



## Research Article

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# The Integration of Artificial Intelligence (AI) As an Emerging Technology in The Future of Learning

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**Abstract:** Artificial Intelligence (AI), a new emerging is the talk and has an impact in the teaching and learning today and in the future. AI offers previously unheard-of possibilities to improve teaching and learning procedures as educational environments change. This study looks at how AI might be used to automate administrative work, customize learning experiences, and give teachers and students immediate feedback. The difficulties and moral issues surrounding the use of AI in educational contexts are also covered. This study intends to shed light on how AI can revolutionize secondary education by examining existing trends and potential future ramifications, creating a flexible learning environment that can accommodate students' various demands. The results highlight how crucial it is to strategically include AI technology to support fair access to high-quality education and get students ready for a quickly.

**Keywords:** Artificial Intelligence (AI), Teaching and Learning, Customizable Learning Experiences, Educational Technology, Ethical Considerations, Secondary Education

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## INTRODUCTION

The use and impact of Artificial Intelligence in education and how AI can be used to improve teaching methodologies and at the same time improve the learning experience of students is of great concern in the research area. Artificial intelligence is a broad field of computer science concerned with creating intelligent machines that are able to do tasks that generally need human intelligence. (Slimi, 2023).

This research area is of great importance as the field of artificial intelligence is in the top ten emerging technologies that are being used today and will have a great impact on the future. The growth of artificial intelligence is set to increase for the foreseeable future and its effects are set to drastically change around all the various industries that are of importance.

## STATEMENT OF THE PROBLEM

Even though most teachers and students may be aware of the acronym AI, it is unlikely that they really understand the ramifications of using it in the classroom. In reality, everything in the classroom is "business as usual." Theoretical instruction still dominates AI courses, with minimal focus on introducing students to real-world situations.

This circumstance may be caused by a number of factors, including the teachers' lack of experience. In

this context, "knowledge" relates to the fields of learning assessment, integrated pedagogy, and artificial intelligence. A teacher who was trained using old methods will find it very challenging to adapt to the new world of artificial intelligence. Traditional teaching posits that the classroom atmosphere is under the instructor's control.

## RESEARCH QUESTIONS

How can artificial intelligence be applied in education to benefit students and teachers?

How will students' learning experience be assessed?

What is the effectiveness of AI based learning platforms?

## RESEARCH OBJECTIVES

- To apply artificial intelligence in education in order to benefit students and teachers.
- To assess students learning experience with versus without AI.
- To assess the effectiveness of AI based learning platforms.

## LITERATURE REVIEW

### Introduction

AI applications in various domains to demonstrate its potential for use in education. Artificial intelligence has been the talk of the town, as demonstrated by its use in practically every industry,

including education, healthcare, and finance. AI is being utilized in hospitals to process medical information, monitor patients, develop medications, and assist with patient diagnosis. Based on consumers' previous queries, artificial intelligence algorithms are used by platforms like Google and YouTube to suggest content to them. AI's use in these various fields and its capacity to resolve challenging issues provide insight into what AI could accomplish in the classroom. The Figure below shows the different areas where AI is being applied.



(point, 2024)

### What is AI

AI is defined as the intelligence demonstrated by machines rather than humans (Sayed Fayaz Ahmad, 2021). AI works based off experiences where it brings together large amounts of data and has processing algorithms. It then analyses a pattern between the data collected. With each new task performed, AI continues analyzing thus becoming more intelligent. This AI capability creates the need for universities and schools to educate and prepare students for an AI future of work (Ufuk, 2020)

### The Application of AI in Education

Artificial intelligence is big inside today's world and it is found in different areas including the education field. It has benefits as it can solve some issues found within the education sector. Teachers can use artificial intelligence to come up with students' assignments although some however argue that in the event that a piece of work is solved by AI it must have little impact on the final grade. The use of AI such as chat GPT presents the possibility of plagiarism as students may present work from these platforms as their own therefore there is a need for schools to teach students how to reference their work to avoid fraud.

### AI Impacts on Higher Education

The introduction and use of AI will reshape the required skills in the corporate market (Siau, 2018). With the use of AI, educational institutions such as the Peterhouse group of schools will need to adopt the new Artificial intelligence tool to better prepare their students. Artificial intelligence will change the schools'

curriculum and these changes cannot be avoided due to the rapid changes happening in the IT world.

