethical considerations in assessment processes. The findings suggest a nuanced understanding among both students and academic staff regarding the transformative potential of AI in education, highlighting opportunities for personalized learning, concerns about ethical use, and the need for ongoing research and development in the field.

Keywords: Artificial Intelligence (AI), AI in Education, Impacts on Education, Role of AI in Education

Introduction

The Cambridge English Dictionary definition of Artificial Intelligence is 'the use or study of computer systems or machines that have some of the qualities that the human brain has, such as the ability to interpret and produce language in a way that seems human, recognize or create images, solve problems, and learn from data supplied to them'. The term itself is not entirely new, becoming recognised and founded as an academic discipline in 1956.

The concept itself began through the development and use of the code breaking computers during World War 2, such as ENIAC and Colossus, the theoretical foundations being laid down by Alan Turing. In 1950, Turing devised what has become known as the 'Turing Test', which proposed that if a machine could engage in a conversation (using a teleprinter) that could not be differentiated from a conversation with a human, then it was reasonable to say that the machine was "thinking".

Throughout the 1980s, 1990s and the early years of the 21st century, algorithms (sets of rules used in programming that allow tasks to be achieved or problems to be solved) developed by AI researchers were gradually introduced into widely used computer programmes. Now, forms of Artificial Intelligence such as ChatGPT and Bing Copilot are used in daily life. Many people may be unaware of their use of AI, for example in YouTube, where this is used to provide recommendations of videos for users even when they do not have an established YouTube account. The rapid uptake of AI poses questions as to how it will shape many aspects of society in general.

As mentioned above, the use of Artificial Intelligence (AI) has started to evolve in recent years in the context of becoming embedded in daily life and has already begun the process of reshaping industries like healthcare and education, as well as being commonly used in manufacturing and e-commerce. In education, AI has the potential to offer innovative solutions by simulating human brain functions to automate tasks and improve learning experiences. This article explores teacher and student perceptions of the possible transformative role that AI has in education, highlighting its potential to revolutionize the established methods used in the teaching and learning processes, the duration of qualifications and their structure and also what types of organisation may offer qualifications compared to the present, more traditional educational establishments.

History of Artificial Intelligence (AI)

Artificial Intelligence (AI) boasts a rich history, with its origins dating back to the mid-20th century when the term was first coined at the Dartmouth Conference in 1956. Pioneers like Alan Turing, John McCarthy, and Marvin Minsky laid the groundwork for AI by introducing key concepts such as neural networks, symbolic reasoning, and machine learning algorithms. Artificial intelligence (AI) has emerged as a transformative technology, influencing various aspects of modern society, including business, communication, and education. Its roots can be traced back to the mid-20th century, when pioneering researchers envisioned machines capable of human-like cognitive abilities (Dahlman and Heide, 1999).

Today, AI has revolutionized business operations, automating tasks, enhancing customer service, and enabling better decision-making (Getchell et al., 2022). For instance, AI-powered chatbots handle customer inquiries efficiently, freeing up human agents for more complex tasks (Cardon et al., 2021). Moreover, AI personalizes marketing campaigns by analysing customer data and delivering targeted messages (Brown-Devlin et al., 2022).

AI has also reshaped communication and media landscapes through advancements in natural language processing (NLP), speech recognition, and sentiment analysis technologies. Chatbots and virtual assistants leverage AI to facilitate seamless interactions and provide personalized customer support in industries like e-commerce, telecommunications, and hospitality. Additionally, AI-powered content generation tools streamline content creation processes in journalism, advertising, and entertainment, enhancing storytelling capabilities and audience engagement. AI-driven translation tools bridge

language barriers, facilitating global communication (Getchell et al., 2022). Additionally, AI-powered text generation tools produce high-quality content, ranging from news articles to marketing materials, saving time and enhancing content quality (Cardon et al., 2021). AI also personalizes recommendations for media and products, enhancing user experiences (Brown-Devlin et al., 2022).

AI's impact on education is equally profound. Personalized learning experiences tailored to individual student needs are now possible, enabling students to learn at their own pace and reach their full potential (Getchell et al., 2022). AI-powered assessment tools provide real-time feedback and identify areas for improvement, allowing teachers to tailor instruction effectively (Cardon et al., 2021). Moreover, AI-created educational materials, such as interactive simulations and personalized learning plans, make learning more engaging and effective (Brown-Devlin et al., 2022). Intelligent tutoring systems, educational chatbots, and virtual reality simulations provide personalized feedback, adaptive assessments, and immersive learning environments. Moreover, AI-driven analytics platforms offer educators insights into student performance, learning patterns, and instructional effectiveness, enabling data-driven decision-making and personalized interventions.

AI's advancements hold the promise of transformative change across all facets of society, revolutionizing business practices, enhancing communication, and personalizing education. As AI continues to evolve, we can anticipate even more innovative applications that will shape our future in ways we can only begin to imagine. As Getchell et al. (2022) aptly state, "AI in communication is truly a game-changer, transforming the way we research, create, and share information." As AI technologies continue to advance, their transformative potential to drive innovation, enhance productivity, and foster human-machine collaboration remains broad, underscoring AI's crucial role in shaping the future of society.

