AI Research

Introduction: 1

Artificial Intelligence also known as AI is changing education in many types of ways, good and bad. It can help personalized learning and make teacher's jobs a lot more easier by automating tasks for them. But, using AI in schools also can bring up some big ethical concerns. Many AI tools are being used without proper rules, which can be pretty risky for students, teachers, and even education institutions as a whole.

AI can also make inequalities worse. Schools with fewer resources might not get access to these advanced technologies, creating a bigger gap between students and education. There are also concerns about data privacy, as AI do collect lot's of personal information from students to be able to create lessons for them.

Introduction: 2

Stefania Giannini from UNESCO says in an article titled Use of AI in Education: Deciding on the Future we want that while AI can improve learning, it can also raise important questions about how much it truly can help and should be involved in discussions and assessments for the students (Giannini, 2024). She emphasizes that technology isn't neutral and must be guided by human values not robots (Giannini, 2024). This means educators and policymakers need to ensure that AI is used fairly and ethically, with humans watching over it for the safety of students, teachers, and education (Giannini, 2024)

AI can be either good or bad depending on the factors you include with it. Here are some benefits from an article.

Introduction:3

Benefits of AI and Education:

From a scholarly article titled Transforming Education Through AI Benefits Risks and Ethical Considerations by Budee U Iu Zaman, he talks about some of the benefits of AI and education that are true...

"Increased Efficiency" (Zaman, 2024)
"Improved Feedback" (Zaman, 2024)
"Better Accessibility" (Zaman, 2024)
"Teacher Roles" (Zaman, 2024)

Introduction: 4

Though he mentioned that "AI algorithms are only as good as the data they are trained on" (Zaman, 2024). This means that AI is made by humans and are only good at a certain point. In summary AI usage in education settings can be either a positive impact or a negative impact depending on what side you are looking at.

Tavani's 3-Step Analysis

Ethical Issue 1 (Privacy Concerns):

The use of AI tools in education often means collecting a lot of personal data about students, which can raise multiple privacy concerns. The University of Iowa blog article titled The role of AI in Modern Education suggested that "...educators should ensure transparency by informing students and parents about the data collected and seeking consent before using AI tools" (Iowa, 2024). Similarly, in an article titled The Future of Learning: How AI is Revolutionizing Education 4.0 by Tanya Milberg, she recommends designing AI systems with a focus on fairness, which would include protecting student data and also ensuring privacy at the same time (Milberg, 2024).

Case Study 1:

The case study that was founded was written by Princeton University students. It is titled Optimizing School: Case Study 3. The case study examines how Minerva administrators and Hephaestats utilize AI to help lower student dropout rates. They claim though their AI interventions are justified by just positive outcomes. However, significant privacy concerns do arise with this: "If all these means must be evaluated independently of the ends they're used to bring about, it may be very difficult to evaluate the permissibility of different actions" (Princeton, 2024). The core ethical dilemma is whether "...ends may justify the means," especially when handling any type of sensitive student data, which brings up ethical issues with privacy concerns needing the right informed consent and privacy (Princeton, 2024).

Ethical Issue 2 (Bias and Fairness):

AI systems can sometimes continue or even make worse with the biases found in their training data, leading to many unfair results. The University of Iowa suggests that educators should "...use AI tools that have been rigorously tested for fairness" and try to include "diverse perspectives" when developing AI (Iowa, 2024). Milberg also says that AI should be designed to address disparities among different groups to prevent making any type of inequalities worse (Milberg, 2024).

Case Study 2-3:

An scholarly article titled FairAIED: Navigating Fairness, Bias, and Ethics in Educational AI Applications by Sribala Vidyadhari Chinta, Zichong Wang, Zhipeng Yin, Nhat Hoang, Matthew Gonzalez, and Tai Le Quy goes on to talk about two case studies that were done that are based on biases shown from using AI. They two case studies were student assessment and gradin, and then admissions and recruitment specifically in college.

For student assessment and grading, AI systems are used to help grade essays. They aim to be more "...consistent, objective, and efficient evaluations.." (Sribala et al., 2024). However, these systems have shown bias, giving lower scores to essays written by Black students compared to similar essays written by White students. To fix this, they suggested to adjust the data before and after processing to help correct bias on students (Sribala et al., 2024).

In college admissions, AI is used to make unbiased decisions. But, these AI models have shown many biases, including identifying gender and income from essays, which indicated socioeconomic and gender biases towards students. To reduce these biases, they recommended to use diverse datasets to help solve this problem (Sribala et al., 2024).

Ethical Issue 3 (Equity and Access):

AI tools can also cause the digital divide to become bigger if everyone can not use the technology due to financial reasons or not knowing how to use it. The University of Iowa says that "Schools should strive to provide equitable access to AI resources and offer training for both students and teachers to ensure everyone can benefit.." (Iowa, 2024). Milberg also points out that making sure there is "Economic viability and access to AI-learning opportunities for all learners" which is important to prevent any type of new gaps in education (Milberg, 2024).2024).