### AI Tool That Are Used Within the Education Field

Many AI tools can be used within the education sector and these include Careerbot, Chat GPT, speech to text and Quillbot. Career bot is a tool that was designed to help learners search for jobs and help better their performance.

Quillbot is another use that is used to paraphrase and helps improve writing. It is free to use and may require one to sign in. It can correct grammar and simplify paragraphs. Students can benefit from. Students can benefit by recording lectures and the use the speech to text AI to convert those audios to text thus saving time (Doty, 2023)

### Integrated AI Teaching and Learning

Teaching is the discipline of paying attention to people's needs, experiences, and emotions while providing targeted interventions to aid their learning. Thus, teachers can instructor impart knowledge to others, or they can set an example for others to follow in order to help them learn or grasp something. The integration of science, technology, engineering, and mathematics (STEM) has been the focus of much investigation in recent years. However, less attention has been paid to how and to what extent these four subject areas might be integrated to improve STEM education, what obstacles might arise, and the potential effects on learning, motivation, and other desired outcomes. The beauty of this example is that teachers can extract skills used in the game and use them to draw comparisons when explaining concepts in disciplines such as Biology, Chemistry and Physics.

### The Impact of AI on Future Careers of Graduates

Artificial Intelligence is continuously evolving by the day. This will lead to many opportunities as well as threats to graduates. Graduates, especially those that are directly qualified in the technology field will need to be prepared to embrace the additional learning that will be brought about by AI. History has shown that initially there may be some job displacements due to technological advancements such as Artificial intelligence, it may also create some specialized jobs. It is very important to adapt to these changes and to upskill yourself in order to still remain relevant in the dynamic job market. Not only may AI create jobs, but it can also eliminate them, according to its proponents. AI has the potential to increase production and efficiency in a variety of industries, creating new jobs that call for human intellect, creativity, and emotional intelligence-qualities that machines now lack. AI will affect jobs that are repetitive in nature. Jobs such as customer service are bound to be more likely to be taken over by artificial intelligence. This is because in most cases, customer requests and problems are highly repeated. Answering these questions doesn't need much emotional or social

intelligence. This means that AI can provide some automatic replies to frequently requested queries.

There are also many human employment opportunities that will arise from artificial intelligence. Making use of creates opportunities for careers such as cyber security experts as well as support for AI ethics. As people become more aware of the ethical implications of AI, there are possibilities for ethics experts to guarantee that AI systems' decisions adhere to moral and societal standards. Simultaneously, the security dangers connected with AI need the employment of cyber security professionals to secure systems from external assaults. (Iacoviello, 2023)

### **Advantages of AI in Education**

The application of artificial intelligence in education presents different advantages due to its intelligent nature. It improves teaching methodologies and also how students learn.

Using AI in education helps students benefit from personalization where it can help them learn based on their experience and preferences. AI can adjust to anyone's pace of learning and offers them the best results through using their previous learning history.

Students can learn from AI during their time away from school as these tools can help answer students' questions that they may come across while studying and no teacher is close by to assist them (Karandish, 2021).

Artificial intelligence tools such as Chat GPT are very responsive and quick. This helps reduce the time it takes for students to get answers while studying (Karandish, 2021).

AI can help teacher by automating different manual tasks such as grading tests, responding to different questions and administrative work (Karandish, 2021).

### **The Disadvantages of Using AI in Education.**

Students who do not know how to use technology are disadvantages with the use of artificial intelligence as they cannot navigate and enjoy its benefits.

The use of AI presents privacy issues which emanate from the need to upload assignments to cloud.

Implementing AI systems in school can be very costly and these funds may not be available and schools may fail to invest towards these implementations.

Prejudice. The data used to train AI determines its level of skill. When students query a computer, such as ChatGPT, they may obtain biased replies that perpetuate social inequalities and prejudices if the

software was trained on biased data. Students may obtain worse grades depending on their gender or race if a biased AI system is utilized for grading.

Mistake-. Artificial intelligence has the capacity to generate misleading information as well as prejudice. AI may use data that is incorrect, out of date, or contains disinformation. Teachers and students should not take AI-generated data at face value.

Employment- Artificial intelligence has considerable potential as a tool for teaching. Some instructors fear that artificial intelligence may replace them.