Subsets of AI
There are subsets of AI such as Machine Learning, Deep Learning, Artificial General Intelligence and Natural Language Processing. According to ChatGPT, Machine Learning (ML) is a subset of AI that focuses on the development of algorithms and statistical models that enable computers to perform tasks without being explicitly programmed for them. It relies on patterns and inference, allowing systems to learn from data, identify trends, and make decisions or predictions. ChatGPT also provides the explanation for Deep Learning. It states that Deep learning is a specialized subset of machine learning that involves artificial neural networks with multiple layers (hence the term "deep"). These networks are capable of learning increasingly complex representations of data through hierarchical layers of abstraction. Deep learning models excel in tasks such as image and speech recognition, natural language processing, and autonomous driving, among others. They are characterized by their ability to automatically discover intricate patterns and features from large volumes of data, often surpassing human performance in specific domains. Artificial General Intelligence (AGI) refers to the hypothetical ability of an AI system to understand, learn, and apply knowledge across a wide range of tasks, similar to human intelligence. Unlike narrow AI, which is designed for specific tasks, AGI aims to possess general cognitive capabilities that enable it to adapt and learn in various contexts, perform reasoning, solve problems, and exhibit creativity and self-awareness. Achieving AGI remains a long-term goal in AI research, with significant ethical and technical challenges to overcome. Natural Language Processing (NLP) ChatGPT explains as a branch of artificial intelligence that focuses on the interaction between computers and human language. It encompasses the development of algorithms and techniques to enable

computers to understand, interpret, generate, and respond to natural language input. NLP applications range from sentiment analysis and language translation to speech recognition and chatbots. Techniques used in NLP include machine learning, deep learning, and linguistic rules, which enable systems to extract meaning from textual and spoken data, making them valuable tools for information retrieval and communication.

AI in Education

Education has always been and should always be one step ahead in all fields. LEAN management was borrowed from business to be introduced in education for the quality change (Gluoksnyte, Papartis, Žitkus, 2024). Remote learning emerged extensively during the pandemics with innovative online teaching tools and education was the field to challenge it vastly (Gluoksnyte, White, 2022). With appearance of AI, teaching facilities should have reflected the need of usage of AI through educational means.

The research by Thomsen and Kopp of the Davos Agenda World Economic Forum in 2023 has shown that from a working week of 50 hours for teachers, less than half of that time is spent in direct interaction with students, the rest being taken up non direct teaching work such as preparation and administrative tasks. They propose that between 20%-30% of that time could be reallocated to more individualised student support through the effective use of AI.

Thomsen and Kopp also cite the following example: 'In Lagos, Nigeria, teachers are beginning to see the efficiency and ease that AI brings to their work. Oluwaseun Kayode, who taught in Lagos and founded Schoolinka, is currently seeing an increasing number of teachers from across West Africa using AI to identify children's literacy levels, uncover where students are struggling, and deepen personalized learning experiences' (Thomsen and Kopp, 2023). They propose in addition that the establishment of closer links between leaders in the fields of educational technology and education provision would promote the development of best practice sharing, innovation co-creation with enhanced personalised learning being a result of these steps. This belief also seems to be shared by potential future employers, as Mark Rayner wrote in 2023 'AI and big data is the number one skills priority for companies with more than 50,000 employees. Beating out 25 other skill clusters spanning the range of hard and soft skills needed in the workplace, the ability to boost business performance using artificial intelligence is the number one focus of investment in skills training for large companies responding to this year's Future of Jobs survey'(Rayner, 2023).

Yoshika Walter postulated in 2024 that 'Students uncritically using the technology and handing over the necessary cognitive work to the machine, students not seeking to learn new materials for themselves but instead wanting to minimize their efforts' (Walter, 2024) were indeed problematic and unethical areas for the use of AI in education, and that a set of rules somewhere between unrestricted use and an outright ban would be effective in setting effective rules for use (he found that only a few students had not used ChatGPT and that whilst they understood the help that it would provide with their assignment work, they also did understand that it was 'only a machine').

This was also echoed by Gill et al (2023), with specific regard to ChatGPT. They found that 'the issue of AI-generated content being passed for original student work has grown significantly. Investigations show that ChatGPT can get past the usual plagiarism detection tools such as Turnitin by producing

information that appears to be unique. Students who utilised ChatGPT were more likely to plagiarise than those who did not, according to the literature. This is a serious challenge to academic credibility and the valid and fair assessment of student learning' (Gill et. Al, 2023).

In light of this, Walter (2024) also proposed that the use of AI should be fair, as in that no student is at an unfair advantage or disadvantage, and it should be clear what the expectations of the school look like so that students know exactly what they are allowed and what they are not allowed to do (Walter, 2024). Clearly, this is an area which has significant implications for the assessment of the effectiveness of the learning process and one way ahead may be for educational organisations to devise effective regulations in partnership with the student body.

In 2023, Gasevic et al observed that educational institutions are 'not measured by their rapid responses to potential trends. While this aspect of higher education systems is to be lauded in ensuring that small, but highly hyped, trends do not overwhelm the lofty long term goals of universities in supporting society and democracies while raising the quality of life for all people, this slowness of universities and school systems to change and respond at a systemic level to dramatic and possibly existential trends, and in the process, to conceive new contributions to a society where AI is prominent, is worrying' (Rayner, 2023).

