

Artificial Intelligence in Teaching and Learning Process

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ABSTRACT

Today, we are at an interesting point of transformation that is massive and being fueled by Exponential Technologies. One of the conversations around exponential technologies is Artificial Intelligence. Artificial Intelligence is currently high requirement in all fields. The technological education will assist to accomplish the learning objectives. Through Artificial Intelligence, each and every student can be better understood and who slow learners in the class are. AI enables teachers to find out where the students are lagging and appropriate actions could be taken. Complex area of study for the students could be made easier by using AI with simple examples to enable the students improves skills. This paper aims to highlight the role of artificial intelligence in teaching and learning process.

1. INTRODUCTION

Today, technology is shrinking the world and making class rooms easily accessible to all through smart content. Ask about AI research began in December 2015 where over 100 applications are identified of AI to life in areas such as recreation, transportation, education, healthcare etc. The main objectives of operation focused on AI in regard to - employment, ethics and education. Artificial intelligence is totally revolutionizing the teaching-learning process in education. In 2017, Hendrawan believes that an intelligent machine should have the following six kinds of typical ability: the ability to categorize all kinds of patterns; the ability to change one's own behavior, that is, learning ability, inductive reasoning ability, that is, generalization ability, deductive reasoning ability, the ability to form conceptual models and the ability to use this model and the ability to understand.

Artificial intelligence identifies where the courses need to be improved. Teachers are unable to find out where there is gap in their lectures and study materials that make the students puzzled about certain concepts. Each student possesses different learning abilities and pace of absorption. One teacher for 70 students will be quite difficult to cater to the needs of each and every student in the class room. Assignment and homework could be tailored according to students profile as well as interest can be induced within students in enhanced way by involving them to different courses and content.

Artificial intelligence paves ways to resolve the problem of exposing students to various courses. For instance, you have MOOC (Massive Open Online Course) that boost the learning process, employment opportunity and life in today's fast-paced education situation. We are just beginning to see the possibilities of AI in education by the use of tools like Siri and Amazon's Alexa, .Artificial intelligence is a new subject.

AI is already used in education for grading purpose in multiple choice tests to enable the teachers to devote much time on each student. Sooner, the achievement by way of technology may double. To grade written contents and essays new software are created by soft developers. Artificial intelligence can lead to digitalization of textbooks or create personalized learning

digital interfaces that will help students of all age groups and ranks. Study material is compressed with a more understandable guide with chapter reviews, exercise tests and charts. Artificial intelligence can reduce the study material into simple chart and smart study guides. AI can coach according to learner's problems in class material.

2. THE FOLLOWING ARE TOOLS THAT WILL TRANSFORM THE LEARNING KNOW-HOW OF THE FUTURE.

AUTOMATION OF ELEMENTARY ACTIVITIES IN TEACHING

Grading of assignment and tests for huge groups are very difficult and it also consumes time. Such precious time could be used for the students' growth and development.

ADDITIONAL SUPPORT OF AI TUTORS TO STUDENTS

Teachers help is needed in certain aspects in addition to support of AI teachers. Some AI teaching programs already exist that can help students through basic mathematics, writing, and other subjects.

FEED BACK TO STUDENTS AND EDUCATORS

Courses that are driven by AI provide students and teachers supportive response. Artificial intelligence enables lecturers and scholars to frame courses that are tailored to their requirements, which also provides response to both. Some schools that are providing online aids are using AI systems to monitor and measure the progress of student to make aware the teacher with regard to performance of the students. This supports teacher to find out where student needs to improve.

ROLE OF TEACHERS WILL CHANGE

Teachers will have to play their roles always in education, but what role and what it entails may change due to the upcoming intelligent computing systems. Artificial intelligence can take over tasks like grading, improve learning and substitute tutoring. It could also take the place of the teachers by programming in such a way that it could serve as a place for students to ask questions and find information. The role of the teacher could shift to that of a facilitator.

TRIAL AND ERROR LEARNING INTIMIDATING

AI system is considered as an ideal system, since it frequently uses trial and error method for such type of learning. This helps the students to try out and learn in a comparatively judgment free environment, when teachers are able to provide solutions for enhancement.