## **METHODOLOGY**

### **Research Design**

This study utilized qualitative research, which is a subset of social science research that focuses on investigating specific individuals or areas in order to collect and evaluate non-numerical data and seek to draw meaning from it. This study aims to determine instructors' and students' knowledge of and responses to the use of AI in the classroom. During the study, non-numerical data will be created. When this data is evaluated, it can provide insights into the opinions and responses of teachers about AI teaching and learning.

### **Qualitative Research: Data Collection**

Primary data was collected through survey to ensure data integrity and relevance and the links to the Google forms were shared to a WhatsApp group and emails of participants. The survey had 20 questions that were in line with the research topic. The survey was shared to 70 people and of these 50 participated. The survey targeted students in the various fields such as IT and also studying towards.

### **The Interview Process**

A specific sample of participants was chosen for interviews once the questionnaire's data was analysed. The interview procedure was divided into two main stages, which are discussed here. The interviews took place over the course of four days, with appointments set for the chosen persons. The first step was to prepare for the interviews. While some interview candidates were contacted via phone, others were contacted using WhatsApp, a social networking tool. The purpose of the interview was explained to them, and they were assured that their involvement would remain confidential. Additionally, they were granted the flexibility to decide whether or not to take part at any time. This is consistent with the upholding of ethical standards in research. The second part involved the actual interviewing procedure. The participants were given the option to choose the place where they felt safe and comfortable. Each participant was introduced, the purpose of the interview was reiterated, and the importance of giving honest answers was underlined. After building rapport, each participant was asked if they would mind the interview

being recorded. The interview was recorded with the aid of a recording device. During the interview process, challenging questions were occasionally asked to elicit more details on topics raised. Lastly, the participants were asked to provide their thoughts and feeling on the ai technologies

A sum total of 30 males and 24 females engaged in the study. They all have different resumes such as Information technology, Technical graphics amongst various jobs that include as marketing manager and IT manager. The ages ranged from 18 to 40 where 30 individuals were between the ages of 18 and 20 and the rest were between the ages of 28 and 40.

Age Information	
Under 18	0
18-20	30
25-30	16
30-40	8

Gender Information	
Male	30
Female	24

The questions were simple and easy to understand and did not require too much effort to answer.

#### Nature of Data Generated.

Ticking the corresponding boxes on the questionnaire represented answers to the questions.

Field notes and audio recordings containing text data were produced using semi-structured interviews.

#### Reliability, Validity and Ethics

Data quality was ensured by considering dependability, validity, and ethics. The sources used were verified in order for them to meet the validity, reliability and ethical criteria. Previously researched data has been referenced. The most applicable research and data collection method was used.

Reliability is the consistency with which a technique analyzes something. Middleton (2019) noted that a measurement is deemed trustworthy if the same result can be obtained repeatedly under the same conditions and technique.

Validity relates to how well a technique measures what it is supposed to measure. High validity is defined as research yielding results that reflect genuine features, traits, and variations in the real world—whether they be social or physical (Middleton, 2019).

Credibility refers to the truthfulness of qualitative research, or if the study's findings are right and true. It is influenced by the researchers' reputation and research methodology. Triangulation, extended engagement with data, persistent observation, negative

case analysis, member checks, and referential adequacy are some processes that may be used to improve the credibility of qualitative investigations. (Group, 2024).

Dependability is used to assess or demonstrate the consistency and dependability of your study's results. This begins with recording the particular processes you use for data collection, analysis, and interpretation, as well as providing relevant contextual information about each piece, so that the study may be hypothetically replicated by other researchers and provide consistent results. Alternatively, screening characteristics might be utilized to reinforce research dependability. (Group, 2024).

Transferability evaluates if the study's findings are applicable in other scenarios, contexts, and locations. It may also be thought of in terms of generalizability. This allows other researchers to assess if the findings are applicable to other circumstances. (Group, 2024).

Ethics in research examines how to conduct research in a responsible manner that maintains the integrity of the scientific process. Researchers have an obligation to follow high ethical standards in their work. (f1solutions, 2022).

The survey was voluntary and anonymous in order to protect the respondents. The personal information of the respondents was not collected to avoid the identification of any respondents. When collecting any information, the researcher was transparent and communicated everything to the respondents. The respondents were told what the research was collected for and they were reassured that the research was anonymous. There was no confidentiality issues identified because all the due procedures were followed. All the results that were attained were communicated without any falsification or manipulation of the results.