It is noted that in the article by Jagadeesh Kengam (2020) 'Artificial Intelligence in Education', the author states that a range of AI based solutions are already being used, including 'The Third Space Learning system which was created with the help of scholars from London University College. It helps to recommend the ways to make the teaching techniques better, like giving a warning when the explanation of teacher is either slow or very fast. The Little Dragon creates smart applications that analyse the user's facial expressions or gestures and adapt the user interface accordingly' (Kengam, 2020).

The following recommendations were made by Rudolph in 2023, with regards to developing new assessment methods which would facilitate real opportunities for the demonstration of effective learning, knowledge, and skill acquisition by students during the assessment process, whilst recognising the use of AI tools by students. These include developing the means to: 'execute certain assessments during class; create assessments where students deliver presentations, performances and other digital forms, including webpages, videos and animations (Lim, 2022); allow students to write about topics that genuinely interest them, in which their voices come through, and their opinions are valued (McMurtrie, 2022); and use authentic assessments (i.e. creative learning experiences that test students' skills and knowledge in realistic situations: Wiggins, 1990) that are meaningful and intrinsically motivating (Rudolph, 2023).

The place of more traditional exam methods was also cited by Rudolph in the same article as 'no longer contemporary, with students cramming less than-useful information into their heads, only to forget much of it shortly after their examinations (Van Bergen & Lane, 2016). With a focus on graduate employability, the skill to ace closed-book exams seems rather irrelevant' (Rudolph, 2023). Teacher ability to facilitate recommendations such as these is an example of how elements relating to the recognition of AI as inevitably being part of the education process will almost inevitably become an embedded component of teacher training.

It might be worthwhile noting that in Scotland, even prior to the inclusion of Artificial Intelligence in the educational process, there has been a significant rise in the number of institutions becoming approved centres for the delivery of Scottish Qualifications Authority programmes and qualifications. These include Local Council Authorities, a wide range of businesses, training companies and also voluntary sector and not-for-profit organisations.

At present, it is certainly possible that to some degree, newer, independent educational organisations may be faster in undergoing change to meet the developing needs of students, industry, and society in general. The relative slowness of more traditional educational institutions to act has been observed by Holmes et al, who stated that in using Artificial Intelligence effectively, 'the goal is to rid the curriculum of obsolete, irrelevant information, while simultaneously modernizing, systematically sequencing, and infusing the content with competencies. Students should learn the useful ways of seeing the world developed by different disciplines, as well as particularly important topics and discoveries within and across the disciplines. In other words, the goal is to maximize the potential for making meaning in the curriculum' (Holmes et. al., 2023).

One clear ethical concern surrounding the use of AI in education highlighted by Seline Akgun and Christine Greenhow is 'the surveillance or tracking systems which gather detailed information about the actions and preferences of students and teachers. Through algorithms and machine-learning models, AI tracking systems not only necessitate monitoring of activities but also determine the future preferences and actions of their users' (Akgun, Greenhow, 2021).

In summary, Chavan and Shaffer emphasise the importance of the use of Artificial Intelligence being centred on the notion of its potential service and benefits to people. A wise application of technology is the need of the hour. Thus, we need to intentionally apply AI. AI does not exist in isolation. We need to combine it with additional modalities, such that it is intentionally focused on urgent human needs (Lahiri Chavan, Schaffer, 2023).

The educational landscape is changing rapidly due to ongoing research and advancements in technology. Furthermore, crucial role of AI in shaping the future of education and workforce readiness is so obvious. However, ethical concerns against AI's unchecked adoption, emphasizing the need for clear guidelines and fair practices are also stressed. As educational institutions grapple with the potential of AI, authors' recommendations for innovative assessment methods and call for curriculum modernization underscore the urgency of adaptation. Amidst these challenges and opportunities, there are concerns about AI surveillance and the importance of a balanced approach that prioritizes human well-being. Ultimately, AI should be applied judiciously, focusing on addressing humanity's needs, ushering in a new era of deliberate integration and innovation in education.

Ethical Considerations of AI
In the field of education, the usage of Artificial Intelligence (AI) presents a series of ethical considerations that demand close inspection. It is essential that the ethical dimensions of AI implementation within educational contexts, echoing the concerns raised by scholars such as Floridi and Cowls (201) regarding data privacy, security, and the potential for bias perpetuation should be considered (Anagnostou et. Al., 2022). Acknowledging the crucial role of AI algorithms in student data analysis, ethical discourse underscores the necessity for robust data protection protocols and

mechanisms to mitigate concerns over privacy breaches and data misuse (Harris, 2020). Furthermore, a critical examination of equity and access concerns underscores the imperative for educational institutions to examine inclusivity and equitable access to AI tools and resources. Concurrently, the discourse navigates the delicate balance between AI-driven instruction and student autonomy, mentioned by Miao et al. (2022) on the necessity of empowering learners while leveraging AI technologies. Emphasizing transparency and accountability of algorithmic media, scholars such as Diakopoulos (2017) advocate for the explanation of AI decision-making processes and the establishment of mechanisms for recourse and compensate in case of algorithmic errors or misconduct. Ultimately, this discourse underscores the imperative for ethical reflection and dialogue among stakeholders to ensure that AI technologies in education align with ethical principles, educational values, and the holistic well-being of learners.

