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QUALITATIVE ANALYSIS OF ARTIFICIAL INTELLIGENCE (AI) PLATFORMS IN EDUCATION

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ABSTRACT

Education is one of the basic pillars of a society and as such people, institutions and companies tend to develop continuous reforms for sustainable progress. With the high technological advancement, an increase in AI services is observed and it also affects the educational process. This paper is an attempt to research the latest news regarding the development of special AI services in education. We study the platform that has developed its own AI systems, which are related to the automatic preparation of exam questions and the creation of interactive automatic answers, called the Eklavvya platform. During this research we see that there is an increase in platforms that offer training, courses or help increase knowledge on how to use AI in education. While we estimate that more work needs to be done in developing special platforms that are only related to education and all the services related to it. While we have not found other platforms dedicated only to education, we have researched and carefully addressed the impact of GPT-3 and Gemini on education. Finally, we conclude that AI platforms innovate and provide a positive impact on improving all areas of education, being quite productive in terms of security, exam preparation, answering questions through AI, contributing to sustainability objectives in promoting quality education and promoting innovations in both education and society.

Keywords: Artificial Intelligence (AI) platforms, Eklavvya, GPT-3, Gemini, education, teaching – learning

1. Introduction

Artificial Intelligence (AI) has been increasingly integrated into education, offering innovative solutions to traditional teaching methods. In this paper, we delve into the realm of AI platforms in education, aiming to analyze and compare selected platforms to better understand their functionalities, shortcomings, and popularity. AI platforms in education encompass a wide range of tools and systems designed to enhance teaching and learning experiences. These platforms use machine learning algorithms, data analytics, and natural

language processing to provide personalized learning paths, streamline administrative tasks, and enhance student engagement. Our analysis will focus on several key aspects such as functionality, pedagogical approach, effectiveness, and accessibility. By examining these aspects, we aim to provide valuable insights into the current landscape of AI platforms in education and identify areas for improvement and innovation. Our analysis will contribute to the ongoing discourse surrounding the transformative potential of AI in education, empowering educators, policymakers, and stakeholders to make informed decisions about integrating AI technologies into teaching and learning practices.

2. The Role of AI in Education

AI offers opportunities to support teachers in their educational and pedagogical responsibilities, human interaction and collaboration between teachers and students should remain at the core of the educational process. Curriculum review to promote deep integration of AI and transformation of learning and Concept Note 3 International Forum on AI, and the Future of Education, the development of AI tools for education should focus on teachers and students. The deployment of AI in classrooms and beyond should be in the service of people to enhance human capacities (UnescoICT, 2020) (UnescoICT, 2020). Today, AI systems and tools are already enabling the adaptation of learning sequences to students' needs to provide students with feedback and suggestions, for example, when solving math problems or learning foreign languages. Artificial intelligence is very suitable in cases where we are dealing with easily verifiable facts, for example when students are looking for a map of a certain country. This would save the time of the students and the professor, and also the AI would select the most suitable map. But there are other cases where the professor may bypass the AI altogether, for example when students are asked to learn history about a certain topic, and the AI may be based on unverified sources and as such may provide irrelevant results (U.S. Department of Education, 2023)(U.S. Department of Education, 2023). For example, mobile and other personal technologies have become a major source of learning by addressing the issues related to the schedules, environments, and locations, which were acting like hurdles in getting an education, and changed the traditional educational process to an advanced level free from the limitation of such challenges. Students can access the learning materials anytime, from anywhere in any environment. This was all made possible with technology development and its utilization in the education sector. This area of addressing students' education-related problems has attracted many researchers (Gwo-Jen H. et al., 2008).

It is clear that AI is a fast-growing field encompassing the wide boundaries of multi-discipline subjects from mathematics to engineering and from computer science to philosophy and linguistics. Due to its interdisciplinary nature, little agreement has been observed among the AI experts on its common definition and understanding (Tegmark, 2018)(Tegmark, 2018). Playing games and proving theorem are the initial endeavors for making computer machines think logically or intelligently like humans. AI often refers to machines that can perform cognitive functions in a manner associated with the human's mind, such as problem-solving and learning (Shane L. et al., 2007). It can be said that the future of education is coupled with technologies and their advancements. More advanced machines will open new opportunities for the education sector and will address the new challenges more effectively (Stefan A. et al., 2018). Education welcomes AI technologies; its application associated with learning and teaching is increasing daily. According to the Horizon report, published in 2018, AI applications will witness a 43% increase from 2018 to 2022 (Educause, 2018). The report published by the same organization predicted that the increase in AI technology adoption will be even more than noted before (Educause, 2019). The question as to how AI impacts education remains. AI is a field in machine learning that

