

Use of AI in Education and the Surveying Profession

Peta COX, (co-contributor Kate FAIRLIE), Australia

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SUMMARY

Artificial Intelligence (AI) has revolutionized various industries over the past decade, including education and surveying. In recent years, there has been a growing interest in how AI can be used in the educational sector (AIed) to benefit both teachers and students. AI has the potential to provide personalized learning experiences, aid in grading and data analysis, and offer new opportunities for teaching and learning. However, there are also concerns about the potential drawbacks of using AI in education, such as bias and errors, and the possibility of reducing student engagement and critical thinking skills. This paper will examine the use of AI in education and the surveying profession, with a focus on the benefits, disadvantages, and potential implications for student learning. The paper will also explore how AI can be incorporated into the educational sector of surveying and geospatial, including the use of AI videos, resources, and diagrams to enhance teaching delivery. Finally, the paper will discuss the best model to influence and include AI into delivery from a teacher's point of view, and the importance of involving teachers in the development and implementation of AI in education.

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1. How AI is and can be used in the educational sector to benefit Teachers and Student

Artificial intelligence (AI) has become a hot topic in the field of education. It has opened up new opportunities for teachers and students to access customized learning experiences, improve grading and data analysis, and provide new tools and resources for teaching and learning. This paper will examine how AI is being used in the educational sector to benefit both teachers and students.

One of the most significant benefits of AI in education is personalized learning. AI-powered algorithms can analyze student data to provide customized learning experiences that address their unique strengths and weaknesses. This can help students to learn at their own pace and level, increasing their motivation and engagement in the learning process. Additionally, AI-powered platforms can provide real-time feedback, enabling students to track their progress and adjust their learning strategies accordingly.

AI is also changing the way teachers grade assignments and assess student progress. AI-powered grading systems can help teachers to save time and improve the accuracy and consistency of grading. Additionally, AI-powered data analysis tools can help teachers to identify areas where students are struggling and provide targeted support and resources.

Another benefit of AI in education is the ability to create new teaching and learning resources. AI-powered chatbots, virtual assistants, and interactive simulations can provide students with a more engaging and interactive learning experience. This can help to improve student engagement and retention of information, as well as providing a more accessible and inclusive learning environment for students with disabilities or language barriers.

Despite the many benefits of AI in education, there are also potential drawbacks to consider. One of the most significant concerns is the potential for bias and errors in AI-powered systems. This can have serious consequences for students, particularly those from underrepresented groups. Additionally, there is the risk that AI may reinforce existing inequalities and perpetuate stereotypes.

Another concern is whether AI will make students less knowledgeable. While AI can provide students with answers, it is still up to the students to interpret and understand the information provided. Students must still engage with the learning process and develop critical thinking skills to become knowledgeable.

The impact of AI on students' knowledge depends on how it is implemented in education. AI has the potential to enhance learning and improve knowledge retention in many ways, such as providing personalized learning experiences, automating routine tasks, and providing instant feedback. However, there are concerns that AI could also have negative effects on students' knowledge, such as reducing their ability to think critically, diminishing their motivation to learn, and creating a dependence on technology.

Potentially, AI could make students less knowledgeable if it is used as a substitute for human teachers. If students rely solely on AI for instruction, they may miss out on the benefits of human interaction, such as personalized guidance, emotional support, and the opportunity to ask questions and receive feedback. Additionally, AI may lack the ability to understand the nuance and complexity of certain subjects, leading to a more superficial understanding of concepts.

Another concern is that AI could lead to a "one-size-fits-all" approach to education, where all students are taught the same way and at the same pace, regardless of their individual needs and learning styles. This could result in some students falling behind or becoming disengaged from the learning process, ultimately reducing their knowledge and skill acquisition.

However, if AI is used as a tool to augment human teaching and provide personalized learning experiences, it could enhance students' knowledge and understanding of a subject. For example, AI could be used to analyze student data and identify areas where they need additional support or challenges. It could also provide real-time feedback on assignments and quizzes, helping students to identify and correct mistakes more quickly.

Overall, the impact of AI on students' knowledge will depend on how it is implemented in education. If AI is used thoughtfully and in conjunction with human teaching, it has the potential to enhance students' knowledge and understanding of a subject. However, if it is used as a substitute for human teachers or in a one-size-fits-all approach, it could have negative consequences for students' knowledge and overall learning experience.

Another challenge is how to monitor students using AI without infringing on their privacy and autonomy. While AI can be used to monitor student progress and engagement, it is important to consider the ethical implications of such monitoring and ensure that students are aware of how their data is being used.

AI is also changing the way surveying and geospatial education is delivered. AI-powered tools can help to visualize and analyze data in new ways, providing students with a more engaging and interactive learning experience. Additionally, AI-powered simulations and virtual reality environments can provide students with hands-on learning opportunities that are difficult to replicate in traditional classroom settings.