Some acts have been released in the EU to regulate ang govern utilisation of AI and ethical aspects of it. The European Union's proposal for regulating AI, known as the EU Artificial Intelligence Act, seeks to establish guidelines governing the development and utilization of AI systems among member states. This legislative framework is designed to uphold fundamental EU values and ensure that AI technologies adhere to principles such as transparency, accountability, and respect for human rights. It introduces measures aimed at managing the risks associated with high-risk AI applications, including requirements for data transparency and algorithmic accountability. Additionally, the Act proposes the creation of a European Artificial Intelligence Board tasked with overseeing compliance and enforcement efforts across the EU. On March 13, 2024, the European Parliament formally adopted the EU Artificial Intelligence Act ("AI Act") with a large majority of 523-46 votes in favour of the legislation. The AI Act is the world's first horizontal and standalone law governing AI, and a landmark piece of legislation for the EU. In parallel, the UK Office for Artificial Intelligence functions as a governmental entity focused on shaping AI policies and fostering innovation within the United Kingdom. Its initiatives aim to bolster the UK's position as a global leader in AI research and innovation, with a focus on addressing societal challenges and ensuring the responsible use of AI technology.

The Relevance, Aim and Object
The relevance of the article is undeniable as it explores how AI is changing education from the viewpoints of students and teachers. It aims to understand how AI technologies are affecting education and to gather the opinions of students and teachers on these changes. By examining the respondents' insights, the article seeks to uncover both the benefits and challenges of AI in education, helping to guide future decisions and policies in this area. Ultimately, it seeks to deepen our understanding of how AI is shaping education and to support discussions and on its integration into educational practices.

Method
Subjects and Sampling Method
Two survey questionnaires, one each for students and academic staff, were devised with the purpose of gaining an understanding of current views and issues surrounding the nature of AI, such as the potential benefits it may have and the subsequent changes to the structure and duration of qualifications, methods of delivery, teacher training and basic questions of ethics in the assessment of students in the teaching and learning process. 'Pollmill' was online survey mechanism used, with responses received from educational establishments in the EU, mostly in Lithuania and the United Kingdom.

Instruments of Data Recollection

A questionnaire was developed during the study. Question types used: open ended, close-ended, rating questions, and multivariate. A valid study was conducted (n = 111 students and n=32 for academic staff), the chosen quantitative research method (survey) achieved the aim stated above.

Plan and Procedure

Various scientific literature and Internet databases were analysed on the topic of AI in general and AI in education. Respondents were therefore asked how they view usage of AI in education.

Findings

The aim of the research was to assess the respondents' knowledge of the concept of AI, how AI technologies are affecting education and to gather the opinions of students and teachers on these changes.

111 students and 32 academic staff respondents participated in the survey: academic staff - 66% female, 28% male, 6% not answered, students - 51% female, 40% male, 9% not answered. The students age varies: 57% 11–19 years old, 14% 20–29, 14% 30–39, 4% 40–49, 2% 50–59, 2% 60 and more years old; 7% of respondents did not answer. The academic staffage is the following: 31% 60 and more years old, 24% 40–49, 21% 50–59, 14% 30–39, 7% 20–29, 0% 11–19, 3% did not answer the question. Less than 30% of respondents are from the UK, over 70% are from Lithuania, including other nationalities living in Lithuania and the UK.

Students survey results

The questionnaires were formed to find out how AI technologies are affecting education and to gather the opinions of students about AI and usage of the AI tools. The first question was asked if they understand the term 'Artificial Intelligence'. 23% of respondents state, that it is the ability of computers to perform tasks more effectively than humans whilst 10% of respondents indicated a possible focus on the understanding of Artificial Intelligence having the means to undertake and complete tasks on your behalf, the overwhelming majority gave responses showing an awareness of the capacity for Artificial Intelligence to think and learn, process information, and communicate with users and potentially complete tasks more effectively than the humans with which it will interact (32% - a computer program that can think and learn, 36% - a computer program and information tool that can use the internet and talk with you).

The students were also asked if they know what is meant by the specific terms Machine Learning, Deep Learning, Artificial General Intelligence and Natural Language Processing. The greatest number of respondents stated an understanding of Artificial General Intelligence (69%) with Natural Language Processing and Machine Learning having an equal number of respondents stating an understanding of these terms (45%). Deep Learning had the lowest number of respondents stating an understanding of Artificial Intelligence terms (31%) (see Chart 1).
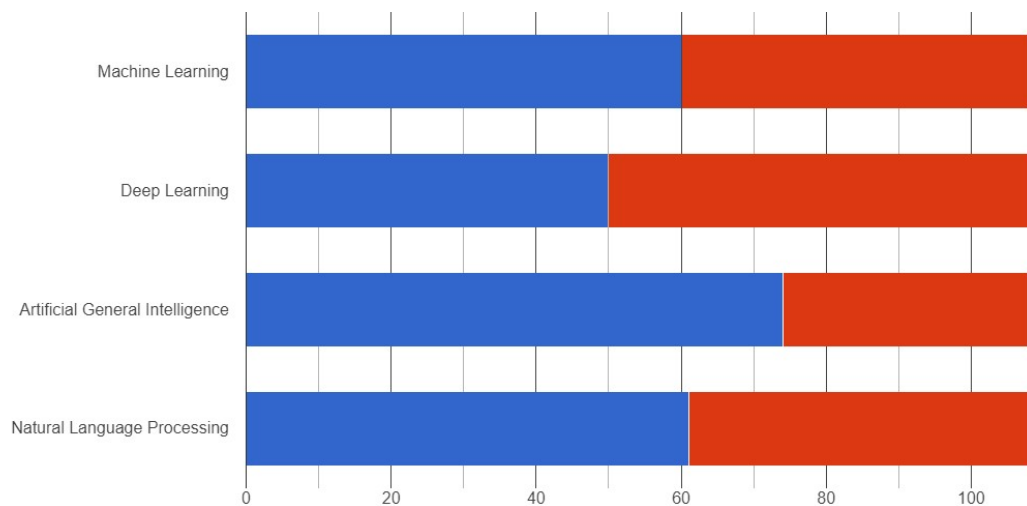
Chart 1: Knowledge about the Specific Terms: Machine Learning, Deep Learning, Artificial General Intelligence and Natural Language Processing