Ethical Problem 1: Description & Analysis

Ethical Problem:

A major ethical concern with the use of AI in education is the potential risk of student privacy. AI tools would typically require using extensive data, including demographic information and detailed academic performance records from students to operate effectively. if this data is not managed properly, it can result in significant privacy breaches.

Context:

AI can change education by making learning more personal for many. it can adjust lessons for each student and also handle many types of admin tasks, giving teachers more time to teach. But as AI tools are used more in schools, they are gathering and using a lot of students informations. As noted in the Iowa's blog, AI systems "...collect and process large amounts of data..." which raises huge privacy concerns (Iowa, 2024).

Stakeholders:

Students: They are the ones who are most affected because their both their personal and academic information might be getting exposed or misused.

Educators: They have the duty of manage and protect student data while using all the different types of AI tools.

Parents & Guardians: They worry about the safety and proper use for their children's information.

Technology Companies (AI Developers): They create the AI tools and they must make sure their products protect privacy the legal way.

Policymakers: They set all the rules for how AI can be used in education and how data should be protected for these students.

Potential Winners:

Students: They gain from customized learning experiences from AI, as long as their data remains secure.

Educators: They can use AI to enhance teaching efficiency while then also ensuring privacy.

Potential Losers:

Students: They may suffer from privacy breaches, which leads to lasting impacts for them.

Educational Institutions: They may encounter legal issues due to data breaches.

Ethical Values:

Privacy: Ensuring the protection of student's data with a strong emphasis on privacy and accessibility in AI tools is very important for them (Milberg, 2024).

Transparency: Schools must always clearly inform students and parents about the data being collected and how it will be used for safety.

Trust: Maintaining transparency in AI systems is very important to build and sustain trust among students, teachers, and parents.

Ethical Conflicts:

Personalization VS Privacy: The ability of AI to offer personalized learning experiences with really conflict with the need to safeguard students. Milberg mentioned "AI will never replace high-quality, human-led pedagogy"

Data Use VS Informed Consent: Schools do not often fully disclose their data collection practices, which leads to concerns about whether proper consent is obtained for the students. Iowa's blog stated "Educators should be aware of these biases and seek the use AI tools that have been rigorously tested for fairness. This shows the importance of consent and ethical data use within that for the students and even parents.

Security VS Innovation: The rapid pace of AI innovation can sometimes prioritize efficiency over data security unfortunately, increasing the risk of student information being misused. Milberg mentioned that "...AI-enabled educational innovations must prioritize equity in their design" and must help bridge the digital divide to help protect students data (Milberg, 2024).

Ethical Problem 2: Description & Analysis

Context:

AI is increasingly being integrated everywhere into educational systems, from grading tools to even personalized learning platforms for students. However, these systems can be influenced by biases being present in their training data. If the data reflects on societal inequalities, AI could potentially be bias related to race, gender, or even socioeconomic status on students, which could lead to unfair educational outcome.

Stakeholders:

Students: They are at risk of being unfairly evaluated or overlooked due to AI systems being biased.

Teachers: They may depend on biased AI tools for being able to make decisions, which could potentially affect their teaching practices and student assessments.

Educational Institutions: Schools could face the challenge of using AI systems that may not be tested for fairness, which could result in bad outcomes.

Technology Companies (AI Developers): They are tasked with creating AI systems that prioritize fairness and minimize bias at the same time.

Potential Winners:

Students (if systems are fair): AI can help enhance personalized learning, offering a better educational experience that address all students needs.

Educational Institutions (if AI is used ethically): Schools can help increase efficiency and effectiveness by utilizing AI for all assessments and personalized learning goals for their students.

AI Developers (If their AI is used correctly): They could gain a lot of profit from letting educational institutions use their AI to help students.

Potential Losers:

Students (If systems are biased): Biased AI could potentially lead to inaccurate evaluations and missed opportunities for certain student groups, which can worsen educational inequalities for them.

Teachers (If AI misguides them): Teachers might unknowingly rely on a biased AI tool, which can negatively impact their instructional decision and their students outcomes.

Ethical Values:

Fairness: AI should always ensure equal treatment for all students. As highlight by Iowa's blog "...AI systems can inherit biases from their training data, leading to unfair or discriminatory outcomes (Milberg, 2024).

Transparency: Educational institutions must always provide clear information about how AI tools are going to operate, how data it utilized, and the steps taken to prevent biases.

Accountability: Developers are always responsible for testing and refining AI systems to ensure fairness and prevent any type of discriminatory outcomes for students.