To effectively incorporate AI into education, it is important to involve teachers in the development and implementation of AI-powered tools and resources. Teachers should be

provided with training and support to effectively incorporate AI into their teaching, and they should use AI as a supplement to their teaching rather than a replacement. Additionally, it is important to ensure that AI-powered tools and resources are accessible and inclusive for all students, regardless of their background or abilities.

While the use of artificial intelligence (AI) in education has many potential benefits, it is important to consider the potential disadvantages and challenges that may arise from its use. In this paper, we will examine some of the main disadvantages of using AI in education.

One of the primary concerns with the use of AI in education is the potential for bias and errors. AI-powered systems are only as accurate as the data they are trained on, and if the data is biased or incomplete, then the AI system will reflect those biases. This can have serious consequences for students, particularly those from underrepresented groups. For example, an AI system may incorrectly identify students of color as being less intelligent than their white counterparts or may reinforce gender stereotypes.

Another disadvantage of using AI in education is the potential for it to replace human interaction and feedback. While AI-powered systems can provide personalized learning experiences and feedback, they cannot replace the value of human interaction and feedback. The emotional support and encouragement provided by teachers and peers are essential to student motivation and engagement. Therefore, AI should be used as a supplement to human interaction rather than a replacement.

AI can also be expensive to implement and maintain, particularly for smaller schools and institutions. The cost of developing and implementing AI-powered systems can be significant, and ongoing maintenance and updates may also be required. This can make it difficult for smaller schools and institutions to keep up with the latest technological advancements in education.

Another concern is the potential impact of AI on student engagement and critical thinking skills. While AI can provide students with answers, it is still up to the students to interpret and understand the information provided. Students must still engage with the learning process and develop critical thinking skills to become knowledgeable. Overreliance on AI may lead to a decrease in student engagement and critical thinking skills, which could have negative long-term effects on their education and career prospects.

Privacy and security concerns are also a significant disadvantage of using AI in education. The use of AI may require the collection and storage of large amounts of student data, which raises concerns about the privacy and security of that data. The risk of data breaches and misuse of student data is a significant concern that must be addressed to ensure that student privacy is protected.

Finally, there is the risk that AI may perpetuate inequalities and reinforce existing power structures. The use of AI in education may lead to the further marginalization of

underrepresented groups if the AI systems are biased or fail to consider the unique needs and experiences of these groups. Additionally, the use of AI may reinforce existing power structures and inequalities by providing greater benefits to those who already have access to education and technology.

2 Will AI make students less knowledgeable?

The rapid advancement of artificial intelligence (AI) has raised concerns about its impact on education. One such concern is whether AI will make students less knowledgeable. This question has important implications for the future of education, as well as for society at large.

On the one hand, it could be argued that AI has the potential to make students more knowledgeable. AI systems can process and analyze vast amounts of data much faster than humans can, allowing students to access a wealth of information and insights that would have been impossible to obtain otherwise. AI-powered tools such as language translators and speech recognition software can also help students overcome language barriers and communicate more effectively.

Furthermore, AI can be used to personalize learning experiences for students. By analyzing data on a student's performance and behavior, AI algorithms can adapt learning materials and activities to the student's individual needs and preferences. This can help students learn more effectively and efficiently and can also help them stay engaged and motivated.

However, there are also concerns that AI could have negative effects on students' knowledge. One concern is that students may become overly reliant on AI systems and may fail to develop critical thinking and problem-solving skills. If students are always given answers by AI systems, they may not learn how to think creatively and independently, or how to evaluate information and make informed decisions.

Another concern is that AI systems may perpetuate biases and inequalities in education. AI algorithms are only as unbiased as the data they are trained on, and if the data reflects societal biases and inequalities, the algorithms may perpetuate these biases in their recommendations and decisions. For example, an AI-powered learning system might recommend different educational pathways to students based on their race or gender, rather than their actual abilities and interests.

There is also a risk that AI systems may reduce the quality of education by replacing human teachers and educators. While AI can provide valuable support and assistance, it cannot replace the human touch and empathy that are essential for effective teaching and learning. Moreover, AI systems may lack the cultural and emotional intelligence that is necessary to connect with and understand students from diverse backgrounds.

To mitigate these concerns, it is important to ensure that AI systems are designed and used in an ethical and responsible manner. This means that AI systems should be transparent and

explainable, so that students and educators can understand how they work and how they make decisions. AI systems should also be designed to avoid bias and discrimination and should be regularly audited and evaluated to ensure that they are not perpetuating existing inequalities.

In addition, it is important to recognize the limitations of AI and to use it in conjunction with human teachers and educators. AI can provide valuable support and assistance, but it cannot replace the expertise and experience of human teachers. By working together with AI, teachers and educators can provide students with a more personalized and effective learning experience.

