

## Hands on training on use of AI in teaching learning process: Different modules for online teaching

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## Abstract

Artificial intelligence (AI) technologies are used in many fields, including teaching. This study examines AI research from the point of view of online distance learning, motivated by the state-of-the-art and the expanding application of AI technologies. The education sector has the most potential for applying artificial intelligence (AI). There are a lot of problems that colleges and schools are facing right now. These include high rates of student disengagement from the classroom and dropout rates, as well as the failure of traditional teaching methods to keep up with ongoing outbreaks. When artificial intelligence and large amounts of data are used appropriately, they can help solve major problems in the education sector and support learner-centered approaches that are tailored to the demands of the modern world. The primary goal of the project is to investigate how artificial intelligence and large amounts of data are being used to adapt the E-learning system in order to provide students at different colleges and universities in Raipur, Chhattisgarh, with better educational opportunities. The method of purposeful sampling was used to gather the study's sample dataset from the 290 students registered in various postsecondary educational institutions. Software such as SPSS & Smart PLS 3 were used for analysing the gathered data. The process of modelling how people think and creating a machine that can behave like a human is called artificial intelligence, or AI. The challenges that higher education institutions and students face when utilizing these technologies for teaching, learning, administration, and support for students are highlighted in this study.

Keywords: Artificial intelligence (AI), big data, learning techniques, Raipur, Chhattisgarh, education, Schools and colleges, student, education sector, E-learning, SPSS

## 1. Introduction

Artificial intelligence technology is affecting all aspects of our lives, especially education, as we live in a technologically advanced digital agent [1]. Thus, artificial intelligence has the potential to help improve methods of instruction and learning while also overcoming many of the challenges associated with online distance learning [1, 2].

We must think carefully about how to use artificially intelligent technology in education in general, and online courses of study in particular, given the abundance of big data, [3], the capacity of AI technologies to create models on their own, [4], and the growing popularity of learning analytics techniques [5, 6]. This paper's primary goal is to review the literature on the use of artificial intelligence in distance education online, driven by the most recent advancements in artificial intelligence technology [7].

The use of technology in today's world has become inevitable [8]. In addition to affecting people's lifestyles, technology has also had an impact on how we communicate, work, [9, 10], and learn. Innovative ideas of all kinds continue to emerge, improving the practicality as well as effectiveness of our work and activities. An even more recent advancement in technology is the term artificial intelligence, or AI for short.

which is now beginning to draw notice as a means of acting human [11]. Throughout its evolution, artificial intelligence has additionally permeated the field of education [12]. With the aid of education assistants like bots, AI systems enable people to learn [13]. To improve the standard education provided in the modern era, the field of education must adjust to technological advancements, particularly with regard to technology for communication and information [14]. The use of AI has made it possible to present the digital learning material that is being created today [15].

When we talk about artificial intelligence technology, we're talking about machines that have the capacity to reason, evaluate options, and make decisions just like people do. Large-scale research and development is currently being done on artificial intelligence (AI), a technology that could eventually replace and even mimic the work of human beings.

According to the definition, artificial intelligence was developed so that programs and robots could behave like people. Obviously, to make human labour easier [16]. Even a variety of digital platforms have included AI. Artificial Intelligence is utilized to facilitate human tasks. AI has been used by a number of tech companies, including Microsoft, Google, Amazon, and Facebook [17]. A technology known as artificial intelligence, or AI, allows machines to learn and analyse logic just like people do.

It is claimed that this technology can aid in simplifying the extremely complex human existence. Intelligent algorithms, iterative processing, and multiple data sources are all combined to create artificial intelligence (AI). As a result, patterns or additional characteristics in the data can be automatically recognized by the software. Another way to describe AI is as an extremely wide area of study [18]. Artificial intelligence (AI) encompasses an extensive variety of theories, techniques,

technologies, and subfields, such as neural networks, machine learning, artificial intelligence, vision in computers, and scientific language processing [19].