Ethical Conflicts:

Bias VS Fairness: AI tools can sometimes continue the biases found in data they learn from. What was mentioned above as the University of Iowa blog says, "AI systems inherit biases from their training data, leading to unfair or discriminatory outcomes" (Iowa, 2024).

Data Bias VS Inclusive Design: AI can help improve learning opportunities for students, but it might also make the digital divide even bigger. Without fair access to AI tools, some students could be left behind from others, increasing educational inequalities. Milberg warns that "...AI-enabled educational innovations must prioritize equity in their design." (Milberg, 2024). This ensures that all students can benefit.

Ethical Problem 3: Description & Analysis

Context:

Its true that AI in education offers great personalized learning experiences, but not all students have the same access to these types of tools. Factors such as socioeconomic status, geographic location, and even insufficient infrastructure can create major obstacles to equal access for students, potentially worsening existing inequalities for these students.

Stakeholders:

Students: Those from lower-income backgrounds or underserved communities might not have even access to the devices or internet connectivity they need to use AI, which can limit their educational opportunities that other students may have.

Educational Institutions: Schools need to make sure that all students, no matter what their backgrounds are, have equal access to AI tools and resources.

Governments and Policymakers: They are the ones responsible for creating policies that ensure that everyone has equitable access to AI in education.

AI Developers: They need to be able to design AI tools that can be used by everyone, even places that have limited resources or money.

Potential Winners:

Students with fair access: AI can provide many adaptive learning experiences, which can significantly enhance great outcomes, especially in under-resourced settings possibly.

Educational Institutions: Schools that adopt to equitable AI systems can see improved student engagement and performance, they could also spend less money on teachers.

Potential Losers

Students without access: Those who lack reliable internet or lives in a low-income household may be left behind if AI tools are not accessible to them.

Low-income communities: The digital divide may increase if educational resources are not distributed equitably.

Ethical Values:

Equity: AI should be made to give every student the same chances. Milberg says "...addressing disparities between genders, public and private schools, as well as catering to children with diverse abilities and learning styles, while removing language and access barriers" (Milberg, 2024).

Access: It's important that all students can use AI tools. If someone don't have access to the technology, it can create even more gaps and a worsened Digital Divide.

Ethical Conflicts:

Access VS Equity: AI tools can help with personalized learning, but only if everyone can use them. Milburg warns that AI might make inequalities worse if it's not fair, especially in underfunded schools.

Innovation VS Disparities: As AI technology is increasing and getting better quickly, there's risks that It won't consider what students can actually access it.

Utilitarianism: 1

Utilitarianism is all about creating the most happiness for most people. An action is good if it benefits the most of the people. When we think about AI in education, this means looking at how AI can help-like making learning more personalized for all students, efficient, and effective-while also considering any downsides that come with it, such as privacy issues or any type of unfair biases in the algorithms which can happen.

Utilitarianism:

We will be applying utilitarianism to the three different ethical problems:

1. Privacy and Data Security: From a utilitarian viewpoint, using AI to collect and study student data can make learning more personalized for all, helping many students. But this truly depends on keeping the data safe at the same time. If the benefits to education are big, they might actually worth the privacy risks. Still, as the a scholarly article titled Unveiling The Shadows: Beyond The Hype of AI in Education by Abdulrahman M Al-Zahrani said "Data Privacy and Security Concerns" are important in using AI in schools, where the data misuse could harm students instead (Al- Zahrani, 2024). A utilitarian view might support data collection if it would help a lot of students, but it would need strong protections to make sure privacy problems don't outweighs the benefits for the students.

Utilitarianism: 2

2. Bias and Fairness: Utilitarianism would support AI systems to remove bias and promote fairness since this would help most students by giving everyone equal chances for AI use. But if AI systems accidentally continue discrimination-like favoring for more privileged students it could cause a lot of harm by more being unfair. As Al-Zahrani points out "...algorithmic bias and discrimination against marginalized student groups in education" (Al-Zahrani, 2024). A utilitarian approach would aim to fix these biases to make things fair and reduce any type of harm for these students, but it might struggle though with understanding the full impact of algorithmic discrimination as you can't get rid of it completely.

Utilitarianism: 3

3. Equity and Access: Utilitarianism might support using AI in education because it can also help many students by giving them good resources to succeed, especially in place that needs it the most. But there's risks that students without access to technology could potentially fall behind even more than they are. Al-Zahrani mentions that "Unequal access to AI resources could exacerbate educational inequalities between privileged and disadvantaged students" (Al-Zahrani, 2024). In these types of cases, utilitarianism might find it had to support AI if it makes things more unfair for most students.

Deontology: 1

Deontology is a huge ethical system that values duty, rules, and moral principles above the results of actions. It states that an action is right if it follows the rules or duties, regardless of what happens as a outcome. This approach focuses on respecting people's rights, ensuring fairness, while also keeping moral integrity.

