**Subject: Contribution to the United Nations Report on Artificial Intelligence in Education: BUSE**

I am writing on behalf of Bindura University of Science Education to contribute to your forthcoming report on the human rights-based use of artificial intelligence (AI) in education. We appreciate the opportunity to share our experiences and insights on this important subject and we have compiled the following information based on our university's experiences and observations.

1. *Please provide examples of how AI tools and systems, including generative AI, are used in the education process and related decision-making in your country, organization, or educational institution, with examples of specific software where relevant.*

At Bindura University, AI technology plays a pivotal role in refining teaching strategies, advancing research methodologies, and enhancing student assessments. We have strategically integrated a variety of AI tools that cater to diverse educational needs, supporting our students, faculty, and administrative staff in creating a more engaging and efficient learning environment.

**AI Tools in Use:**

* **Textual Content Creation and Editing:** Tools like Grammarly, Trinka, and Quillbot assist in refining written materials, ensuring clarity and grammatical accuracy. Claude and ChatGPT are employed for generating creative content and facilitating interactive learning experiences.
* **Research and Data Analysis:** Platforms such as Elicit, Connected Papers, and Microsoft CoPilot provide powerful capabilities for conducting sophisticated research and data analysis, helping users synthesize information and visualize connections in academic papers.
* **Project Management and Concept Development:** Tools like Firefly, Read AI, and Pdf gear are integral in managing projects and organizing information. Humata and Scispace offer innovative solutions for brainstorming and developing new concepts collaboratively.
* **Visual Content Creation:** Canva and ChatPDF enable the creation of high-quality visual content, from academic presentations to marketing materials, enhancing educational resources' visual appeal and comprehensibility.

1. *Please provide specific evidence of the known impact of AI tools and systems on learners and teachers and on education systems in general, both positive and negative, and explain how the impact is monitored. For example, how does the use of AI affect:*

*a. persons with special learning needs, learners with different linguistic and cultural backgrounds, women, and girls;*

*b. access to education of populations marginalized or underserved due to ethnicity, socio-economic status, displacement, and other factors;*

*c. human interaction between teachers and students;*

*d. students' and teachers' human rights, privacy, safety, engagement, agency, and critical thinking;*

*e. perpetuation of stereotypes and inequalities;*

*f. the type of information or disinformation that learners and educators are exposed to:*

*g. assessment of learning;*

*h. education management.*

The impact of artificial intelligence (AI) on education in Zimbabwe presents both opportunities and challenges, affecting various groups and aspects of the educational system:

1. **Diverse Learning Needs and Backgrounds:** AI has been instrumental in enhancing inclusivity in education. Technologies like speech recognition, text-to-speech, and language translation services cater to students with disabilities, those facing language barriers, or those with different learning abilities. These tools help make educational content more accessible, thus benefiting learners with special needs and from different linguistic and cultural backgrounds​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200024106/ai-benefits-concerns-in-the-education-sector))​.
2. **Access to Education for Marginalized Populations:** While AI technologies can improve access to education through online and digital platforms, significant challenges remain. A substantial portion of schools in Zimbabwe, especially in rural areas, lacks access to electricity and internet connectivity, which are critical for utilizing AI and digital learning tools. Efforts like the solarization of rural schools by UNICEF are steps toward addressing these disparities​ ([UNICEF](https://www.unicef.org/zimbabwe/stories/re-imagining-education-zimbabwe-collaborative-effort))​.
3. **Human Interaction:** There is a concern that AI might reduce human interaction, which is crucial for empathetic connections and deeper learning. However, proponents argue that AI can free up teachers' time from administrative tasks, allowing them to engage more meaningfully with students​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200025815/impact-of-ai-on-education-in-zim))​.
4. **Rights, Privacy, and Safety:** The use of AI raises significant concerns about privacy and data security, as these technologies often require the collection and analysis of detailed personal data from students. Ensuring the ethical use of AI, maintaining transparency, and safeguarding student data are critical areas needing stringent regulation and oversight​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200024106/ai-benefits-concerns-in-the-education-sector))​.
5. **Perpetuation of Stereotypes and Inequalities:** One of the critical drawbacks of AI in education is the potential reinforcement of existing biases and inequalities. AI systems can inadvertently perpetuate these biases if they are present in the training data or if the design and implementation of these systems do not account for diverse user needs​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200024106/ai-benefits-concerns-in-the-education-sector))​.
6. **Information Quality:** AI can both enhance and undermine the quality of information learners and educators are exposed to. While AI can provide vast amounts of up-to-date information and data-driven insights, there is also a risk of exposure to misinformation if these systems are not properly monitored and managed​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200024106/ai-benefits-concerns-in-the-education-sector))​.
7. **Assessment of Learning:** AI can automate grading and feedback, providing students with timely responses. However, the reliance on automated systems for assessment needs to be balanced with human oversight to ensure fairness and accuracy​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200024106/ai-benefits-concerns-in-the-education-sector))​.
8. **Education Management:** AI supports data-driven decision-making in education management, helping administrators and educators improve educational outcomes through insights generated from large-scale data analysis. This can lead to more tailored educational experiences and interventions​ ([NewsDay Zimbabwe](https://www.newsday.co.zw/theindependent/opinion/article/200024106/ai-benefits-concerns-in-the-education-sector))​.
9. *Please provide examples of legislation, regulations (including codes of conduct or institutional rules) or policies addressing or covering the use of AI in the educational context, including ethical or human rights concerns around AI development and use, data privacy, bias mitigation, transparency, academic integrity, plagiarism and proper attribution. Is due diligence mandated for the use of AI in an educational context'? Do students have clear guidance for citing AI usage?*