The field of Artificial intelligence is currently growing at a rapid rate, which has significant implications for the services provided by higher education. Universities currently employ a form of the use of artificial intelligence that is in its early stages [20]. This solution offers guidance to students at any time of day, 365 days a year, for CBSC institutions in Raipur, Chhattisgarh.

Use is a representation of how man-made consciousness (man-made intelligence) will influence the creation of the regulatory labour force in advanced education later on, regardless of whether it puts together itself with respect to calculations that can finish dreary and to a great extent unsurprising responsibilities [21 ,22]. This is modifying the labour force's construction, the time elements inside the foundation of higher learning, and the quality administrations that are advertised [23]. Utilizing a similar measure of organization staff individuals who were formerly dealing with this capability is becoming pointless thanks to a supercomputer that can give redid input whenever.

This study focuses on devices that can observe, respond, learn, identify, and solve problems like artificial intelligence based on the technologies previously mentioned. In the near future, these advances in technology will revolutionize workplaces. Similarly, the future of innovation appears to be in areas where artificial intelligence may communicate with people and help them perform at their best.

Though it may actually be the "Fourth Revolution in Education," many view AI as a "driver" that is essential to the "Fourth Industrial Revolution." AI is now covered in educational programs as well. Using offline educational strategies to assess students' learning is challenging because e-learning and traditional education are not the same?

Since there are more students and a more complex learning process and set of learner behaviours, e-learning solves the problems associated with time and space [24]. Under the old teaching methodology, the progress of the students was evaluated based on the completion of their homework and test scores. It is impossible to precisely and quickly evaluate student behaviour during the learning process. Assessment in online learning through "big data analysis" techniques can track and utilize student data about their learning, which may also be computed scientifically, allowing for a timely and accurate assessment of learners' performance.

If artificial intelligence is used in a way that affects the jobs of teachers, they are concerned. As an alternative, researchers and professionals in education have been talking about AI applications and learning. Some believe that, similar to how technology has replaced many other jobs, advances in artificial intelligence will either challenge or completely replace educators. While some students who can be regarded as "digital citizens" are able to support these changes, other students' opinions and attitudes toward them also constitute one of the new challenges.

However, a lot of students at Raipur, Chhattisgarh, and other CBSC schools around the world have adopted a positive view of AI in the classroom. Since artificial intelligence (AI) technology is still developing and growing, there is still a long way to go before it becomes fully utilized in education. This study suggests the function of the artificial intelligent system for instruction through the use of big data analysis techniques, assuming relevant researchers for learning analysis and generalized big data methodologies.

The use of AI (Artificial Intelligence) is becoming more and more prevalent in a number of industries, including education. Artificial Intelligence (AI) has revolutionized education, particularly in the domains of science, technology, engineering, and mathematics [25]. However, artificial intelligence will also transform the field of instruction as a whole. Artificial Intelligence is one technological advancement that has gained attention lately (AI).

Technology plays a major part in making many job functions easier, including those in the educational sector. AI has applications in the field of education as well. Instructors and lecturers are better able to comprehend the needs of their students. The pupils won't have any trouble learning in accordance with their needs. It is thought that artificial intelligence (AI) can improve human learning and help people accomplish their educational objectives more successfully. Thus, it should come as no surprise that a number of AI-based developments and breakthroughs have been and will be used to enhance learning in order to make it more useful and effective.

In order to ensure that education continues, it is necessary to overcome the challenge posed by AI in the area of education, which in turn causes teachers to express concerns. Educator working alongside AI in learning implementation is one of the firm convictions that instructional professionals cannot be substituted by AI. Science and technology literacy are requirements for teachers.

#### *Objectives of the study*

Determine who the intended audience is, such as educators or other professionals in the field of education.

To provide participants with the knowledge and ability to choose and apply AI tools and technologies in an informed manner.

Customize each student's educational experience by adjusting the course material and pacing to suit their needs and skill level.

To evaluate how AI affects student outcomes and the quality of online learning.