## RESULTS ANALYSIS

Presentations of the findings relate to the participants' awareness to artificial intelligence and whether they think it affects education in terms of methodologies and how learners grasp.

These are participants' awareness of AI, assessment of students experiences and AI platforms. The results obtained revealed that AI greatly impacts education in so many ways where it improved the learning and teaching methodologies and also the grading of students .AI also better prepares students for what is required in the corporate world. The data presented in tables and graphs speaks to the results obtained from the research.

#### Background of the Respondents

The poll started with a question to learn more about the respondents' backgrounds. The question was "what level of education are you currently doing?" to

determine if they were in advanced level or if they were a teacher. If the answer is NO the participants would not be able to move to the next question. The second question was “what field of study are you in?”. This was done to explore if there was a link between the AI tools used by students in their fields and their impressions of them.

**The impact of AI in education.** The survey was shared to 70 people and of these 50 participated .33 participants agreed that AI does indeed impact the learning and teaching process.15 think maybe and the remaining 5 disagreed by choosing NO.

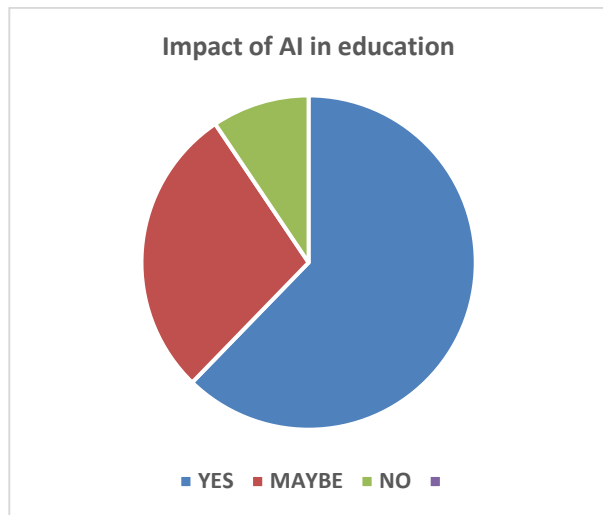


Figure 1

In another check on whether AI offers better learning and teaching methods, the responses were from 40 participants. 20 (50%) agreed that AI improves the learning and teaching processes and positively impacts the delivery of complex tasks .4 disagreed and the remaining 16 were neutral as compared to the previous result.

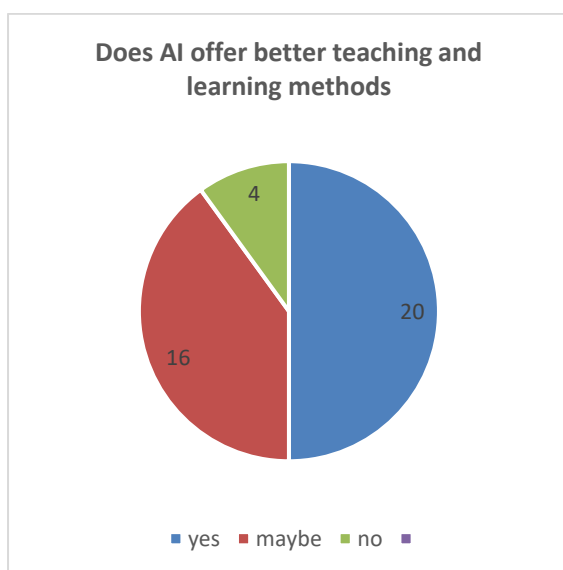


Figure 2: Does AI offer better teaching and learning methods

The research also checked on the experience of respondents with AI tools where the researcher asked if they have previously used any AI tool and which one had they used. The search tested on the tools the participants are familiar with in the teaching and learning and also aimed to check which tool is frequently used in education. From the responses CHATGPT is the most frequently used AI tool with 25 responses and speech to text received less which indicates that the devices the users use are not compatible with the speech facilities.