consists of software capable of pattern recognition, prediction making, and learning to make a new pattern or making a decision on its own (Stefan A. et al., 2018). So, it has the know-how to respond according to the situation, which was not a program with their initial design. AI makes it happen through its rational agents, which are responsible for making a goal-oriented behavior (Russel, S. et al., 2010). AI applications have three main categories in education: personal tutors, collaborative learning, and virtual reality (Luckin, R. et al., 2016). Online collaboration needs to be moderated. Through intelligent virtual reality, students could be engaged and guided in a game-based environment of learning and reliable virtual reality, where the work of teachers, facilitators, etc. could be performed by virtual agents in remote virtual labs (Perez, S. et al., 2017). It can generate a just-in-time assessment and feedback, unlike the traditional way of a stop-and-test. Through AI applications, students' learning accomplishments can be recorded and analyzed from time to time. It has algorithms for the prediction of students' progress, chances of grades to be obtained and assignment concerns with a high probability (Bahadır, 2016)(Bahadır, 2016). Generative AI benefits non-English speaking students in language editing, translation, and overcoming language barriers (Lim, W. et al., 2023). Generative AI's interactive nature helps identify gaps in student learning and provides timely feedback (Lim, W. et al., 2023). Plagiarism detection and equitable assessment are challenges posed by AI tools (Geerling, W. et al., 2023). AI-generated text can evade detection but must be prevented to maintain academic integrity (Yeadon, et al., 2023).

3. Methodology

This study uses a comprehensive methodology to analyze the latest AI platforms in education, assessing their functionality, accessibility, interface, and overall usefulness. To begin, an extensive literature review was conducted to identify and understand the landscape of AI platforms currently used in educational settings. The search included academic journals, conference proceedings, reputable online databases, and relevant grey literature, with a focus on publications dated within the last five years to ensure inclusion of the most recent advances in the field. Following the literature review, a systematic approach was adopted to select AI platforms for evaluation. After careful consideration, a diverse group of AI platforms was selected, representing different functionalities and approaches within educational technology. Once the selection of AI platforms was finalized, a structured evaluation framework was developed to comprehensively evaluate each platform. This framework encompasses multiple dimensions, including, but not limited to:

Functionality: The capabilities and features offered by each AI platform were examined in detail. This encompassed adaptive learning, personalized tutoring, content creation, assessment tools, student progress tracking, and any other unique functionalities designed to enhance the educational experience.

Accessibility: The accessibility of the AI platforms was evaluated in terms of compatibility with different devices (e.g., desktops, laptops, tablets, smartphones), operating systems, internet connectivity requirements, and provision of multilingual support.

Interface Design: The user interface (UI) and user experience (UX) of each AI platform were critically assessed. This involved evaluating the intuitiveness of navigation, clarity of instructions, visual design, responsiveness, and overall ease of use for both educators and students.

After evaluating each AI platform on these dimensions and to facilitate visual comparisons, tables and graphs were also used to summarize key findings regarding the strengths, weaknesses and comparative advantages of each AI platform in education.

4. Impact of Eklavya Platform on Education

After detailed research about intelligent platforms with a special dedication to education, we have noticed that the Eklavvya (Eklavvya, 2024) (Eklavvya, 2024) platform is one of the most complete platforms that offers more and more innovations in increasing AI functions. Therefore, it is a part of our research and analysis together with other platforms that provide services in the education process.

4.1. Functionality of Eklavvya platform

We will present all the services offered by the platform, but we will analyze only the services that are related to AI, evaluating their functionality, their importance in the educational process, as well as the latest innovations that these services offer in AI.

Table.1. Main functionalities of the Eklavvya platform

ASSESSMENT	PROCTORING	EVALUATION	CONFIGURE TEST
Generative Assessment AI	AI Proctoring	Exam Analytics	Exam Types
Academic Assessment	Remote Proctoring	Onscreen Evaluation	Customize Online Tests
Corporate Assessment	360 Degree Remote Proctoring		Question Bank
Descriptive Test	Proctoring Exam Integration and API		AI-Driven Question Creation
Video Interview			
Viva Test			
Psychometric Tests			
Practical Exams			

Analyzing Table 1, we see all the functions provided by Eklavvya. From all the functions presented, we note that we have a total of three AI services, which are Generative AI Assessment, AI Proctoring and AI-Driven Question Creation. For these three services we will provide more data below:

4.2. Accessibility of Eklavvya platform

At first, we would like to introduce the levels of access to the platform, where we have a total of seven levels listed as follows: Super Admin, Exam Administrator, Subject Expert, Result Viewer, Examiner, Proctor Admin, and Candidate Management.