## **2. Literature Review**

(Stadelmann, T., 2021) [26] We introduce the "AI-Atlas" didactic concept as a cogent collection of best practices when teaching machine learning (ML) and artificial intelligence (AI) to a technical personnel audience in tertiary education. We also report on its implementation as well as assessment within two real courses: an ML introduction in an interdisciplinary engineering graduate program and an AI introduction in the final two years of a university-level computer science program. With small classes taught on-site and an emphasis on leveraging the lecturers' special abilities in motivational public speaking, the concept was created in response to the recent surge in AI and the ensuing demand for fundamental teaching on the subject to a wide and diverse audience.

(Ferro, A. 2019) [27] The education of implant dentistry is undergoing rapid evolution due to the advent of new technologies that enable creative approaches to teaching the principles of implant dentistry. The experience and viewpoints of knowledgeable writers were integrated with literature from the domains of haptics, mixed reality, virtual reality, artificial intelligence, and active learning. The learning methods' advantages and disadvantages are discussed. While the core goals of

learning and instruction have not changed, new approaches to teaching and learning are creating new opportunities to reach more students and include learning into hands-on experiences.

(Nagao, K., & Nagao, K. 2019) [28] This book describes how integrating artificial intelligence into education can enhance human learning. Let's first take a look back at the contributions that information technology, particularly artificial intelligence, has made to education. Several technologies have been created to make education simpler for students and to provide an environment that makes teaching easier for teachers. E-learning and automated tutoring systems (ITS) are two examples of this. E-learning is a kind of education that has evolved alongside web technology and uses online media. An early artificial intelligence system, the rule-based system, was used in the development of ITS. Improvements have been made to educational contents and learner models, or user models for learners.

(Oliveira, A., 2022)[29] The advent of Industry 4.0 (I4.0) is redefining how systems and processes work by taking into account Cyber-Physical Systems in conjunction with a wide range of newly emerging technologies related to information and communication, such as Cloud Computing, Artificial Intelligence, Internet of Things (IoT), and Intelligent Robots. However, the rise of these technological innovations clearly shows that young undergraduates and working professionals need to be requalified and upskilled. Thus, successful execution of lifelong education and training programs that address these issues is necessary for the widespread adoption of I4.0 system and related technologies.

(Elmesalawy, M, 2021)[30] E-learning has grown more popular as a result of the COVID-19 pandemic and its global outbreak. But industries that depend on laboratory work, like engineering, science, and technology, have a unique problem because there aren't enough online laboratories management systems available. The specifications and layout for an adaptable AI-based laboratory educational system (LLS) that facilitates online laboratory experiments are provided in this paper. Based on a survey that was conducted for a specific set of LLS features, the LLS design specifications are elicited. The LLS is flexible enough to support different types of online experiments, such as remote-controlled or virtual tests using desktop or web applications.

(Alam, A. 2021,) [31] Artificial intelligence (AI) is a technology that can be used in non-traditional computer environments and is widely accessible to the general public through low-cost smart devices. These inexpensive devices come equipped with built-in computing edge capabilities, cloud-based services for cooperatively tackling complex problems, conciliation accession for flexible network connections, and access to vast amounts of both open and restricted data resources. AI has a minimum of two benefits for education: (1) the educational process, which includes support and adjustments to teaching and the educator's daily duties; and (2) the educational scope and content, which includes determining the type of education required. The author of this piece examines both the possibilities and challenges that artificial intelligence presents for the field of education.

(Marchak, D., 2021) [32] All of the summer 2020 teacher training courses had to switch to digital formats due to the COVID-19 pandemic. This change put the core of the arts-integrating course "Teaching Chemistry by an Innovative Approach" in risk because the approach's foundation is active, hands-on, and creative learning. Here, we outline the evolution of the course's format and

contents from a prearranged in-person setting to a customized, effective online learning environment. During the adaptation process, there were two main objectives taken into consideration: (1) giving teachers the educational and professional backgrounds they needed to fully comprehend the arts-integrating look at through innovative, active learning methods, and (2) giving them the actual tools to reconsider and create their own instructional resources to suit remote teaching through including supportive neuropedagogical aspects.