3 Benefits and concerns from Monitoring students using AI

In Monitoring students using AI is a growing trend in education that has generated both enthusiasm and concern. While there are clear benefits to using AI to monitor students, there are also concerns that need to be addressed to ensure that this technology is used ethically and responsibly.

Personalised Learning: One of the most significant benefits of monitoring students using AI is the ability to provide personalized learning experiences. By collecting data on student behavior and performance, AI can help educators tailor their teaching approach to the specific needs of individual students.

Early Intervention: AI can help identify struggling students early on, allowing educators to intervene and provide additional support before problems become more severe. This can help prevent students from falling behind and increase their chances of success.

Efficiency: AI can automate certain tasks, such as grading, allowing educators to focus on other important aspects of teaching, such as lesson planning and student support. This can improve the efficiency of education and free up time for more meaningful interactions between students and educators.

Accountability: AI can help educators evaluate their own effectiveness by providing real-time feedback on student progress. It can also help administrators evaluate the effectiveness of educational programs and make data-driven decisions.

Safety: AI can help identify potential safety risks, such as bullying or self-harm, and alert educators so that they can intervene and provide support.

Concerns with Monitoring Students Using AI:

Privacy: One of the biggest concerns with monitoring students using AI is the potential violation of privacy. The collection and use of sensitive data raises important questions about how that data will be protected and who will have access to it.

Bias: There is a risk that AI systems will perpetuate existing biases and inequalities, potentially reinforcing and amplifying discriminatory practices.

Over-reliance on Technology: There is a concern that the use of AI could lead to an over-reliance on technology, which may limit personal interactions between students and educators and reduce opportunities for human connection and empathy.

Ethics: There are concerns about the ethical implications of using AI to monitor students, including the potential for abuse or misuse of the technology, and the potential impact on students' psychological well-being.

Quality of Data: There is a risk that the data collected by AI systems will be incomplete or inaccurate, leading to flawed conclusions and potentially harmful interventions. depend on the degree to which they are used thoughtfully and in ways that support student learning and success.

4 Incorporating AI into the educational sector of Surveying and Geospatial:

AI can be incorporated into the delivery of surveying and geospatial education through videos, resources, and diagrams. This can provide students with a more interactive and engaging learning experience. Teachers can use AI to supplement their teaching and provide students with additional support and resources.

Artificial Intelligence (AI) has become increasingly popular in various industries, including education. It has the potential to revolutionize the way we learn, particularly in the field of surveying and geospatial education. AI can be incorporated into the delivery of surveying and geospatial education through videos, resources, and diagrams. This can provide students with a more interactive and engaging learning experience. Teachers can use AI to supplement their teaching and provide students with additional support and resources.

One way AI can be incorporated into surveying and geospatial education is through videos. Videos can be used to demonstrate practical applications of the concepts learned in class. For example, students can watch a video of a surveyor conducting a field survey to understand how the concepts they learned in class are applied in the real world. Videos can also be used to show the process of creating maps and spatial data.

Another way AI can be incorporated into surveying and geospatial education is through resources. AI-powered resources can provide students with personalized learning experiences. For example, students can use AI-powered learning platforms that adapt to their learning style and pace. These resources can also provide instant feedback and recommendations to help students improve their understanding of the concepts.

Finally, diagrams can also be used to incorporate AI into surveying and geospatial education. Diagrams can be created using AI-powered software that can show complex data and relationships between spatial objects. This can help students visualize and understand complex concepts.

Using AI in surveying and geospatial education can provide students with a more interactive and engaging learning experience. It can also help teachers supplement their teaching and provide students with additional support and resources. For example, teachers can use AI-powered software to create quizzes and assessments that provide instant feedback to students. This can help students understand where they need to improve their understanding of the concepts.

Moreover, AI-powered software can help teachers create personalized learning experiences for their students. For example, teachers can use AI-powered learning platforms to provide students with resources that are tailored to their learning style and pace. This can help students learn at their own pace and improve their understanding of the concepts.

Overall, the use of AI to monitor students has the potential to be a valuable tool for educators, but it is essential that these systems are used ethically and responsibly. Educators must take care to ensure that the benefits of AI are balanced against the potential risks and that the privacy and well-being of students are protected. Ultimately, the success of these systems will depend on the degree to which they are used thoughtfully and in ways that support student learning and success.

5 The best model to influence and include AI into delivery from a teacher point of view:

As AI continues to advance, the potential for its integration into education delivery has become more apparent. From providing personalized learning experiences to automating administrative tasks, AI has the potential to transform education delivery. However, integrating AI into delivery from a teacher's point of view requires careful consideration to ensure that AI enhances the educational experience rather than replacing it. Here are some considerations that could help identify the best model to influence and include AI into delivery from a teacher's point of view.