The respondents were asked to give an example of how they could use Artificial Intelligence in research and essay writing. A significant minority of almost a third responded that they would use Artificial Intelligence to either do all of the necessary work or at least provide major assistance with the assigned essay work (32%). This is a possible indicator of the necessity of at least being aware of the various Artificial Intelligence plagiarism detection checkers currently being introduced and also the potential for AI to 'hallucinate' and provide faulty information. It is also a possible indicator of the requirement to consider the future format of assessment of student skills and knowledge and using practical or realistic work situations where possible. Almost one half stated that they would use Artificial Intelligence to help with material research and fact checking (47%), with 10% intending to use it for checking presentation and grammar. Just over one tenth stated that they would either not use it or were presently unsure of how they would use it. The overall majority of those respondents who stated examples of how they would use AI in research and essay writing matches the findings of Schiel, Bobek and Schnieders who, in their 2023 paper 'High School Students' Use and Impressions of AI Tools', found that 'nearly three fourths (74%) of students believed that their overall performance in school would improve at least a small amount because of using AI tools for school assignments' (ACT, Schiel et. al, 2023).

A clear majority percentage of students indicated that they did definitely consider that the use of Artificial Intelligence would have the capacity to deliver a more personalised learning experience on an individual basis (64%). The combined percentage total of those as yet unsure or who considered it a possibility was 18%, equal to those who considered that it definitely would not.

A very clear majority of 78% stated a belief that becoming experienced in the use of Artificial Intelligence as a student would help them in the work environment, with 17% responding that they believed that it would not help. Only a very small percentage of 5% were undecided (see Chart 2).
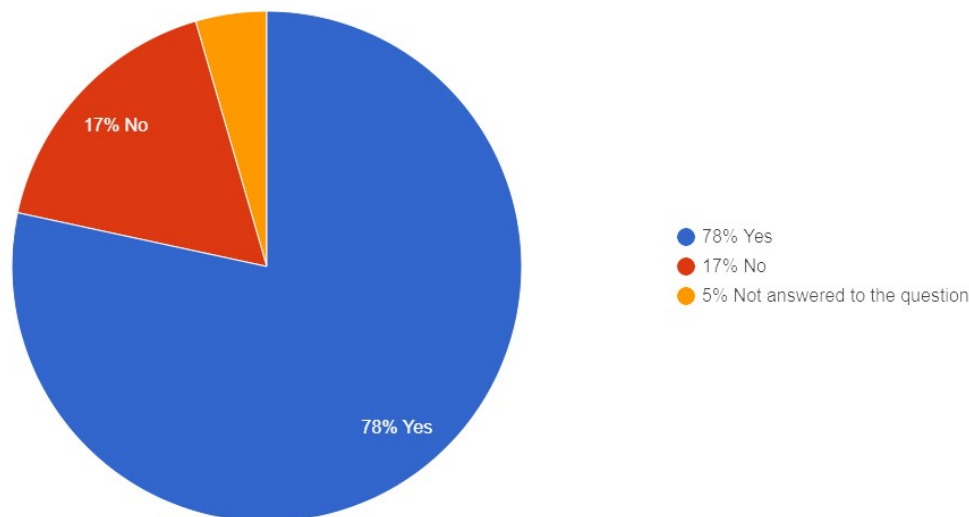
Chart 2: AI's Importance in Work Environment

A very clear majority of almost three quarters of respondents stated plagiarism or cheating, with regards to getting all your work done for you, as an example of Artificial Intelligence being used in an unethical way. 'Don't know' was the response of 14% of respondents with a further 1% giving no response to this question. It is interesting to note that 8% considered that 'getting information quickly' was an unethical use of Artificial Intelligence, a concept not new to this technology but rather one which has become a common use of established and developing internet technology. A combined total of 2% identified bullying and also the promotion of fear through misinformation as unethical uses in the educational context, with 1% noting that using Artificial Intelligence to in turn deceive plagiarism detection tools as possible unethical uses. This latter point could well become a significant issue as the technology develops and becomes more widely used.

The students were asked when they think that the use of Artificial Intelligence in education should begin. Only 8% of respondents indicated that students at primary school age should be introduced to artificial intelligence, with the majority believing that it's use in an educational context should begin at secondary school (i.e. between the ages of 12 and 18). Just under 39% considered that it should not be introduced until attending post school provision, at either college or university. It will be inevitable that young people will become familiar with the use of Artificial Intelligence to some extent in contexts which are outside of the educational environment, and the consideration of factors involved in the formulation of possible age limits for access throughout a range of contexts will be complex and time consuming to both investigate and consider and introduce in the form of practical measures.

The respondents were asked to express their opinion on how they think that using Artificial Intelligence can help teachers improve the teaching and learning experience.