(Yu, J. 2021) [33] The prediction technique of students' online educational achievement has been researched in an effort to raise the standard of instruction in online learning. First, a theoretical analysis and introduction are given to learning evaluation, machine learning, artificial intelligence (AI), and other related ideas. The decision tree of the single algorithm for classification and the RF (random forest) decision tree of the combined learning algorithm are then analysed, and the RF algorithm is used to build the educational achievement prediction model for online learning. Ultimately, the educational achievement projection algorithms of online education is empirically verified for practicability and reliability using data from the education platform. The meaning of learning analysis is defined, along with its function and constituent parts in the learning process. The analysis of the RF and the decision tree algorithmic principles is done. The methods of discretization and information entropy concepts are applied to the continuous variables in order to enhance the algorithm's degree of connection. Empirical analysis is used to assess the model, and comparisons are made between the performance on the test of various algorithms.

(Kavitha, V., 2019) [34] The utilization of web based and PC innovations to give a large number of answers for work with learning and upgrade execution is known as e-learning. E-learning has proven useful for staff instruction, updating, and the development of specialized skills in students and young people as well as employed professionals. Online training is provided by 77% of American businesses to help their employees advance their careers. Many uses for e-learning have been found for it, and most people with different learning styles can benefit from its features. A great deal of investigation has been done to determine the ideal design for creating e-learning courses based on the goal and the intended audience.

(Lemole Jr, 2007) [35] Numerous hours of closely monitored intraoperative training are necessary to master the neurosurgical skill set. The amount of surgery that neurosurgical residents are exposed to has decreased due to a combination of political, financial, and social forces. Realistic neurosurgeon simulations that replicate the operative experience without regard to time or patient safety requirements must be developed. Virtual reality platforms that run on computers provide just that. Realistic algorithmic simulation is made possible by the combination of virtual reality, dynamic, three-dimensional in nature stereoscopic representation, and haptic feedback technologies. To replicate the process of a complex neurosurgery procedure, the majority of techniques may be conceptualized and divided into critical task elements that can be simulated separately or in combination with other modules.

### *Research gap*

Artificial intelligence, or AI, has advanced significantly in the field of higher education, especially in the area of online instruction. assessing how personalized learning affects student outcomes over the long run, such as motivation, engagement, and achievement in school. evaluating the data privacy concerns and ethical issues related to personalization as well. evaluating the AI-generated

content's quality and compatibility with educational goals. investigating how the AI can improve the curation of pertinent educational resources and help address the problem of information overload. examining the creation of AI systems capable of identifying and decreasing cultural insensitivity and bias in relationship and educational content.

#### *Hypothesis*

*H01:E-learning is directly impacted significantly by artificial intelligence (AI).*

*H02:Big data directly affects e-learning in a major way.*

*H03:The application of artificial intelligence (AI) and its impact on CBSC educational institutions are mediated by e-learning.*

*H04:Big data's impact on CBSC educational institutions is mediated by e-learning.*

#### METHOD

This exploration is both quantitative and graphic in nature, and it is directed utilizing review strategies. Essential as well as auxiliary data are used [36]. The survey strategy was utilized to accumulate information for this review. Understudies, specialists, instructors, PhD proprietors, and teachers from various Raipur, Chhattisgarh, instructive CBSC schools filled in as the review's members.

The questionnaire is made up of two sections:

Section-Ainvolves demographical data of respondents.

Section-Bcomprises of the estimation of the job of man-made intelligence and large information in the transformation of web-based learning methods in the establishments of instructive CBSC schools in Raipur, Chhattisgarh by utilizing the "5-point Likert scale," going from "firmly concur 5" to "emphatically deviate 1."

