Instating guidelines for the use of Artificial Intelligence in children's education

UNICEF

Meike Clahsen
President

Forum: United Nations International Children Emergency Fund (UNICEF)

Issue: Instating guidelines for the use of Artificial Intelligence in children's education.

Name: Meike Clahsen

Position: President of UNICEF

Introduction

Artificial Intelligence is developing faster and faster. A child born in the 21st century is guaranteed to come in contact with AI. It is incorporated into newer educational programs; this means that avoiding AI is nearly impossible. The possibilities of AI are beginning to seem endless, which increases the importance of guidelines for the use of AI in children's education.

AI can behold great advancements which can improve the quality of both education and learning. However, it can also form a risk to the well-being of children. A short summary of this: AI will give us the opportunity to enhance the study experience for every individual child and can help them build skills that are essential for the future. It can risk the well-being of children because there is uncertainty about privacy, the possible biases AI may have, and transparency that AI is not able to provide currently.

Guidelines provided by governments can decrease the potential risks that AI may have. There are varying parties that should be involved in instigating these guidelines, due to the importance of them being strong and direct. It is the responsibility of all nations to create guidelines that promote the safe use of AI, and the learning abilities, social skills, and all other essential skills a child may need.

This research report will elaborate on the advantages and disadvantages of AI in children's education, the history of AI in education, and some guidelines that could be formed around AI.

Definition of Key Terms

Artificial Intelligence (AI)

These are systems that are able to perform tasks where human intelligence is required such as translating languages, making decisions, and playing chess.

Chatbots

Chatbots are programs that simulate conversations with human users.

Computer-Assisted Instruction (CAI)

Computer-Assisted Instruction is a teaching process in which a computer is used to enhance the education of a student.

Emotional Intelligence (EI)

Emotional Intelligence is the awareness and understanding of both your own emotions and the emotions of others surrounding you.

Intelligent Tutoring System (ITS)

An Intelligent Tutoring System is an educational software that contains a component of Artificial Intelligence.

Massive Open Online Courses (MOOC)

Massive Open Online Courses are free online courses that are available for everyone. These are often created with Artificial Intelligence.

Natural Language Processing (NLP)

Natural Language Processing is a branch of computer science, also known as the branch of Artificial Intelligence. It takes interest in creating an understanding of text and spoken words in computers.

Virtual assistants

Virtual assistants commonly help with differing administrative tasks, for example reminding people about deadlines, ordering supplies, and arranging travels.

Virtual Reality (VR)

Virtual Reality is an environment created by a computer simulation; the appearance of the VR is often realistic, creating a feeling of immersion for the user.

General Overview

History and Assets

The history of AI in children's education starts with project PLATO, it was the first computer-assisted instruction system. It was created by the University of Illinois, with its release date being in 1960. It created a structure that is still used today. In the 1980s basic education games like ´Reader Rabbit´ and ´Math Blaster´ started to gain popularity. These games were a new innovative way for children to study and improve their math skills and reading skills. The games were basic interactive games, they did not use any aspects of AI yet. In the 1990s natural language processing systems were created, these computers were capable of supporting and manipulating human languages. It analyzed text and speech and used statistics to find the solution. The chess match between Garry Kasparov and Deep Blue of IBM really showed the potential of AI and its actual possible intelligence. This also raised some questions because Deep Blue won from Garry Kasparov.

In the 2000s intelligent tutoring systems were created, these systems created the opportunities for students to receive feedback and customized instruction without the help of teachers. ITS was a demonstration of the possibilities of AI in the field of education. In 2010, ´Dreambox´ and ´Knewton´, two adaptive learning systems, began to flourish. These systems kept track of the mistakes people made and adjusted the assignment to them to fit the individual. Massive open online courses started gaining popularity, and in 2013 MOOC began creating their courses with AI. AI gains its knowledge from a huge amount of data and combines it in a text or other form during generation. It is able to do this in a rapid amount of time, which would not be possible for a human. This is why MOOC began using AI, it creates courses at ease and saves humans a massive amount of time. Duolingo, a different type of ITS, started to gain popularity in 2016.