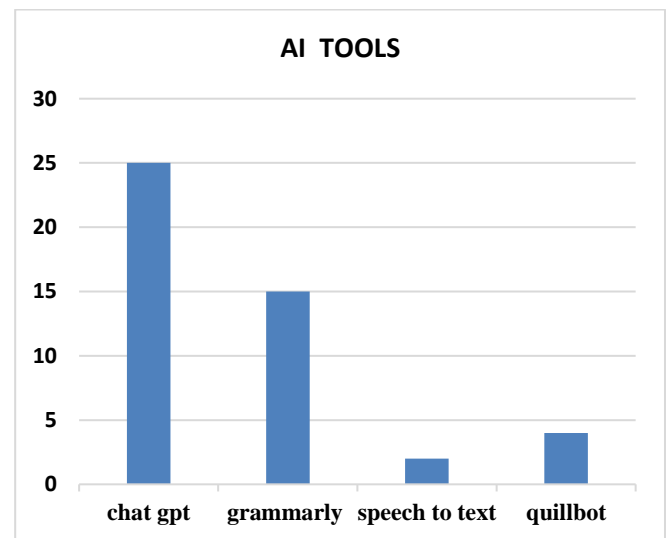


Figure 3: AI tools

The results reveal that most people use chat GPT which is an AI tool used to improve essay writing. The second most used is Grammarly which is used to improve vocabulary and check for grammatical errors. The results show that most people are aware of AI They know it exists, what it is and how well it can be used not only in hospitals but also in schools through the use of artificial intelligence tools such as chatGTP.

Table 1: Rating of the Impact of AI in Education

Rating	Frequency
Best	45
Better	10
Good	3
Worse	0

Table1 above shows how participants rate the AI as an emerging technology in education, referring to the impact and the contribution the technology is bring to the teaching and learning. The check was referring to the research question *What is the effectiveness of AI based learning platforms?*

The graph below illustrates the ratings as given by the responses. Most responses (45) indicated that AI is the best tool that can be used in education. No participant rated AI as a worst technology which does not have contribution to the education sector.

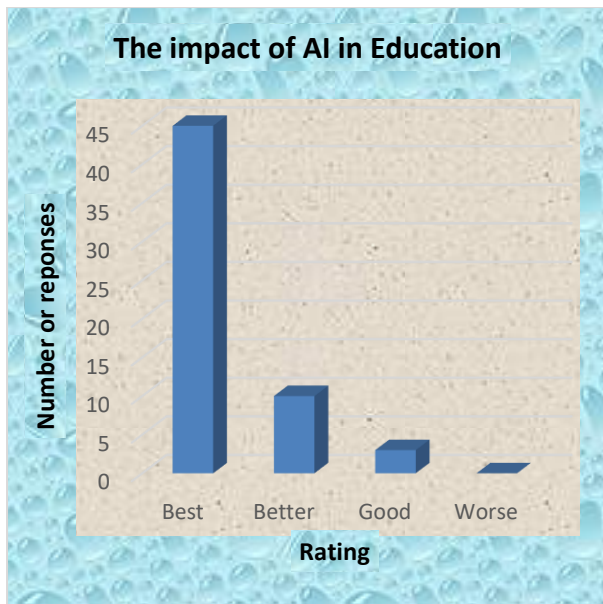


Figure 3

## CONCLUSION AND RECOMMENDATIONS

AI will probably continue to evolve and should therefore be embraced. Curriculum changes will continuously be done and it is a necessity for organisations to strategy on how they will curb the effects through better preparing students and also aligning their teaching methodologies.

**The Following Research Questions Were Answered:**  
*How does the application of artificial intelligence in classrooms assist both students and teachers?*

To answer the first question, the researcher looked at the tools for artificial intelligence in education and how they work. Therefore, the results showed that different tools such as Chat GPT and Grammarly are being used and these have helped improve the way students learn and teaching methodologies

*How will students' learning experience be assessed?*

The researcher prepared a questionnaire where one of the questions where students were asked about any AI tool they have used and how it has helped them. The results indicated that most students use Chat GPT and Grammarly to help them with their school work.

*What is the effectiveness of AI based learning platforms?*

AI based learning platforms such as Coursera and open AI were very helpful thus effective as they help students with what they need when they need it be they tutorials etc. AI tools for example the study shows that the participants are aware of AI tools such as Grammarly and Chat GPT and have been using them. Teachers use them to improve their teaching methodologies and students use them to improve their skills.

## RECOMMENDATIONS

**Digital Literacy as an important competency to all teachers.** Teachers need to be trained to be able to deal with the impacts of artificial intelligence on the already existing curriculum as it changes. Teacher's colleges must be equipped for them to produce graduates who are familiar with artificial intelligence and its integration in education.