* **Institutional AI Policy:**

Our institution has taken a proactive and strategic approach by formulating a comprehensive AI policy, laying a robust foundation for the integration of artificial intelligence across university operations. This policy addresses critical concerns such as academic integrity, AI-assisted plagiarism, and the ethical deployment of AI technologies. It establishes clear guidelines and stringent ethical standards, ensuring that AI tools are used responsibly to enhance academic practices and uphold our institutional values.Importantly, the policy fosters an environment where AI is employed constructively, enhancing both teaching and research while safeguarding fundamental principles of honesty and ethical conduct. The document serves not only as a guide but as a dynamic framework that adapts to ongoing advancements in AI technology, ensuring our institution remains at the forefront of AI ethics and responsible usage.

* **Use of AI detection software tools:**

To ensure academic integrity and address the challenges posed by AI-assisted plagiarism, the university has adopted “Turnitin”, a leading software solution. The tool is specifically designed to detect similarities and potential plagiarism in student submissions, including those that may have been aided by AI technologies. This initiative not only helps uphold our standards of scholarly work but also educates our students about the importance of originality and ethical conduct in their academic pursuits.

1. *Please provide examples of the participation of teachers, parents, students or communities in the development of nationwide or internal regulations addressing the use of AI in education. What has been the feedback from teachers, students and parents? Are there mechanisms in place to solicit such feedback?*

**AI in education Activities**

* **AI Indaba/Symposium:**

Our institution has initiated and hosted a series of workshops engaging school teachers, teachers’, vocational, and polytechnic college leadership and university lecturers on the ethical use of AI in educational settings. These sessions have provided a platform for educators to deepen their understanding of AI technologies, focusing particularly on ethical considerations and best practices.

* **Feedback from AI in education Participants**

The feedback from these workshops has highlighted a clear demand for the development of assessment-focused AI frameworks and the expansion of these educational initiatives to a nationwide audience. Participants expressed the need for comprehensive training programs that not only address the technical aspects of AI but also emphasize its ethical application in assessment and pedagogy. In response to this feedback, we are exploring strategies to broaden the reach of our training programs and to develop AI frameworks that are both ethically sound and effective in enhancing educational assessments.

1. *How does the education system support management staff, teachers and students in understanding how to use AI and how AI works? Please provide examples and /or texts of curricula that address both the technological and - human dimensions of AI competency (both how it works (the techniques and the technologies) and what its impact is on people (on human cognition, privacy, agency).*

Our approach to supporting management staff, lecturers, and students in understanding AI involves comprehensive educational strategies that address both the technical operations and the human implications of artificial intelligence. This includes its construction, functionality, and impacts on cognition, privacy, and autonomy.