First, it is important to understand that AI can enhance the teacher's role in education delivery. By automating certain administrative tasks, such as grading and record keeping, teachers can focus on delivering quality instruction to their students. AI can also provide teachers with data-driven insights into student performance, which can help them identify areas where students need more support and tailor their instruction accordingly.

Second, the implementation of AI should be done in a way that enhances the student learning experience. One way to achieve this is by using AI to personalize learning. With AI-powered adaptive learning systems, students can receive customized instruction based on their individual needs and learning styles. This approach can help to improve student engagement, retention, and academic outcomes.

Third, the integration of AI should be done in a way that is transparent and ethical. Teachers must be able to understand how AI systems work and how they are making decisions about student learning. This understanding can help teachers to ensure that AI is being used ethically and that students are being treated fairly.

Fourth, collaboration between teachers and AI is essential to successful integration. AI can provide teachers with insights into student learning that they may not otherwise have access to. However, it is up to teachers to interpret these insights and make decisions about how to respond to them. Teachers must be trained to effectively use AI tools and integrate them into their instruction.

Finally, the use of AI in education delivery should be continually evaluated and refined. As with any technology, there will be limitations and unintended consequences that arise with the use of AI. Teachers must be willing to evaluate the impact of AI on student learning and make adjustments as necessary.

In conclusion, AI has the potential to revolutionize the education sector by providing personalized learning experiences, improving grading and data analysis, and creating new tools and resources for teaching and learning. To effectively incorporate AI into education, it is important to involve teachers in the process and ensure that it is used as a supplement to their teaching rather than a replacement. Additionally, it is important to ensure that AI-powered tools and resources are accessible and inclusive for all students. While the use of AI in education has many potential benefits, it is important to consider the potential disadvantages and challenges that may arise from its use. The potential for bias and errors, the cost of implementation and maintenance, the impact on student engagement and critical thinking skills, privacy and security concerns, and the risk of perpetuating inequalities and reinforcing power structures are all significant concerns that must be addressed. To effectively use AI in education, it is important to consider these potential drawbacks and work to develop AI-powered systems that are accurate, accessible, inclusive, and ethical. Additionally, AI should be used as a supplement to human interaction and feedback rather than a replacement, to ensure that students receive the emotional support and encouragement that are essential to their education and wellbeing. The question of whether AI will make students less knowledgeable is complex and multifaceted. While AI has the potential to enhance students' knowledge and learning experiences, there are also concerns that it could have negative effects on students' critical thinking skills and perpetuate biases and inequalities in education. To ensure that AI is used in an ethical and responsible manner, it is important to design and use AI systems in conjunction with human teachers and educators, and to regularly audit and evaluate their performance. With the incorporation of AI into surveying and geospatial

education in various ways, including videos, resources, and diagrams, provide students with a more interactive and engaging learning experience, as well as provide teachers with additional support and resources to supplement their teaching. The integration of AI in the educational sector of surveying and geospatial can provide students with personalized learning experiences that can help them learn and understand complex concepts. The best model to influence and include AI into delivery from a teacher's point of view is one that enhances the teacher's role in education delivery, enhances the student learning experience, is transparent and ethical, promotes collaboration between teachers and AI, and is continually evaluated and refined. By taking these considerations into account, teachers can ensure that AI is used to enhance, rather than replace, the educational experience.

REFERENCES

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BIOGRAPHICAL NOTES

Peta Cox is the National Training and Development Manager at the Association of Consulting Surveyors in Australia. As the peak body representing nearly 500 businesses they exist to promote, represent and support surveyors and their businesses across Australia. Their strategic goals are to:

1. Encourage and grow membership nationally
2. Expand training and support to meet the needs of the surveying profession across Australia
3. Be the voice for surveyors on a national level
4. Build a structure for a sustainable future for the surveying industry across Australia

Peta is a qualified Engineering/Technical Surveyor and Professional Educator who holds a Bachelor in Adult Education and Training (Training and Assessment). Peta has been in the Surveying industry for 28 years. Her passion for educating the next generation has led to her position in developing the first private Vocational Courses delivered across Australia in a holistic delivery mode of online teacher led theory learning, complimented with Practical on the job (work-based) learning incorporating mentorship from supervising surveyors. The Surveyors Academy is providing vocational qualifications to those who normally would not have access to traditional college learning.

CONTACTS

Mrs Peta Cox
Association of Consulting Surveyors
Level 12, 49-51 York Street
Sydney, New South Wales, 2000
AUSTRALIA

Tel. +61 409 814 407

Email: training@consultingsurveyors.com.au

Web site: www.consultingsurveyors.com.au

Kate Fairlie - contributor

Land Administration Specialist at Land Equity International

Tel. +61 444 542 452

Email: kfaitlie@landequity.com.au