Deontology: 2

We will be applying deontology to the three ethical problems:

1. Privacy and Data Security: From a deontological perspective, respecting student's privacy is an important fundamental duty, no matter the potential benefits that comes with AI. AI systems should always follow strict data protection rules no matter what, and collecting student data without proper consent or safeguard is morally unacceptable and should not happen. As Al-Zahrani notes, "Data Privacy and Security Concerns" must be managed with strong ethical guidelines to ensure that all individual students rights are protected (Al-Zahrani, 2024).

Deontology: 3

2. Bias and Fairness: In a deontological standpoint, AI systems should always be built to ensure fairness and equality for all students, avoiding any type of discriminatory practices. Creating or using biased AI systems is morally wrong of course, regardless of any type of potential efficiency gains. As Al-Zahrani states, addressing AI's "...algorithmic bias..." is essential to guarantee that all students receive all equal treatments (Al-Zahrani, 2024).

Deontology: 4

3. Equity and Access: Again from a deontological perspective, it is a moral obligation to always guarantee that all students have equal access to educational resources, including AI tools. Discriminating against students based on their "technological access" mixes on their right to equal educational opportunities in all. As Al-Zahrani highlights, the "...Technological Divide..." must be bridged to ensure AI benefits everyone, not just the rich and privileged students.

Rawlsian Justice : 1

We will by applying Rawlsian Justice to the three ethical problems:

1. Privacy and Data Security: According to Rawls, privacy is a important fundamental right, and any AI system that undermines student's privacy would be morally wrong. Furthermore, the difference principle requires that AI systems be designed to safeguard the most vulnerable students, who are at a greater risk of privacy breach. Addressing "Data Privacy and Security Concerns" is important to protect those students who are least capable of defending themselves, as noted by Al-Zahrani (2024).

Rawlsian Justice : 2

2. Bias and Fairness: Under Rawlisan justice, AI systems should always be designed to help aid the least advantaged students. If AI continues bias against these marginalized groups, it then breaches the principle of justice by not benefiting the least well-off ones. Rawls would support algorithmic fairness and transparency to ensure AI systems do not at all worsen social inequalities. Al-Zahrani emphasizes the importance of addressing "...algorithmic bias..." to prevent any type of bad outcomes (Al-Zahrani, 2024).

Rawlsian Justice : 3

3. Equity and Access: AI should help the least advantaged students. So Rawls would stress the importance of fixing the "...technological divide.." to ensure everyone has fair access to AI (Al-Zahrani, 2024). He also notes that unequal access to AI can potentially increase educational gaps, so its important to have policies that would help provide equal opportunities for all students (Al-Zahrani, 2024).

References:

Scholarly Articles (APA Format)

Al-Zahrani, A. M. (2024). Unveiling the shadows: Beyond the hype of AI in Education. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC11087970/

Ui Zaman, B. U. (2024). Article Page. Retrieved from https://www.preprints.org/manuscript/202407.0859

Vidyadhari, S., Wang, Z., Yin, Z., Hoang, N., Gonzalez, M., & Quy, T. L. (2024). Retrieved from https://arxiv.org/html/2407.18745v1

Popular Articles (APA Format)

The role of AI in modern education. (2024). Retrieved from https://onlineprograms.education.uiowa.edu/blog/role-of-ai-in-modern-education

Milberg, Tanya. (2024). The Future of Learning: AI is Revolutionizing Education 4.0. Retrieved from https://www.weforum.org/stories/2024/04/future-learning-ai-revolutionizing-education-4-0/

Bailey, J. (2024). Ai in Education. Retrieved from https://www.educationnext.org/a-i-in-education-leap-into-new-era-machine-intelligence-carries-risks-challenges-promises/

Giannini, Stefania. (2024). Use of AI in education: Deciding on the future we want. Retrieved from https://www.unesco.org/en/articles/use-ai-education-deciding-future-we-want

Optimizing schools - princeton dialogues on AI and Ethics. (2024b). Retrieved from https://aiethics.princeton.edu/wp-content/uploads/sites/587/2018/10/Princeton-AI-Ethics-Case-Study-3.pdf

ChatGTP for helping to understand the articles better, but thought to note that!

Description

Name: Nadia and Jaylene

Role: Co-Researcher/Co-Designer of Portfolio

Collaboratively investigated the ethical implications of AI and Education.
Wrote the introduction, providing historical context and outlining the paper's purpose together.
Identified and analyzed three key ethical issues related to AI: privacy concerns, bias, and equity/access together.
Applied ethical theories (Utilitarianism, Deontology and Rawlsian Justice) to each identified issue that was found together.
Worked together to draft and polish the paper, ensuring that all sections flowed well.
Reviewed and revised the final paper for clarity, accuracy, and proper citation formatting together.
Jaylene worked the most on the portfolio, and I worked a lot more on the articles. But we both did them together