

## Artificial Intelligence and Personalized Learning

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### Abstract

Intelligence differs human beings from other animals and artificial intelligence is one of the characteristics of computers. Digital transformation is an essential aspect in various fields. Artificial Intelligence is one of the latest and innovative computer technology. Artificial Intelligence has applications for fields such as agriculture, healthcare, linguistics and education. It is increasing its influence over businesses around the world.

In education field, AI has distinctive impact for many tasks right from enrollment, assessment to prediction about future course selection. It provides personalized teaching and learning for various subjects. Advancements are still continuing with better efficiency and reliability.

Artificial Intelligence technology focuses on large datasets. It analyses available data and predicts output. These predictions helps for decision making.

**Keywords:** Artificial Intelligence; predictive analysis; personalized tutor

### 1.Introduction

Artificial Intelligence(AI) technology in education is transforming activities carried out apart from teaching and learning. AI is one of the latest techniques to provide better way of completing tasks. It provides customized approach for betterment of life. All the organizations are implementing technology for improving productivity.

Artificial Intelligence is a branch of science which works based on simulation of human intelligence processes. With the help of AI the routine processes are handled in better way which in turn speedup the activities and provides quality results. To get the benefits, many organizations are putting lot of efforts.

Traditional education has been changed because of digitization. A variety of AI tools have good impact on processes. For education field , it provides lot of advancements for teaching and learning processes. AI provides assistance and automation of our routine tasks. Also it provides meaningful reports for better impact on decision making. AI gives the facility of personalized teaching and learning. It simplifies assessment process to improve speed of dependent activities. According to our needs, AI tools can be selected for effective teaching and learning. It also helps to generate smart content.

### 2.Impact of AI on Education field

Technology always provides facilities for betterment and effectiveness of tasks. It depends on our way of working up to how much extent we can use it and implement it. Now it is the world of "Digital Transformation" in which companies or individuals want to get more and more benefits from the routine tasks. They want to differentiate themselves from others.

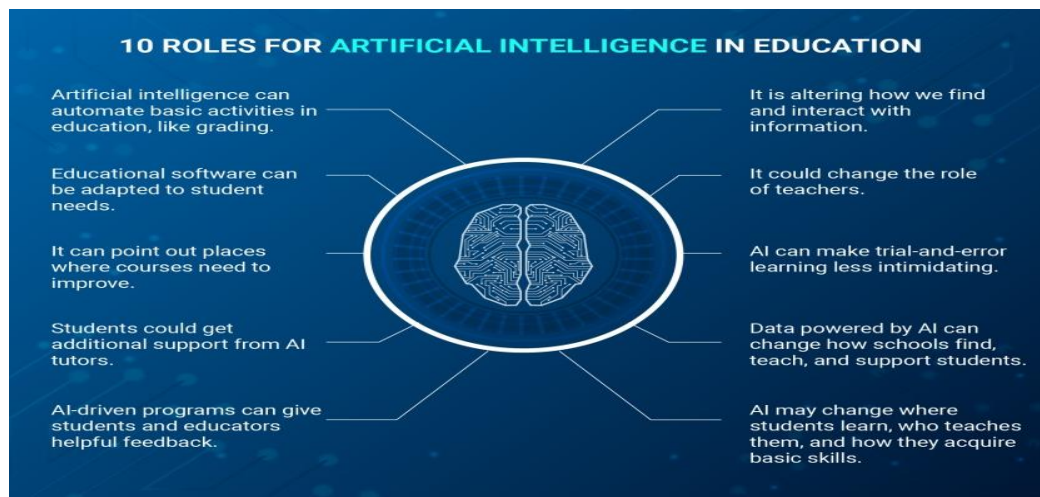
Artificial intelligence is one of the technology which has benefits in different fields.[1][2] Education is also not an exception. Tasks such as admission, examination, assessment and predictions can be automated for better results. With the help of AI teacher can provide correct path of learning. AI can enrich the skills of students. It helps students in remote areas to improve knowledge using latest resources. New learning styles can be designed using AI technique. It will help to obtain universal quality education.