A sample of participants from Raipur, Chhattisgarh's higher education institutions were given the questionnaire, which was created using "Google Forms" and disseminated via the use of several social media platforms. While 295 responses were discovered, only 290 were selected for the study in order to speed up data processing [37]. This study verified the sample dataset that was collected from the participants and employed the statistical methods and tools that were appropriate for additional analysis. To statistically analyse the data gathered, researchers used "SPSS (v-25)" and "SmartPLS3 software [38].

The academy experts claim that the information has also been analysed with the goal of ascertaining the "future prospects of higher learning with regard to artificial technology" from the educational CBSC schools in Raipur, Chhattisgarh. Along with participant evaluations and comments, the researcher also obtained expert opinions. Researchers have been able to make inferences about the future of big data as well as artificial intelligence in educational institutions thanks to the comments, viewpoints, and multiple-choice answers submitted by the respondents [39].

### **3. Results And Discussion**

The survey had two sections with a total of twenty-five questions. The demographics of the respondents were covered in one section, and the big data, e-learning, artificial intelligence (AI),



and educational CBSC schools were covered in the other four. For the participants' assessable data, a condensed version of the scale for rating was used.

Out of the 295 responses received, only 290 were selected for the study in order to speed up the processing of the information. SPSS (v-25) and Smart PLS 3 programs were used to perform a statistical examination of the data. The research results and findings are compromised in this section. The responses and perspectives of a selected group of respondents to the survey utilized for this study allowed the researchers to draw conclusions about the future directions of artificial intelligence education in CBSC institutions in Raipur, Chhattisgarh.

#### *Data of the Respondents*

The sample responses of the people who completed the questionnaire are shown in this section. The answers to the questions about the selected demographic factors for the study are displayed in Table 1. The data that is displayed right here comes from original sources.

Table 1 Participants' baseline information (N = 290).

Basic	Category	Frequency	C.F.	Percentage
Gender	Male	170	170	64.05
	Female	120	300	36.94
Ages	5-10	45	35	12.60
	11-15	80	102	14.02
	15-18	140	210	25.09
	18-22	25	250	56.36
Subject of the study	Maths	57	25	26.36
	Civil	82	55	14.25
	So- sciences	62	26	56.36
	English	89	89	15.69
Level of the study	1 <sup>st</sup>	52	58	18.99
	5 <sup>th</sup>	75	129	15.96
	10 <sup>th</sup>	62	189	24.25
	12 <sup>th</sup>	103	300	36.25
Present status	On study leave	90	75	25.36
	Full – time student	80	150	31.25
	Work and schools	120	240	77.26

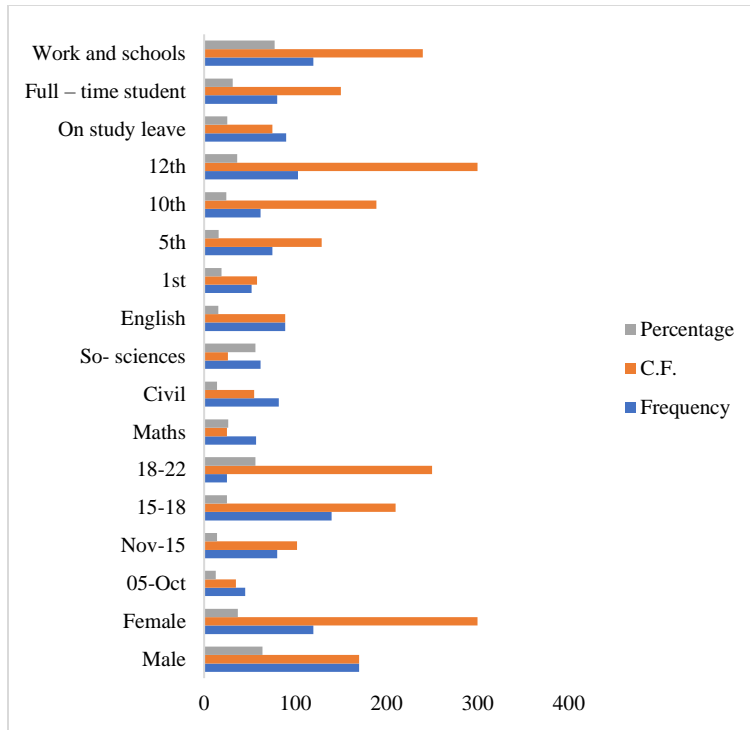


Fig. 1 Participants' baseline information (N = 290).