This platform offers convenient access to all smart devices such as smartphones, tablets, laptops, etc. Also, the user interface is quite practical for all levels of access. It is compatible with various operating systems running on the Internet. It is also compatible with browsers such as Mozilla, Google Chrome and Microsoft Edge. The platform does not offer multilingualism. It works only in the English language, and cannot be customized according to different ethnicities.

4.3. Interface Design of Eklavvya platform

Eklavvya offers a good user interface. All menus are well organized and structured according to their respective functions. All services offered by the platform contain additional explanations or video manuals for their use. It also provides ready-made answers to the most frequently asked questions. None of the services are offered for free, although we think that considering the field it operates in education and most offline or online platforms offer a limited number of free educational services.

4.4. AI services of Eklavvya platform

Services related to AI are of particular importance for us and therefore these cases are in our focus. We will introduce and discuss two AI services that the platform provides.

A)AI proctoring, which enables the holding of online exams by providing high quality transmission, security and authentication as well as automatic preparation of questions through AI. Below we have presented table 2, in which all forms that increase the quality of transmission and security during the exam are included in the platform.

Table.2. AI Proctoring safety ways

AI Proctoring has 12 ways to increase the secure of online exams with AI proctoring			
Watch screen activities live	Candidate authentication process	Facial recognition	Compatible in all devices
Live chat with remote exam user	Facility to pause and resume the exam	Facility to broadcast message to exam candidates	Monitor live streaming
Eliminate physical exams due to auto proctoring	Securing browser to avoid cheating during exam	Works on internet speed at a minimum of 0.1 mbps.	Listen to audio of exam candidate

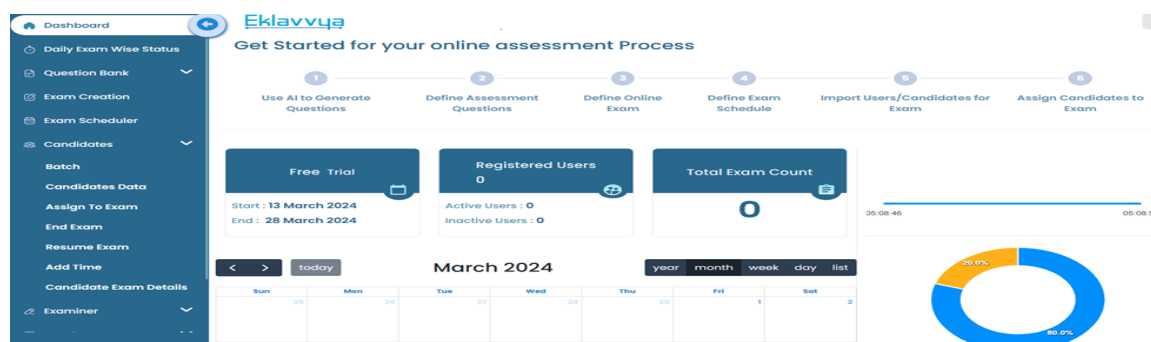


Figure 1. AI Proctoring service

Based on Figure 1, we have presented the main view of the AI Proctoring service in which all the steps of the process are included starting from the AI creation of the questions to the appointment of the exam date and the examiner.

B) Generative AI assessment (Table 3)

Generative AI Assessments Works based on four steps:

1. Topic Selection: You define a Question/ Case Study/ Scenario for the AI to focus on.
2. User Response: Candidate writes a response.
3. Follow-up Questions: Based on the candidate's response, the AI generates subsequent questions to deepen understanding of the topic.
4. Assessment Completion: After 4-5 questions, the AI generates a result based on the responses, providing instant feedback on understanding of the topic.