85% of respondents indicated their belief in positive aspects of the use of Artificial Intelligence by teachers, comprising the ability to keep up to date with methods and information, increasing competence in a general way and generally increasing creativity and research capacity, planning, questioning and presentation skills. Some stated (15%), that it helps keep up to date with the latest teaching methods and information, 6% do not believe it will help and teachers shouldn't use it, 9% think knowing about AI will increase general competence, 1% - to check students' work, the same amount think that this should

be investigated further, also that teachers should try new teaching methods virtually before using for real. 7% could not give the answer and stated they do not know.

Answering the question of they believe that the use of Artificial Intelligence in education will lead to a more flexible delivery of qualifications in the future and if so, how, just over half of respondents stated a belief that the use of Artificial Intelligence in education would lead to greater flexibility in qualification delivery, with 12% being undecided at present. Just under 40% of student respondents did not as yet consider this to be a possible outcome of Artificial Intelligence use. It is of course likely to be the case in the specific context of schools that there will not be any change, at least for the foreseeable future, in terms of attendance duration and delivery being materially being linked to age, and that this concept is more likely to affect post-school and vocational qualifications. 13% of the participants offered answers as to how flexibility of delivery may happen. These factors build on concepts already mostly present in general internet use with regards to education. However, the replacement of teachers, at least in some contexts, by virtual instructors, is certainly a real possibility. This may well be introduced in terms of the capacity of Artificial intelligence to recognise the preferred learning characteristics of individual students and to modify materials, and respond to questions, in a way that meets individual learning needs. 4% of respondents believe that teachers should learn and teach more flexibly and adaptively and take into consideration personalisation of learning at own pace.

Only one quarter of respondents indicated an awareness of either the EU Artificial Intelligence act or the UK Office for Artificial Intelligence. With 9% of survey participants giving no response, there remains a significant majority of students who are unaware of any of the measures being taken to regulate the use of Artificial Intelligence in general.

The survey aimed to understand students' views on how AI impacts education and their grasp of AI-related terms. It found that while most students have a general understanding of AI, their knowledge of specific terms like Machine Learning varies. Many students mentioned using AI for research and essays, suggesting a need to educate them about plagiarism detection and ethical concerns. Despite recognizing AI's potential to enhance personalized learning, students expressed worries about its unethical use, particularly in aiding plagiarism. Opinions on when AI should be introduced in education varied, with most preferring secondary school. Additionally, students showed limited awareness of regulatory measures like the EU Artificial Intelligence Act and the UK Office for Artificial Intelligence, highlighting the need for more education on AI's ethical use and regulatory frameworks.

Academic Staff Results
The academicians were asked to define the term AI. Whilst one third of respondents indicated that they did not understand what was meant by the term 'Artificial Intelligence', almost one half stated that they understood the broad concept of Artificial Intelligence as being a branch of computing science which can simulate human intelligence and be used as a basis to approach tasks in a way that is similar to that of human intelligence. Just over one fifth recognised it as being the basis of current chat-bot processes, communications and information seeking tools, whilst not explicitly specifying the human intelligence-like characteristics. Participation in use of company website chat-bot tools is now very widespread, and in terms of communications and information tools, Microsoft's 'Google Copilot' now appears automatically on Google as 'Your everyday AI companion'.

In each case, over half of the respondents indicated that they were aware of what was involved in the specific terms 'Machine Learning', 'Artificial General Intelligence', 'Natural Language Processing' and 'Deep Learning'. The highest stated awareness was that for 'Machine Learning' (74%) with the lowest being for 'Natural Language Processing' (52%) (see Chart 3).
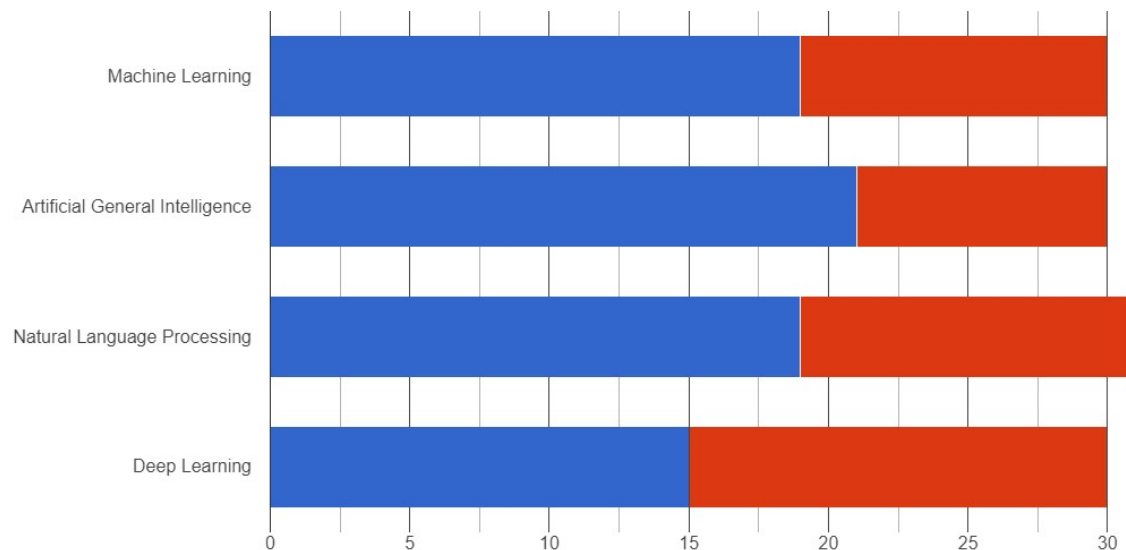