The demographic statistics of the participants, broken down by age, gender, course of investigation, level of study, and current status, are displayed in Table 1. The data indicates that 65.05% of the sample responses were men (M), and 36.94% were women (F). According to the information provided, a minimum of 12.60% of all respondents are between the ages of 5 and 10; 14.02% are between the ages of 11 and 15; 56.36% are between the ages of 15 and 18; 25.09% are between the ages of 18 and 22; and the remaining respondents are within this age group.

According to the information above, mathematics courses accounted for a minimum of 19.65% of the total amount of courses chosen for study by the respondents. Of that total, the majority—15.69%—represents art and design English, while 26.36% devotes itself to technology and civil, 14.25% to business, and 56.36% to business.

A minimum of 18.27% of participants are in their first year of study, 18.99% are in their fifth year, 15.96% are in their third year, and 24.25% are primarily in their tenth year. According to the respondents' current situation, at least 25.36% are on leave to study, 31.25% are enrolled full-time, and the majority, 77.26%, are employed while also going to school.

*Assessment of Measurement Models*

Three methods were used to test the measuring model: discriminant validity, internal uniformity, and convergent validity.

The mean, standard error of the mean, and loadings of factors of each construct utilized in this investigation are shown in Table 2.

Table 2 Construct loadings, SD, and mean.

Particulars	Items	Mean	SD	Loading
Artificial intelligence (AI)	AI 1	3.79	1.159	0.81
	AI 2	3.69	1.149	0.59
	AI 3	3.49	1.129	0.87
Big Data	Big Data 1	3.89	1.120	0.79
	Big Data 2	3.89	1.014	0.59
	Big Data 3	3.51	1.008	0.89
E- learning	E-Learning 1	3.69	1.059	0.97
	E-Learning 2	3.59	1.104	0.49
	E-Learning 3	3.14	1.149	0.54
Educational CBSC Schools	CBSC	3.16	1.124	0.11
	CBSC	3.59	1.049	0.56
	CBSC	3.89	1.249	0.46

comprises of the estimation of the job of man-made intelligence and large information in the transformation of web based learning methods in the establishments of instructive CBSC schools in Raipur, Chhattisgarh by utilizing the "5-point Likert scale," going from "firmly concur 5" to "emphatically deviate 1."

Table 3 Results of convergent validity.

Factor	Cronbach Alpha	Rho-A	CR	AVE
AI	0.891	0.894	0.798	0.697
Big Data	0.856	0.597	0.597	0.649
E- Learning	0.798	0.591	0.597	0.798
CBSC	0.259	0.497	0.891	0.736