Table.3. Generative AI Assessments cases

Generative AI Assessments main functions related to education			
Chatbot interactions	Virtual conference	AI-powered case studies	Email correspondence test
AI-enhanced peer review	Interactive listening tests	Interactive dashboards	Crisis communication scenarios
Negotiation simulations	Customer service simulations	Role-playing scenarios	Interactive Troubleshooting tasks

Language proficiency tests	Real time coding assessments	Automated essay scoring	AI-Driven project management simulations
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5. Impact of GPT-3 in Education

Chat-GPT is an intelligent platform developed by Open AI. GPT-3 (OpenAI-Team., 2023)(OpenAI-Team., 2023) emerged as a breakthrough LLM that can generate text and maintain a human-like conversational style. GPT-3 has exhibited top performance in many application domains, such as coherent content and essay generation, chatbot responses, language translation, question answering, and programming code (Kasneci, E. et al., 2023) (Qadir, 2022) (Qadir, 2022). In the context of education, both students and educators can use GPT-3 for many academic and research purposes. Educators can take advantage of GPT-3 to prepare an outline of a particular course, topic-related content for lectures, presentations on academic topics, questions, problem sets, etc. Similarly, students can be assisted by GPT-3 in solving complex problems and questions, writing essays, and explaining a specific topic to accelerate their learning (Qadir, 2022)(Qadir, 2022) (Thunstrom, 2022) (Thunstrom, 2022).

5.1 Functionality of GPT-3

GPT-3 uses a deep machine learning model to understand context and produce reliable and intelligent answers. It is making a great contribution to education, whether for students or professors, who can only obtain important information through specific question formulation. The answers are provided in over 55 different languages of the world. As a shortcoming, we can consider that it does not offer images as answers, or voice answers, but only written in text form. The platform only offers one form of interaction with users, namely with students and professors, namely through chat. There are no other automated functions, or specific menus that are used for special cases to perform intelligent algorithms for a certain field, especially for education.

5.2 Accessibility of GPT-3

The Chat-GPT platform is one of the most popular and widely used intelligent platforms in the world. In order to reach this level, the easy method of access, which is offered through the Login form, presented in the following figure, has had an extraordinary impact.

Unlike the Eklaavya platform, here we have only one level of access, which is the same for everyone. All users are able to access the same services, creating a single account regardless of profession. Access to the platform is free. Relatively few steps are required to utilize the platform, making it easier for users to access and use it.

5.3 Interface Design of Chat-GPT 3.5

The platform features a clear and adaptable design for accessibility by all users, without requiring extensive computer or software/web service knowledge. It offers a simple initial prompt for inquiries, followed by subsequent steps for receiving answers and interactivity. Regarding the interface, we find it highly adaptable for use on other devices such as iPads, smartphones, etc. The platform's design is crafted to be straightforward and precise in gathering requests and finding results. The first window, provides access in the platform without the need to create an account.

5.4 Services of GPT-3

The GPT-3 platform offers more services than the Eklavvy platform. Below we have presented the main services it offers (Table 4). It is worth mentioning that almost all of them

have a direct or indirect connection with the education process, whether for teachers, students, or for joint projects.

Table 4. GPT-3 services

GPT-3 Services related to education		
1	Conversation	ChatGPT can engage in open-ended conversations on a wide variety of topics, providing information, opinions, and engaging dialogue.
2	Language Translation	ChatGPT can translate text between multiple languages, facilitating communication across language barriers.
3	Text Generation	It can generate text for various purposes, including creative writing, content generation, and storytelling.
4	Language Learning	ChatGPT can assist in language learning by providing explanations, answering questions, and engaging in conversation to practice language skills.
5	Content Creation	It can generate content for blogs, social media, marketing materials, and other purposes based on provided prompts or topics.
6	Text Analysis	ChatGPT can analyze text for sentiment, tone, and other linguistic features, providing insights into the emotional or subjective aspects of the text.
7	Code Generation	It can generate code snippets or provide assistance with coding tasks in various programming languages.
8	Education	It can serve as a tutoring or educational tool, helping students with homework, explaining concepts, and providing additional learning resources.
9	Storytelling	ChatGPT can collaboratively create stories or narratives with users, offering plot ideas, character development, and dialogue suggestions.
10	Creative Writing	It can assist with creative writing projects, offering prompts, feedback, and inspiration to writers.

6. Impact of Gemini on Education

Gemini, powered by GenAI, is a compelling AI model that excels at generating new content based on the input it receives. With its impressive capabilities, Gemini can create a wide range of data types, including text, code, images, and more. Unlike previous models trained on unchanging datasets, Gemini has the possibility to tap into Google Search to acquire and process real-world information (Portakal, 2023)(Portakal, 2023). This allows Gemini to tailor its responses to ongoing events, ensuring they reflect the latest developments.

6.1 Functionality of Gemini

Functionally, Gemini is very similar to GPT-3, but in some aspects it has advantages, including the acceptance of sound and image as input. Unlike GPT-3, which only accepts text as input. The logic remains the same based on chat, questions - answers. Open to all categories and interacting with over 40 languages of the world.