Duolingo is an application in which the user can learn different languages. It takes note of the mistakes the user makes and adjusts the assignment based on the skills of the user. In 2018 the use of chatbots and virtual assistants started gaining momentum, as at that time it was mainly used for customer service. If someone had a complaint they could message a chatbot, though this was often not helpful due to the bot's misunderstanding of the text and disability to properly answer the question. During the 2020s there was a beginning of the integration of AI in education, and in November, 2022 ChatGPT the well-known chatbot was released. This chatbot was free and anyone could use it, which created some problems in the education system. Students started to ask questions about their assignments to ChatGPT, even asking it to write an entire paper. Schools were

not prepared for this and are currently still struggling with controlling the use of AI. The daily energy use of ChatGPT created some ethical considerations, as the energy that ChatGPT consumes a day is the same amount of energy that is consumed by 33 thousand U.S households a day (Cohan, 2023). In 2023 there have been some advancements in NLP technologies, researchers are striving for more unbiased, fair, and privacy respectful models.

The Concerns

Artificial Intelligence in children's education can enhance both the learning experience and teaching experience. However, AI in education does raise some concern, and these concerns need to be handled with guidelines. By using AI in children's education it is able to collect and store data. This data can be misused, which is why there is a need for great protection measures. The loss of privacy is a danger to children's rights, every child has the right to privacy and if AI endangers that right, it is crucial to instate guidelines for the creation and use of AI. If the use of AI in children's education increases, it will also endanger another children's right: the right to education. Every child deserves the same level of education. Less developed countries do not often use devices with schooling, so that means that some children will not have access to the new AI education which would enhance their performance. This will not create equal opportunities.

As already mentioned above, AI systems are able to have biases, this can manipulate children's learning experience. Education should be equal for every child, so this would not be fair and equitable. Lessons by AI can have an impact on the social skills of children, they will lose face-to-face contact with teachers and possibly peers. This will create a lack of emotional and social development in children, the development of these skills is essential. So, a balance of technological and face-to-face learning should be kept in mind. The great personalization tool of AI can create a lack of skill building, because it can create a learning structure in which some skill aspects are shown less. This means that the child would increase their skill level for one skill, however not increase their skill level for the other skill. This could hinder their development of critical thinking.

The use of AI in children's education can also create a dependence on technology. For example ChatGPT, it can help you write texts. However, this means that a student becomes dependent on that system to make their assignments or learn for their tests. It will hinder their ability to independently solve problems which is a crucial skill for a human living in the society. Another disadvantage of AI is the decrease in creativity, and the ability to adapt to different learning styles and environments. The integration of AI in children's education will require informed parents

Meike Clahsen   UNICEF

and teachers, they need to be informed about how the AI works, they need to be able to help and support the children during the AI assisted learning process.

Conclusion

Artificial intelligence creates more opportunities in education for personalized learning, adaptive learning, language learning, and it can improve accessibility. The use of AI in children's education could change lives if used correctly, children that used to suffer from compromised results by having problems with different teaching methods for studying methods, will now have the ability to show their true capacity. However, the use of AI can include some risks such as privacy concerns, biases in algorithms, it can create equity issues, and it can create overreliance on technology. These risks can be minimized by guidelines, it is the job of UNICEF to make sure that every child has access to fair and equitable education. And the impact that AI could have on children's education with set guidelines is immense.

Timeline of Key Events

Date	Event
1950s-1960s	CAI systems like PLATO are developed
1980s	Basic education games gain popularity
1990s	Emerge of NLPs
1997	Garry Kasparov gets defeated by IBM's Deep Blue
2000s	ITS gains attention
2010s	Dreambox and Knewton begin to flourish
2013	MOOCs incorporate AI
2016	Duolingo gains popularity
2018	The use of chatbots and virtual assistants
2020s	The start of integration of AI in education
November, 2022	Release date ChatGPT
2022	Ethical considerations about AI rise
2023	Continued advancements in NLP

Major Parties Involved

United Nations Educational, Scientific and Cultural Organization (UNESCO)

The United Nations Educational, Scientific and Cultural Organization has been involved with this issue by publishing reports and guidelines that question the impact of AI on education. UNESCO is also known for their collaboration with other NGOs to create a coordinated and inclusive approach to challenges. Currently one of their main priorities is creating guidelines for the safe use of AI in children's education.