Chart 3: Knowledge about the Specific Terms: Machine Learning, Deep Learning, Artificial General Intelligence and Natural Language Processing

Being asked, if they believe that the use of Artificial Intelligence will make your job better or worse, the answers were quite interesting. As the use of Artificial Intelligence in education is still in the comparatively early stages, it is perhaps not surprising that there was not a clear majority of opinion regarding this question. One in ten respondents did believe that it would make the work involved in teaching worse, whilst another one in ten made no response to the question. The proportion of those who considered that it would make the role of teacher better (38%) was only marginally less than those who considered it not possible to say at present one way or the other (42%).

The academic staff members were asked if they consider that the use of Artificial Intelligence will provide greater scope to devise student individual learning experiences. The response to this question is interesting when considered in comparison with the results to question 3, described above. Whilst, as stated, there was no clear majority stating that they felt that Artificial Intelligence would make their job better or worse, well over half respondents did consider that the use of Artificial Intelligence would provide greater scope to devise individualised learning experiences (58%). It is possible that as the use of Artificial Intelligence becomes embedded in education, that this view will steadily rise in proportion (no answered 6%, do not know – 17%).

Respondents were asked how they believe this will change nature of the delivery of learning, with particular regards to flexibility of delivery and the use of the traditional academic year. Whilst only just over one fifth believed that the use of the traditional academic year by educational institutions would reduce considerably, almost one third did state that there would be a reduction in the amount of teaching material delivered directly by teaching staff. This does seem to indicate at present that there is a small majority who do believe it is possible that significant change in the 'structure' of educational delivery will result from the use of Artificial Intelligence.

Next question was "what effect will there be on the present required duration of qualifications?". As an issue considered independently of the use of the traditional academic year, well over one third of respondents believed that the use of Artificial Intelligence in the teaching process would lead to a reduction in the present duration of educational qualification delivery, with just over one fifth stating a 'don't know' response at present. It is interesting to note that a small number of staff (5%) believed that respectively there would be either an extension of course duration or that there would be no effect (10%). It will be interesting to carry out a comparison survey within the next two years to determine how beliefs have changed, accompanied by actual practice.

To the question "How do you think that the use of Artificial Intelligence will affect the way you prepare and deliver learning materials?" A significant minority (43%) do believe that the use of Artificial Intelligence will have an effect on preparation and delivery, with specific regards to devising case studies, personalisation of learning materials and a greater frequency of revision of teaching materials to help ensure a greater degree of currency and relevance. Only a small proportion (10%) considered that at present there would be no change, with just over a quarter of respondents not yet certain of the resulting effects. Just over one fifth of survey participants (21%) made no response to this question. This, totalled with those that who are as yet undecided, shows a total percentage return of 4% above those who collectively consider that there will be significant changes on how teaching and learning materials are prepared, delivered, and reviewed. This almost equal but opposite number of staff taking these respective views is again perhaps not entirely unexpected given the relatively early stages of the use of Artificial Intelligence the context of education.

Analysing the results on the effect on the teacher training, just under three quarters of respondents did indicate that they believed that there would be a resulting comprehensive incorporation of Artificial Intelligence use and related issues in future teacher training programmes (74%), with 16% stating that they did not as yet have an opinion. Couple with the 10% 'no-return' rate, this shows almost exactly a 3-1 majority belief that Artificial Intelligence will become a necessary element of teacher training provision.

A very clear majority of responders (78%) indicated that they did believe that the number of independent organisations and business offering post-school qualifications would rise, with 16% stating that they did not consider the use of Artificial Intelligence in education will lead to a growth in number of independent educational organisations and business providing post-school qualifications, and 6% not answering the question.
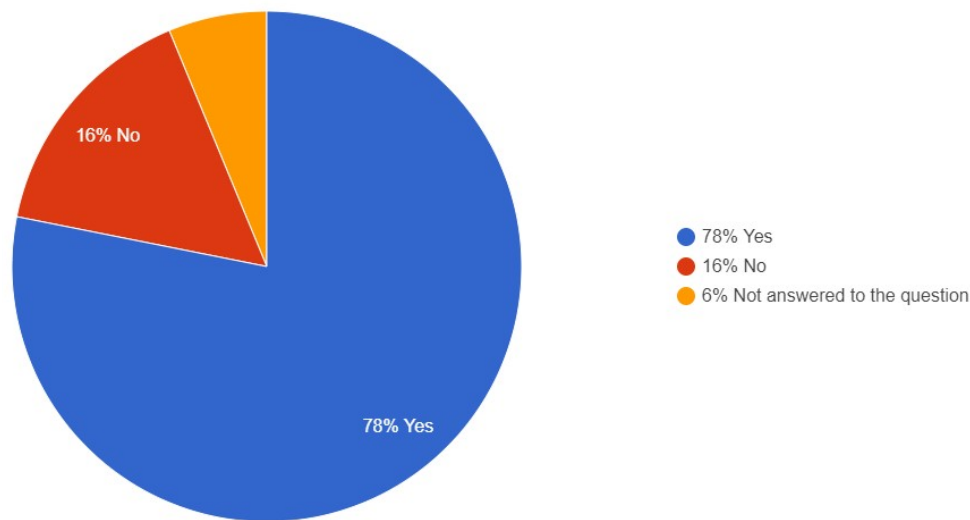
Chart 4: Artificial Intelligence Growth in Independent Educational Organisations and Business Providing Post-school Qualifications