Educational Initiatives and Support Programs

* **Professional Development Workshops:** We are committed to enhancing AI literacy across our university. Our workshops for management staff and educators cover essential topics such as basic AI technologies, data analytics, machine learning processes, and the ethical considerations specific to AI usage in higher education.
* **Integration into Curricula:** Our training programs are designed to smoothly manage transitional changes as we integrate AI literacy into our academic offerings. These programs serve as a cornerstone for embedding generative AI education within the curricula of various faculties.
* **Collaborations with Tech Companies:** A dedicated department within our institution focuses on AI and spearheads efforts to forge enduring partnerships with leading AI companies and tech firms. These partnerships are enriching our educational ecosystem with guest lectures, seminars, and potentially co-developed courses. Such collaborations are instrumental in providing practical, hands-on experiences with AI tools and facilitating discussions on real-world applications of AI.

1. *Please provide examples of existing professional development programs for teachers to use AI technologies. What training and support are provided to educators to effectively utilize AI tools in their daily work?*

* **In-House Training for Academic Staff:** Bindura University is actively conducting comprehensive AI training sessions tailored specifically for our administrative and academic staff. These sessions are designed to enhance their proficiency in utilizing AI tools and integrating AI-driven methodologies into their daily workflows, ensuring our institution remains at the forefront of educational innovation.
* **Postgraduate Short Course:** We have launched a pioneering postgraduate short course titled "AI in Education." This dynamic program is crafted to equip educators at all levels — from primary and secondary school teachers to university lecturers throughout Zimbabwe and across the African continent. The course aims to empower participants with the skills to effectively integrate AI into their teaching practices, fostering a more engaging and impactful learning environment.

1. *Please provide examples of policies addressing gaps and inequalities in access to necessary conditions for the use of AI in teaching and learning, for instance, aimed at reducing the digital divide between students with easy access to AI tools at home and those dependent on school resources. What measures are in place to ensure that trustworthy and pedagogically appropriate AI tools and resources are accessible to all students, regardless of their socio-economic background or geographical location?*

**Policies and Initiatives to Bridge the Digital Divide**

* **AI Policy and Strategy Development:**

As highlighted above, our institution has proactively established a comprehensive AI policy and strategy as a foundational step towards integrating artificial intelligence across university operations. This policy is meticulously designed to tackle critical issues such as academic integrity, AI-assisted plagiarism, and the ethical use of AI technologies. By setting clear guidelines and ethical standards, the policy ensures that AI tools are used responsibly and constructively, enhancing the academic environment while safeguarding our core values.

* **Mobile Learning and Offline Solutions:**

Bindura University has taken a bold step towards democratizing access to technology and education by establishing a mobile device manufacturing plant. This ambitious initiative aims to provide all staff and stakeholders with affordable, AI-powered devices, ultimately fostering a more inclusive and technologically advanced learning environment. The project is a strategic step towards closing the digital divide and enhancing the educational experience through state-of-the-art technological empowerment.

**Trustworthy and Ethical Use of AI**

* **Scheduled Staff and Student Training and Support:**

Our dedicated AI unit within our institution provides comprehensive training and ongoing support. The unit ensures that educators and students gain both technical proficiency in AI tools and the pedagogical skills needed to effectively integrate these technologies into their teaching and learning processes. The aim is to enhance the educational experience by enabling all users to utilize AI resources in a way that is inclusive and supportive of every student’s needs.

1. *Please provide examples of state-supported collaboration or partnership between public educational institutions and corporations producing AI tools for education. Does the education system enforce contracts with specific software providers or is there a choice, at which level and is it informed by feedback from teachers, parents and students, as appropriate? How are data sovereignty and localization being addressed in the context of using international or foreign-developed AI tools in education?*

* Currently, while there are no existing collaborations explicitly focused on AI technologies within our public educational facilities, we have initiated partnerships with various public sector entities (including the Ministry of Primary and Secondary Education and the Ministry of Justice, Legal and Parliamentary Affairs). These collaborations are centred on training programs and the development of custom AI tools specifically designed for applications in the partners’ domain fields. We recognize the significant potential AI holds for enhancing educational outcomes and improving operational efficiencies.