Organization for Economic Cooperation and Development (OECD)

The Organization for Economic Cooperation and Development is an organization which strives to create policies for better lives. One of the goals of the OECD is strong education, this connects the OECD to this issue. They are known for their collaboration with countries to write and give advice about policies.

United Nations International Children's Emergency Fund (UNICEF)

The United Nations International Children's Emergency Fund guides the rights of children, this may also involve AI in children's education. They want to create awareness about the possibility of AI undermining the rights of children if not used correctly. UNICEF is open to providing requirements and recommendations to uphold the rights of children for the use of AI in education.

Child Rights International Network (CRIN)

The Child Rights International Network is involved with this issue by their main goal: ´A world where children's rights are recognized (About | CRIN, z.d.).' CRIN recognizes the rights of a child in the digital environment, this also includes an environment with AI. They believe that collaboration is key and they note the importance of transparency. This makes them a major party concerning this issue.

Possible Solutions

International collaboration

Countries and NGO´s can collaborate to create universal guidelines for every culture, legal, and ethical perspective. Additional research and development can also be shared.

Governmental policies

Meike Clahsen   UNICEF

The establishment of clear regulations and policies which outline ethical use of AI in education, and also address any additional concerns such as data, security, and algorithmic transparency.

NGO involvement

The involvement of NGO´s such as UNICEF and UNESCO can have a contribution to the guidelines for AI by providing ethical frameworks, and by ensuring that the guidelines have a child-friendly approach.

Industry standards

Collaboration between developers, industry stakeholders, and educational technology companies can create universal standards for AI and the best practices for AI in children's education.

Research and development

The continuous research and development of AI is essential for the improvement of the guidelines for AI in children's education. There could be extra research on what impact AI has on the development of children, so that new developments are designed to ensure children's well-being.

Ethics committees

The establishment of ethics committees who are dedicated to evaluating the application of AI in children's education can ensure that the technologies align with the ethical principles and the well-being of the children.

Continuous review and adaptation

The guidelines that are created by governments should be adaptable and reviewed often, this will ensure that the guidelines fit the continuous development of AI.

User-friendly resources

The need for handbooks and online materials is growing, this can help create understanding for educators and parents to responsibly navigate the implementation of AI in children's education.

Further Reading

UNICEF: Children and AI. Where are the opportunities and risks?

This document by UNICEF and the World Economic Forum explains the concerns of AI further but also talks about the opportunities that it may behold. Please do keep in mind that this is written by UNICEF, that means that your country does not share the same stance!

https://www.unicef.org/innovation/sites/unicef.org.innovation/files/2018-11/Children%20and%20AI_Short%20Verson%20%283%29.pdf

UNICEF: Artificial Intelligence and Children's Rights

This summary furthermore explains the dangers of AI to children's rights. It explains what children's rights are, what AI is, and AI in education. It also gives recommendations for educators, parents, governments, and corporations. This could increase ideas about any guidelines that could be created around the use of AI in children's education. There is also an ability to read the full report if a delegate feels like more elaboration is needed. Please do keep in mind that this is written by UNICEF, that means that your country does not share the same stance!

https://www.unicef.org/innovation/media/10726/file/Executive%20Summary:%20Memorandum%20on%20Artificial%20Intelligence%20and%20Child%20Rights.pdf

UNICEF: Policy guidance on AI for children

This document gives some requirements for child-centered AI. This can also help a delegate with some ideas for guidelines. Please do keep in mind that this is written by UNICEF, that means that your country does not share the same stance!

https://www.unicef.org/innovation/media/10726/file/Executive%20Summary:%20Memorandum%20on%20Artificial%20Intelligence%20and%20Child%20Rights.pdf

UNESCO: Artificial intelligence in education

This further reading gives more information about the potentials of AI, and UNESCOs plans concerning the future of education including AI. It also introduces UNESCOs development in a framework of Beijing Consensus which focuses on the readiness of education policy makers in artificial intelligence.

https://www.unesco.org/en/digital-education/artificial-intelligence

Britannica EDUCATION: AI in Education: Introduction

Meike Clahsen   UNICEF

This introduction explains the importance of AI in education and it also explains the history of AI a bit more, if the delegate would like more information about that. It also talks about how it is improving education.

https://britannicaeducation.com/blog/ai-in-education/

Harvard University: The History of Artificial Intelligence

If the delegate would like an in-depth explanation of the history of AI in education, they can read this article. It also talks about struggles that were faced during the development and the future of AI.