AI MAY REPLACE TEACHERS IN CERTAIN SITUATIONS AND STUDENTS ACQUIRE KNOWLEDGE FROM ANYWHERE AT ANY TIME

The artificial intelligence has the latent to drastically change everything in education. Students can attain knowledge from anywhere without any time constraint. Artificial intelligence can replace teachers in some situations. Already AI enabled education is helping learners to gain knowledge of basic skills and in future the developers would provide extensive services.

3. STATEMENT OF PROBLEM

The scope of teaching and learning environment depends on student's active participation in learning the lessons and using of learning approaches to remember what is learnt. Students learn effectively through experience and by doing. Quality of learning increases only if learning approaches are effective. The learning ability of each student vary, some can understand with one example and some with two examples, some will be absent for the class.

AI BASED EDUCATIONAL PROCESS

Educational process is supported by Artificial intelligence in the following way:

COMMUNICATION: using intelligent tutoring systems for appropriate feedback

Role of the teacher is to give effectual and targeted feedback to students which are quiet difficult due to the enormous strength in the class. To avoid such difficulties, many universities implement interactive learning environment to get better quality of result and counseling. Interactive learning environment refers to using a combination of e-learning techniques and technologies (LMS-learning management system) as well as reciprocal learning perspective in order to achieve a sustained learning scenario throughout the student's life. The key aim of reciprocal learning perspective is to train the students to gain knowledge and acquire in depth understanding of subject that is already learned in the class room. Association of branch of LMS (learning management system) and AI is intelligent tutoring system (ITS). Intelligent tutoring systems (ITS) results in considerable accomplishment than involving in conventional classroom instruction and study materials. To some extent personalized learning is enabled by ITS and it is also an effective tool for training the ability of problem solving.

EXAMPLE IT AND AREA OF APPLICATION

ITS	Disciplines	Target Audience
The Auto tutor	Computer science	College students
Active Maths	Mathematics	School students

TABLE NO 1

4. LEARNING DISPARITY IN STUDENTS

ITS helps in assessing the learning disparity in students' performance and also used as an instructor in answering questions regarding assignments or study material. The teacher evaluates a sample set of student responses where a computer model is created by ITS along rules it inferred about the teacher's grading decisions. Example, student's use tablets while solving tasks and doing assignments where the teacher is able to control and evaluate them. IPA (Pupil Analysis system) integrates of pupil analysis with subsystems of decision support and intelligent tutoring systems and innovative Models of the Model-base. EDM (Educational Data Mining) can be used to identify students' failures in academic and also useful to teachers to take right decisions relating to student with relevant information.

5. TEACHING METHODS: PERSONALISED LEARNING

The biggest challenge is making understand everyone present in the class room. Artificial intelligence avoids such difficulties by personalized learning. Personalised learning is that fits educational material to the distinctive needs of each and every student. By this way student's needs, pace of learning and knowledge level is satisfied. This would avoid defeat of student in the exam. Few examples are given below.

EXAMPLE OF PERSONALIZED LEARNING AND ITS TOOL

TOOLS	OBJECTIVE	TARGET AUDIENCE
Watson Education Classroom	Personalised learning through Cloud service solution	College and University students
Highlight	Personalised learning through Cloud service	College and University students

TABLE NO 2

A fast developing technology and a new scientific method is AI-enabled robotics that can teach children everything starting from programming, robotics, mathematics and logic, problem-solving and even biology. Experts and experienced can make it happen soon. Example, Cubelets is a set of robots that teach children to robotics, coding and design thinking through assembling robot blocks.

6. CONCLUSION

Artificial intelligence is the upcoming trend in our country that would replace conventional method of teaching. It should be added to the traditional studying process as it was done with gamification and currently happening with VR (Virtual reality) and AR (Augmented reality) technologies. Execution of artificial intelligence will lead to many opportunities for development of extensive open online courses. AI would enable to assess a large number of assignments, finding the gap between teaching and learning. AI supported education would not only save time but also drive towards more reliable outcomes across different classes, despite of the experience of teaching staff.

7. REFERENCES

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