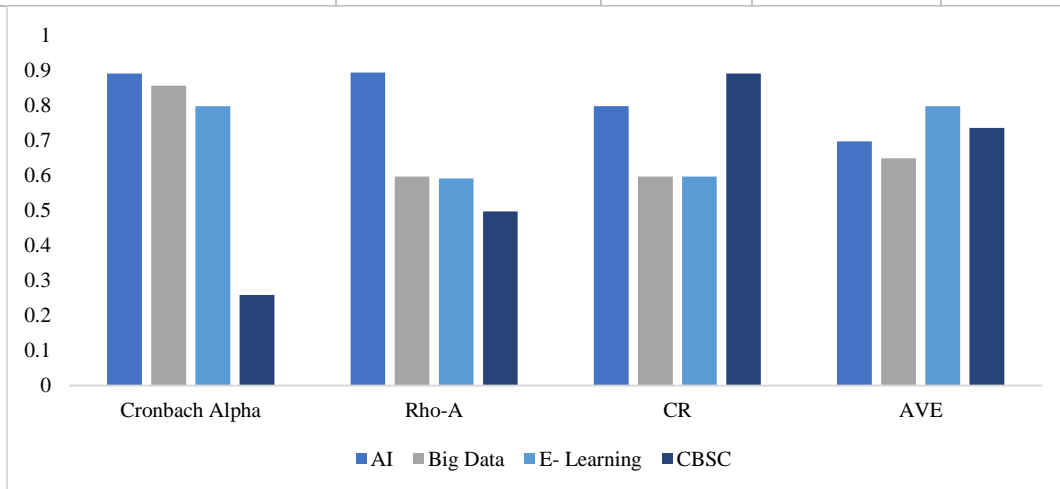


Fig. 2 Results of convergent validity.

The "square roots of the average variance extracted" for the available constructs are displayed in Table 4. These values were what they were: E-learning (0.821), AI (0.828), large-scale data (0.880), and CBSC (0.828) had higher correlation values than the correlations between any two constructs and all other constructs.

Table 4 Differential validity.

Factors	AI	Big Data	E- Learning	CBSC
AI	0.894			
Big Data	0.791	0.795		
E-Learning	0.741	0.979	0.891	
CBSC	0.798	0.690	0.771	0.826

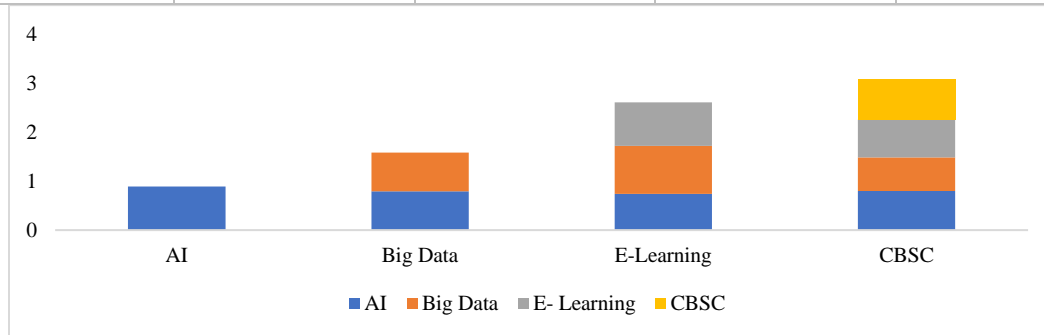


Fig. 3 Differential validity.

Table 5 portrays the qualities for every one of the builds (simulated intelligence, large information, E-learning, and CBSC) were underneath the suggested worth of 0.9. Hence, there is a foundation of estimation model's discriminant legitimacy.

Table 5 Differential validity.

Factors	AI	Big Data	E- Learning	CBSC
AI	0.856			
Big Data	0.798	0.891		
E-Learning	0.597	0.798	0.891	
CBSC	0.590	0.491	0.793	0.798

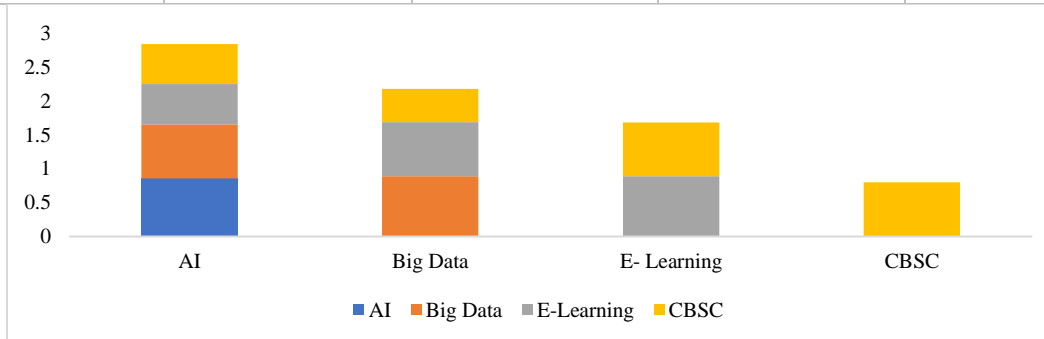


Fig. 4 Differential validity.