https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/

Bibliography

Artificial Intelligence Powered MOOCs: A brief survey. (2018, 1 July). IEEE Conference Publication | IEEE Xplore. https://ieeexplore.ieee.org/document/8460059

Cohan, P. (2023, 9 November). As ChatGPT and other AI tools increase energy demand, here's what investors need to know. *Forbes*. https://www.forbes.com/sites/petercohan/2023/11/09/equinix-and-vertiv-stock-prices-could-rise-on-generative-ais-energy-use/

Computer-Assisted Instruction and Reading | Reading Rockets. (z.d.). Reading Rockets. https://www.readingrockets.org/topics/educational-technology/articles/computer-assisted-instruction-and-reading?__cf_chl_rt_tk=srz34JPzW16hLBZ619E_s_XDDvNT2_Kwji0.X3NoDbE-1703970893-0-gaNycGzNDZA

Gold, E. (2023, 5 May). *The history of artificial intelligence from the 1950s to today*. freeCodeCamp.org. https://www.freecodecamp.org/news/the-history-of-ai/

Henry, P. (2023, 30 Oktober). *How Duolingo uses AI to create lessons faster*. Duolingo Blog. https://blog.duolingo.com/large-language-model-duolingo-lessons/

Intelligent Tutoring Systems: Enhancing Learning through AI | The Princeton Review. (z.d.). https://www.princetonreview.com/ai-education/intelligent-tutoring-systems

Introducing ChatGPT. (z.d.). https://openai.com/blog/chatgpt

Nwana, H. S. (1990). Intelligent Tutoring Systems: An Overview. *Artificial Intelligence Review*, *4*(4). https://doi.org/10.1007/bf00168958

Online math & reading programs for students | DreamBox Learning. (z.d.). https://www.dreambox.com/

PLATO-IV system for computer aided instruction. (z.d.). https://ub.fnwi.uva.nl/computermuseum/PLATO.html

Staff, C. (2023, 29 November). *What is artificial intelligence? Definition, uses, and types*. Coursera. https://www.coursera.org/articles/what-is-artificial-intelligence

Unicef NL. (z.d.). *Standpunten - UNICEF*. UNICEF. https://www.unicef.nl/over-unicef/standpunten

What is natural language processing? | IBM. (z.d.). https://www.ibm.com/topics/natural-language-processing

What is natural language processing? | IBM. (z.d.-b). https://www.ibm.com/topics/natural-language-processing#:~:text=Natural%20language%20processing%20(NLP)%20refers,same%20way%20human%20beings%20can.

Yao, D. (2023, 29 November). *25 years ago Today: How Deep Blue vs. Kasparov changed AI forever*. AI Business. https://aibusiness.com/ml/25-years-ago-today-how-deep-blue-vs-kasparov-changed-ai-forever#close%20-modal

https://www.unicef.org/innovation/media/10726/file/Executive%20Summary:%20Memorandum%20on%20Artificial%20Intelligence%20and%20Child%20Rights.pdf

https://www.unicef.org/globalinsight/media/2356/file/UNICEF-Global-Insight-policy-guidance-AI-children-2.0-2021.pdf

https://www.oecd.org/about/

https://www.upwork.com/resources/ai-chatbot-vs-virtual-assistant

https://www.tesl-ej.org/pdf/ej73/m1.pdf

https://www.profijt.nu/wp-content/uploads/2015/09/20150902-White-paper-The-Knewton-Platform.pdf

https://www.google.com/search?q=massive+open+online+courses&rlz=1CAWPBA_enNL997&oq=massive+open+on&gs_lcrp=EgZjaHJvbWUqBwgAEAAYgAQyBwgAEAAYgAQyBggBEEUYOTIHCAIQABiABDIHCAMQABiABDIICAQQQABgWGB4yCAgFEAAYFhgeMggIBhAAGBYYHjIICAcQABgWGB4yCAgIEAAYFhgeMggICRAAGBYYHtIBCDQwODJqMGoxqAIAsAIA&sourceid=chrome&ie=UTF-8&safe=active&ssui=on

https://www.unicef.org/innovation/sites/unicef.org.innovation/files/2018-11/Children%20and%20AI_Short%20Verson%20%283%29.pdf