6.2 Accessibility of Gemini

Gemini offers equal access to all its users through the Login form. Similar to GPT-3, Gemini also has no usage categories. It is the same with all users and sources of information, respectively the use of services is the same for everyone without differences in profession, etc.

6.3 Interface Design of Gemini

Gemini offers a very simple, clear and concrete interface. Which first presents some proposals to the user, and below also presents the field for submitting questions. Which is a very suitable form, in terms of structure and content.

6.4 Services of Gemini

It is a tool that can help in finding answers to questions related to any subject in a clear and informative way, tailored and customized to an individual's specific requirements and understanding. Moreover, it can adapt its explanations to the learner's learning style, level, and subject, providing targeted support (Saeidnia, 2023)(Saeidnia, 2023). For teachers and instructors, Gemini has made several teaching and assessment tasks easy to accomplish. They can leverage its' capabilities to create engaging materials, differentiation, and rapid assessment and feedback. For instance, for an interactive lesson plan, Gemini helps teachers in generating worksheets, quizzes, personalized learning paths for students, interactive exercises, etc (Muhammad Imran, 2024) (Muhammad Imran, 2024). We have listed below all the services offered by Gemini, which provide direct or indirect connection with the education process.

Table 5. Gemini services

Gemini Services related to education		
1	Reduced workload	Gemini can automate time-consuming tasks like creating lesson plans, summarizing complex topics, or writing grant proposals.
2	Personalized learning	Educators can use Gemini to tailor content to individual student needs and interests.
3	Brainstorming and creative thinking	Gemini can be a thought partner for educators, helping them brainstorm new ideas for teaching or sparking creative discussions in the classroom.
4	Personalized learning experiences	Gemini can help students by generating customized learning materials or suggesting additional resources based on their individual needs and understanding.
5	Research assistance	Students can use Gemini to find relevant information for research projects or get help summarizing complex topics.
6	Improved writing skills	Gemini can be used as a writing assistant, helping students with grammar, sentence structure, and overall clarity in their work.
7	Increased efficiency	By automating tasks and providing research assistance, Gemini can free up valuable time for both educators and students.
8	Improved Engagement	Personalized learning experiences and creative brainstorming can make learning more engaging and enjoyable for students.
9	Deeper Understanding	Gemini can help students gain a deeper understanding of complex topics by providing them with additional resources and summarizing information.

DISCUSSION

By researching the Internet, namely in several search engines, forums and various educational institutions, we managed to find only one platform that offers unique AI services with a special focus on education, developed exclusively by the management team of the Eklavvya platform, which currently offers three widely used AI services. The rest of the platforms mainly target two other aspects of AI in education. So, one group of platforms deals with online training of academic staff and students to gain knowledge on the use of ready-made AI services, which are undoubtedly giving a very positive impact on teaching, facilitating the achievement of knowledge. While, the second group of platforms deals with

online training in teaching students in the development of AI services, as a trend of the time. In addition to these results, we address several aspects and see their impact on education for GPT-3 and Gemini.

CONCLUSION

After reviewing the literature and comparative analysis for the three AI platforms included in this paper, we can summarize some conclusions. After evaluating the Eklavvya platform, we can freely say that it has made an innovation and has given a positive impact on the improvement of all areas of education, being quite productive in terms of security, exam preparation, returning answers through AI, etc. this platform may in the future provide more convenience for users to access and that there are no long delays in confirming accounts on the platform, but it should be done within a few minutes. The number of languages should be increased since professors and students from all over the world are part of this educational process, and not all of them speak English. Unlike the other two platforms, Eklavvya is a platform developed and dedicated only for education and offers additional services in facilitating and monitoring the holding of online exams, etc. GPT-3, now a platform known all over the world, is providing great help in many different spheres of education, refer to table no. 4. It is a platform that offers interactivity with the largest number of languages in the world with over 55 languages. GPT-3, being the first platform based on AI, does not accept images or audio as input. Unlike GPT-4, which is a much more advanced model interacting with all input formats. Gemini, a platform developed by Google, offers a series of services with direct or indirect links to education, referring to table no. 5. It accepts images and audio as inputs. Works with over 40 languages of the world. As well as in terms of automated text generation, there are shortcomings compared to GPT-3. The Gemini advanced version is a paid version that offers much more advanced tools and services. We expect in the future to address GPT-4 and Gemini advanced, as well as to issue comparative analyzes regarding the services they offer and the latest innovations in AI.

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