The study helps for H01, H02, H03, H04, and H05 is shown in Table 6. H01 shows that keen machines and e-learning have a positive and quick association ( $\beta = 0.540$ ,  $t$ -esteem = 6.249,  $P$ -esteem < 0.001). Simultaneously, H02 shows that large information as well as e-learning have an immediate and good relationship ( $\beta = 0.262$ ,  $t$ -esteem = 2.364, and  $P$ -esteem < 0.001). Interestingly, H03 shows that computer-based intelligence and CBSC have a prompt and gainful association ( $\beta = 0.369$ ,  $t$ -esteem = 3.497, and esteem < 0.001).

Table 6 The immediate effects of big data, AI, and hypothesis testing.

Hypothesis	Path	$\beta$	T- Value	P-Value	Results
H01	AI→E-Learning	0.540	6.249	<0.001*	Accepted
H02	Big Data →E- Learning	0.262	2.364	<0.001*	Accepted
H03	AI→CBSC	0.369	3.497	<0.001*	Accepted

### *Consequences of the Research*

The consequences of this study show that to find new money sources and acclimate to new generational procedures, instructive establishments should go through tremendous changes. Since educational CBSC schools are known for being conservative, making a few changes to the organizations and the way that instruction is delivered might be a good thing [40]. This study focuses on emerging technologies and how they affect learner education and schools. In an era where big data and computational intelligence are ingrained in our educational system, the quick uptake of emerging technologies in college and university settings is being studied to forecast the characteristics of the educational CBSC learning institutions in the future [41].

### *The Study's Restrictions and Its Prospects*

The present study's limitations and their potential implications are as follows: The first drawback is that while rural areas might have an entirely distinct educational environment, the bulk of sample respondents were from metropolitan areas. Because the study only looked at universities or other urban educational institutions, its generalizability is thus restricted. Second, there is a remote possibility of the results being broadly applicable because purposive sampling was employed as the non-probability sampling method. Third, while there may be other settings to take into consideration, we only examined one mediator variable—e-learning. The learning sequence in Learning CBSC schools can be influenced by neural networks and big data through the introduction of any other appropriate moderating variable [42].

To speed up the adoption of big data and artificially intelligent technology, future research should evaluate schools of learning or Learning CBSC schools' digital pedagogy and link it to students and teachers. In addition, we conduct research on E-learning using a variety of techniques and data types, or we use a qualitative method.

## **4. Conclusion**

Teachers need to know how to use methods involving AI appropriately to help students accomplish their academic goals. There are four primary components to this research study: e-learning, big data, educational CBSC schools, and artificial intelligence (AI). The big data-driven AI teaching system helps students' study on their own by establishing an atmosphere that is conducive to academic achievement.

In educational CBSC schools, the AI teaching system enables students to learn beyond temporal and spatial constraints. Yet since AI teaching systems put teachers and students at a distance and require educators to manage multiple students at once, e-learning is unable to help teachers recognize their students better. It is challenging to monitor each student's progress in learning because teachers are unable to carry out their job responsibilities as they would in a conventional learning environment.

Nonetheless, educators make an effort to comprehend and observe each learner's unique learning environment and procedure. They provide student the right direction to increase their capacity for learning. To solve these problems, it has therefore been crucial to use big analysis methods in e-learning. Student learning data that has been gathered may be used to assess, monitor, and analyse the educational environments of the students. In informative CBSC learning institutions in Raipur, Chhattisgarh, e-learning evaluation is essential for providing students with personalized learning and is also beneficial to instructors for offering individualized instruction.

## 5. Future works

It is expected that each of the paper's future recommendations and current accomplishments will contribute to the goal of supporting educators and students in pursuing continued growth.

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