**State policies to the AI integration.** The government must also come up with a framework of how it is going to implement the use of AI in schools for example the implemented framework will be used by teachers.

**Awareness Campaigns and or digital advocacy.** The government through the responsible ministries should come up with awareness campaigns and introduce events where students use and become familiar with artificial intelligence for example workshops that show case artificial intelligence emerging technologies such as 3D printers and IOT devices.

**Work Integrated learning and AI.** Lastly there is need to work hand in hand with the industries so that what students are equipped with the skills which are needed in the industries to cover the digital divide across many industries.

## REFERENCES

- Academy, E. (2023, September 14). *What are the ethical considerations in research design?* Retrieved from Enago Academy: <https://www.enago.com/academy/what-are-the-ethical-considerations-in-research-design/>
- Carraway, A. K. (2012). *Do it yourself guide to STEM community engagement* (p. 3). North Carolina: NC STEM.
- Doty, C. (2023, December 16). *Top 7 uses for speech-to-text in education.* Retrieved from Deepgram: <https://deepgram.com/learn/top-7-uses-speech-to-text-education>
- f1solutions. (2022, July 08). *What is ethics in research?* Retrieved from OmniStar: <https://www.omnistar.cloud/insights/what-is-ethics-in-research>
- Global, C. S. (2021, August 09). *How does AI actually work?* Retrieved from CSU Global: <https://csuglobal.edu/blog/how-does-ai-actually-work#:~:text=AI%20systems%20work%20by%20combining,performance%20and%20develops%20additional%20expertise>
- Group, T. F. (2024, April 21). *How to achieve trustworthiness in qualitative research.* Retrieved from The Farnsworth Group: <https://www.thefarnsworthgroup.com/blog/trustworthiness-qualitative-research#:~:text=Credibility%20is%20a%20measure%20of,well%20as%20their%20research%20methods>

7. Office of Educational Technology. (2023). *AI in education*. Retrieved December 15, 2023, from <https://tech.ed.gov/ai/#:~:text=AI%20enables%20adapting%20to%20a,strengths%20and%20working%20around%20obstacles>
8. Iacoviello. (2023, July 26). *How does artificial intelligence create new jobs?* Retrieved from Forbes: <https://www.forbes.com/sites/forbesbusinesscouncil/2023/07/26/how-does-artificial-intelligence-create-new-jobs/?sh=6a44c9832586>
9. Karandish, D. (2021). *7 benefits of AI in education*. *The Journal*.
10. Middleton, F. (2019, July 29). *Reliability vs. validity in research: Difference, types and examples*. Retrieved from Scribbr: <https://www.scribbr.com/methodology/reliability-vs-validity/#:~:text=Reliability%20refers%20to%20how%20consistently,the%20measurement%20is%20considered%20reliable>
11. Newcastle, T. U. (2024, April 25). *Research methods: What are research methods?* Retrieved from Library Guides: <https://libguides.newcastle.edu.au/researchmethods>
12. point, J. t. (2024, April 21). *Application of AI*. Retrieved from JavaTpoint: <https://www.javatpoint.com/application-of-ai>
13. Sayed Fayaz Ahmad, M. K. (2021). *Artificial intelligence and its role in education*. *Sustainability*, 11.
14. Siau, K. (2018). *Education in the age of artificial intelligence: How will technology shape learning?* *The Global Analyst*, 22–24.
15. Slimi, Z. (2023). *The impact of artificial intelligence on higher education: An empirical study*. *European Journal of Educational Sciences*, 10(1), 17.
16. Talmage-Rostron, M. (2024, April 25). *How will artificial intelligence affect jobs 2024–2030?* Retrieved from Nexford University: <https://www.nexford.edu/insights/how-will-ai-affect-jobs>
17. *The impact of artificial intelligence on employment: Replacing jobs or creating opportunities?* (2024, April 24). Retrieved from Sage University: <https://sageuniversity.edu.in/blogs/impact-of-artificial-intelligence-on-employment>
18. Ubuntu, C. (2024, April 25). *The story of Ubuntu*. Retrieved from Canonical Ubuntu: <https://ubuntu.com/about#:~:text=Ubuntu%20is%20an%20ancient%20African,world%20of%20computers%20and%20software>
19. *What is teaching? A definition and discussion*. (2024, April 25). Retrieved from infed.org: <https://infed.org/mobi/what-is-teaching/>