We can get benefits from AI for students such as 24/7 Access To Learning. There will be continuous availability of smart contents for teaching and learning. It facilitates better Engagement. It provides results immediately. Next activity can be carried out within short span of time. It speeds up the decision making process. It enhances the quality of different activities.

### 3.Roles Of AI In Education

With the help of technology, we can build societies. AI has its specific purpose for each and every field. Market is changing and getting lot of advantages . It depends on human beings to seize or lose the opportunity. Job market will change by adding many new jobs or removing few jobs. Education skills will be based on emotional intelligence and mental stability. Apart from only information, value addition can be done with the help of AI. Initially it is essential to know the roles of AI in education.

AI facilitates personalized teaching with special needs. It automates different activities in education field.



**Fig1. Roles of Artificial Intelligence in Education**

AI can automate different tasks in educational sector. It fulfills student needs such as teaching, lessons availability. It suggests improvement and feedback. It provides different skills for teachers and learners.

### 4.Implementation of AI

#### 1. Identify the needs

For implementing any technology initial step is to identify the requirements. Based on needs implementation becomes simpler. Is it really required for your organization or not? Analyze possible benefits and limitations.

#### 2. Select relevant users

Before implementing AI , selection of the responsible team to use the AI technology is necessary. Relevant infrastructure availability is also essential step for implementation.

#### 3. Develop and refine capabilities needed for AI transformation

Based on the type of organization and type of AI implemented, decide the performance expectations.

### 5. Personalized teaching Learning Mode

Artificial intelligence provides personalized education. It provides different educational tasks in automated mode. It helps to provide digital lessons. Users can optimize regular processes. Students can learn on their own with the help of AI systems.

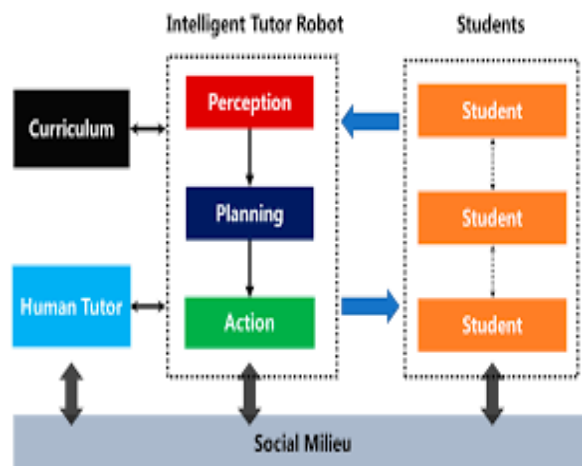
Artificial intelligence has applications for educating different subjects such as Mathematics, Science ,computers and also Linguistics.[4] It provides smart and quality lessons for student improvement. It gives score or displays result within short span of time. For learning any language AI based personalized tutor provides better support. It analyses the needs of a learner and basic skills. According to expertise it suggests courses. Basic alphabets, words and sentence creation are the activities of any language teaching learning process. Image and speech recognition are the methods of teaching and learning. System can analyze strengths and weaknesses of individual students and can suggest different courses and improvement.

Personalized tutor refers the large dataset which includes intelligence. It analyses data from syllabus and human tutor. Based on analysis, it understands the needs and decides the output to be given. It communicates with the students interactively.

Technology-driven intelligent system[3] provide a way of computing systems to automatically teach learners by giving them personalized and immediate feedback. These systems improves the capabilities of a teacher. It will not replace the teachers.

Personalized learning provides [8]following benefits:

- Keep learners engaged for longer, Enables students to learn at their pace,
- Ensures that personalized learning is more interactive,
- User assistance
- Enables students potentials to be better explored,
- Ensures that students learn at any time, and even on the go,
- Improve ICT skills,
- Ensures unbiased Judgment,
- Increased motivation,
- Better time management,
- Save cost at the long run,



**Fig.2 Personalized tutor**

## 6.Components of Personalized Learning System

With the help of personalized tutor learners can improve their abilities to learn the skills. It can guide systematically. It is developed with latest technology. It simplifies teaching learning process. Based on learner's interests alternatives are selected. There is a good impact on student success.[9]

Personalized tutor comprises of four important components. The knowledge base consists of domain knowledge. It includes details regarding the subject. Student model includes student's current knowledge state. Pedagogical module consists of instructional measures and user interface provides effective dialog between tutor and student.