Just over 40% of respondents indicated that they were aware of either the EU Artificial Intelligence act or the UK Office for Artificial Intelligence. Although this is clearly less than half of the respondents surveyed, it is an interesting result considering the comparatively low level of publicity that these have received. They had to answer if they consider that they will offer the necessary level of safeguard against unethical use of Artificial Intelligence. There was an even split between those who considered that there will be an effective level of resulting safeguards and those who did not (26%). Slightly over half of the respondents gave a 'don't know' response. This may indicate some level of embedded suspicion of the absolute safety of, or level of human control over, Artificial Intelligence technology.

The findings from the survey of academic staff shed light on their perceptions of AI and its implications for education. While there was a lack of consensus on whether AI would improve or worsen teaching roles, a majority believed it would offer greater scope for individualized learning experiences. Additionally, many anticipated changes in the delivery of learning, with some predicting a reduction in traditional academic structures and qualification durations. A significant minority acknowledged the potential impact of AI on teaching materials and training programs, suggesting a need for adaptation in these areas. Despite optimism about the rise of independent educational organizations, awareness of regulatory measures like the EU Artificial Intelligence Act and the UK Office for Artificial Intelligence remained relatively low, raising questions about the efficacy of safeguards against unethical AI use.

Results, Conclusions and Recommendations
These were the results and conclusions acknowledged:
The survey results from both students and teachers provide valuable insights into their perceptions and expectations regarding the use of Artificial Intelligence (AI) in education. Here's a comparison of the key findings:

1. Understanding of AI Terminology: most students demonstrated awareness of terms such as Artificial General Intelligence, Natural Language Processing, and Machine Learning, albeit with varying levels of understanding. Similarly, teachers exhibited awareness of AI terminology, with over half of the respondents indicating familiarity with terms like Machine Learning, Artificial General Intelligence, Natural Language Processing, and Deep Learning.

2. Perception of AI's Impact on Education: many students expressed optimism about AI's potential to enhance learning experiences and improve academic performance. However, there were also concerns about unethical AI use, plagiarism, and the need for clear guidelines. Teachers held diverse views on AI's impact on education, with some anticipating positive outcomes such as improved teaching methods and personalized learning experiences, while others expressed concerns about job security and the ethical implications of AI use.

3. Expectations for AI Integration: many students believed that AI would play a beneficial role in education, with many expressing a desire for more personalized learning experiences. Most teachers anticipated the integration of AI into future teacher training programs, recognizing its potential to enhance teaching methods and improve learning outcomes.

4. Awareness of Regulatory Measures: a relatively low percentage of students were aware of regulatory measures such as the EU Artificial Intelligence Act or the UK Office for Artificial Intelligence. Similarly, awareness of regulatory measures among teachers was moderate, with some uncertainty about their effectiveness in safeguarding against unethical AI use.

5. Perspectives on Flexibility and Qualification Delivery: students were divided on the question of AI's impact on the flexibility of qualification delivery, with some anticipating greater flexibility enabled by AI technology. Teachers expressed varying opinions on the potential changes to the delivery of learning, including reductions in traditional academic structures and teaching material delivery by staff.

Overall, while both students and teachers recognize the potential benefits of AI in education, there are also concerns about ethical implications, job security, and the need for clear guidelines and regulations. These findings underscore the importance of ongoing dialogue and collaboration between stakeholders to ensure responsible and effective integration of AI in education.

As in all aspects of service provision, the scope for Artificial Intelligence to significantly innovate all aspects of educational practice is enormous. It is clear that the delivery of education in terms of the structure of the traditional academic year will be subject to change, as will the place of established traditional teaching and learning methods. There is also potential for a provision of a more individualised style of learning using Artificial Intelligence in educational provision. Together, these facets can help to meet the changing needs and expectations of students, the subsequent demands placed on educational institutions and the needs of industry in particular, and also society in general, in the future. However, as the use of AI expands and its capabilities develop, the rules governing it's use in terms of ethics and safety will also have to evolve to provide an effective regulatory framework.

It is recommended that further research be undertaken in the fields of changing course structure and duration resulting from the adoption of AI in education, changing work patterns and the evolving needs of industry.

Limitations of the Study
The study could have reached a wider spectrum of respondents not only in Lithuania and the UK, but also in the whole world. So, the sample size may not adequately represent the entire population of students and teachers, potentially leading to sampling bias. The data collected through surveys relies on self-reported responses, which may be subject to bias. The study may not adequately account for contextual factors such as regional differences in educational systems, cultural norms, or technological

infrastructure. Moreover, the wider spectrum of respondents could have been used as the main factor of survey. Also, as it is an initial research, more research should be conducted in the future. The study may only capture a snapshot of participants' opinions and experiences at a single point in time. Longitudinal data tracking changes in attitudes and behaviour over time would provide a more comprehensive understanding of the impact of AI in education. The survey may not cover all relevant aspects of the topic. To maintain the continuity of the survey, it is planned to carry out additional surveys in the future.

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