In addition to these efforts, we are actively seeking further collaborations and partnerships with leading technology firms and academic institutions specializing in AI. Our aim is to establish a robust framework that not only fosters the innovative use of AI in education but also meticulously addresses vital concerns such as data sovereignty, privacy, and the ethical deployment of AI technologies.

To ensure the success and relevance of our initiatives, we are engaging with educational experts, technology providers, and stakeholders. This consultative approach guarantees that our strategies are comprehensive and reflect the diverse insights and needs of the community we serve.

1. *What are the main challenges encountered during the implementation of AI in education? Have there been any technical, ethical, financial, or regulatory hurdles in deploying AI solutions in the educational context?*

**Technical Hurdles**

* **Infrastructure Deficiencies:** We struggle with basic Information and Communication Technology infrastructure issues, such as inadequate computing resources, limited access to high-speed internet, and frequent power outages, which can hinder the effective deployment of AI systems.
* **Lack of Technical Expertise:** There is a general shortage of local technical expertise in AI and related technologies because the private sector tends to pay more for such expertise. This shortage limits the capacity of universities to develop, implement, and maintain AI systems without external assistance.

**Ethical Hurdles**

* **Bias and Fairness:** AI systems can perpetuate or even exacerbate biases if not carefully designed and monitored. Ensuring that AI solutions are fair and unbiased is crucial, especially in an educational setting where decisions affect students' futures.
* **Privacy Concerns:** Handling sensitive student data, including performance and personal information, raises significant privacy issues. Universities must navigate these concerns ethically and in accordance with best practices to protect individual privacy.

**Financial Hurdles**

* **High Costs:** The deployment of AI technologies can be cost-prohibitive. This includes the expenses associated with acquiring AI software and hardware, training personnel, and ongoing maintenance.
* **Funding Shortages:** Zimbabwean universities often face budget constraints that can make it difficult to prioritize investment in advanced technologies like AI over other critical needs.

**Regulatory Hurdles**

* **Lack of Specific Regulations:** The pace at which AI technology is evolving is faster than the rate at which regulatory frameworks are being developed. There may be a lack of clear regulatory frameworks specifically governing the use of AI in higher education. This can create uncertainty around the legal implications of deploying AI technologies, including issues of compliance with international standards.
* **Intellectual Property Issues:** With the development and use of AI, intellectual property rights become a concern, particularly in collaborative environments involving international partnerships.

1. *Are there any specific areas within education where you see significant potential for AI integration in the future?*

At Bindura University of Science Education, there are several areas where AI could be significantly integrated to enhance both administrative efficiency and academic quality. Here are some key areas to note:

* **Personalized Learning:** AI can analyze individual student performance and learning styles to tailor educational experiences, thus improving student engagement and outcomes. This can be particularly beneficial at our university where individual attention is challenging to scale.
* **Admissions and Enrollment Management:** AI can streamline the admissions process by automating routine tasks, analyzing application data to predict enrollment trends, and identifying the best candidates based on a broader set of criteria beyond just exam scores.
* **Student Support Services:** AI-powered chatbots and virtual assistants can provide 24/7 support to students, answering frequently asked questions about campus life, course details, and administrative processes, thereby enhancing student experience and administrative efficiency.
* **Research:** AI can aid in data analysis and complex computations, helping researchers solve intricate problems in fields like medicine, engineering, and environmental science. It can also facilitate better collaboration tools for researchers, including those in remote areas.
* **Library Services:** AI can transform library services by enabling smarter search engines, automating information retrieval, and providing personalized reading recommendations to all students (including those living with disabilities). It can also be used to digitize and preserve historical documents and texts generated at the University like dissertations and projects.
* **Curriculum Development:** By analyzing job market trends and student performance, AI can assist in designing curricula that are more aligned with current industry needs and future job markets, ensuring that our educational institution remains relevant.
* **Campus Security:** AI can enhance campus safety through smarter surveillance systems that can detect unusual activities or potential security threats in real time.
* **Resource Management:** AI can optimize the use of campus resources, from energy management to classroom allocation, based on real-time data and predictive analytics, ensuring efficient use of university assets.