## 7.Impact of AI and Latest Communication technology on Personalized Learning

AI tools are used for improving capacity. It facilitates effective communication. It automates the communication process. It gives quick responses to the user. It recommends different options to the users. It handles complex functionalities. It also helps to upgrade their fields. AI acts like a language translator where people communicate in different languages. Education field is also not an exception for vital changes due to latest technology. It provides digital assistance. Technology is becoming sophisticated. Technology provides various modern ways of teaching and learning. These tools help for effective teaching. Learning a language becomes easier by applying new methods. Instructions can be communicated in a correct manner to the learner. Learners can increase their concentration. They can understand the concept well. It improves the confidence of teachers and learners. Both teacher and learner will be able to play their role by taking interest. Based on their performance teachers can design assignments for students. Depending upon moderate or best students, teachers can guide them individually. Teachers can use audio visual aids for instructing students. There is modernization of education field.[9] Apart from teacher and student parents also play specific role. It will improve the quality and structure. It facilitates new opportunities for schools and colleges. It will help in research process. Artificial intelligence also plays effective role for teacher learner communication. Based on image recognition and speech recognition methods, concept can be learnt by taking interest.

## 8.Effectiveness of Personalized Learning during COVID-19

Since November 2019 corona pandemic started in different countries and people faced lockdown. Initially everything remained closed except necessary services. Working style of different fields has changed. But everybody realized and found the solutions during pandemic. Most of the time job is completed using online mode for maintaining social distancing.

Education field is also not an exception to it. There are problems such as network unavailability, limited resources or infrastructure. But, mgt., teachers and students overcame this situation. Now a days, education

field prefers online, personalized teaching and learning process. For conducting lectures different apps are used. Zoom or Google classrooms are frequently used resources. Teaching includes technology more. Teachers can easily use audio or video files and teach through it. Attendance is calculated automatically. Examinations are also conducted using online mode and results are also declared within less time. Even for making payments online mode is used.

People started online or personalized training very positively though they faced some problems earlier. Now online process is a part of life. Many experts conducted session online on different topics right from basic subjects to meditation, yoga and many more. It provides employment and source of income. It built confidence and providing extra skills.

### 9.The Role of AI in Future of the Education

The rapid advancements in the technology impacts different industries including Education. Additional support can be achieved. It helps to automate the activities. It improves the skills of students. It can connect classrooms all over the world. It is possible to design customized content for student for his or her improvement. AI also uses digital discussions, video conferences, personalized assignments and learning analytics. It provides smart study guide. Recent technological advancements and the increasing speed of adopting new technologies in higher education.[12] It helps to design global classrooms. Information will be made available in different languages. Teaching content will be analyzed in a correct way.[14]

### 10.Impact of Learning Analytics

Learning analytics is an effective digital tool in personalized teaching. It is beneficial in teaching and learning process. It is the collection of learners and teaching and learning methods for the improvement of education field. Students, instructors, departments and advisors are important entities. It will change the traditional ways and will improve the performance of the student and teacher. It will help for data driven decision making and strategic planning. There are different phases of learning analytics. Based on requirements data is collected. Data will be provided for decision making and relevant predictions will be done. Proper action will be taken. If necessary refinements are done.



**Fig.3 Learning Analytics Phases**

### 11.Conclusion

Artificial intelligence is the technology which can help teachers and students. It provides intelligent tutoring system. It is based on dialogue based and exploratory environment. Computer assisted instructions is important feature of personalized tutor. AI facilitates augmenting classrooms. It facilitates stronger human-machine interaction. Students can get virtual assistance and well organized curriculum. It will eliminate the boundaries for learning. It provides great education for young people. Education is becoming more streamlined. It develops the mind of a student. There will be best practices in education system. Value added information will be given to learners. Information can be provided in different levels.

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