

# The Opportunities and Challenges of Artificial Intelligence (AI) Application in Education: Literature Review

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**Abstract**—The main goal of this article is to study the Opportunities and Challenges of Artificial Intelligence (AI) Application in Education. Artificial intelligence is the most increasingly advanced technologies. It has brought about seismic changes in the world of education. The problem study in this report AI's issues and issues have created a slew of hurdles while also opening up new potential for AI education. This study examines the absorption and exchange of AI systems in the sphere of education, as well as the obstacles and potential development patterns of AI technologies. Also, in this article evaluated the research objectives and questions. Moreover, the literature indicates that a variety of study methodological designs are accessible. To develop the study approach, the layered model has three basic levels. This chapter explains the research design and sampling procedure used in the main study. It also briefly described the instruments used for the research analysis procedure of the main study. It also explained the method of data analysis. Using past sales, this technique forecasts future trends while excluding seasonal impacts and inconsistencies. This forecasting technique is aided by more accurate sales data, which indicates how certain consumers and types of customers will purchase in the future. This data can help analysts discover new ways to market and sell products.

**Keywords**— Artificial, Intelligence, Education, Application, Challenges, systems, development, and Challenges.

## I. INTRODUCTION

As indicated by the fundamental history of AI technological advances, education is just the sector most touched by AI, as well as being among the earliest, fastest, and perhaps most promising industries for AI; this element is generated through good AI depth learning methodologies and other technical concepts. The fundamental elements of this wave of Machine learning and artificial intelligence are movement capability and technology mobility to crucial sectors of overall socio-economic development including education. The present AI knowledge management in teaching has only recently begun, yet it has showed enormous promise. Education is consolidating its leadership position in Artificial intelligence strategic planning, and a significantly bigger AI technology tidal is developing (Jaakkola et al., 2020).

The program measurement tool is now included in computer education technology, which is employed for instructional, online homework registration and modification, online assessment, and so forth. Intelligent speaking English data is to be collected Phrased speech assessment is now feasible thanks to advancements in Advanced technologies

including such voice recognition, image and speech recognition, speech processing, and natural language, particularly the success of deep learning approaches in this sector. It is offered in the departments of initial evaluation and language instruction. An all-inclusive program. To accomplish personalized smart voice rating, spoken and word evaluating method is based upon that actual conversation mode, which covers a range of scenarios including through spoken teaching English, teaching, evaluation (Hee Lee & Yoon, 2021).

The motivation for study stems from the fact that the researchers of this study have already been professionally involved in the advancement process that occurs in education in their respective nations for generations. For illustration, literary works again from China are suitable for big and non-formal education. Furthermore, individuals have launched the adoption of AI technology in schools' establishments where they work as well as which they confidentially own. AI technology is not yet developed enough. AI's issues and issues have created a slew of hurdles while also opening up new potential for AI education. Conceptual study utilizing empathy, sentimentality, and protracted relationship are still in a comparably primitive step as a result of expiration; in terms of item support artifacts, many Techniques are still only utilized in the field of kid's future; at the same time, AI education is employed in various fields. The majority of them are currently in the planning stages. The commercial application variety possibilities need to be realized.

There are no legal system rules in place to address AI's possible moral and ethical difficulties. At this point, AI is progressing toward superintelligence that can fully reasoning and solve issues; yet strong AI requires policy direction and governmental oversight. The moral and legal difficulties raised by oversight are concerning. The implementation of Artificial intelligence, for particular, is based on a gigantic variety of data training phase and reference information and vetting, in particular in the area of teaching with different personality traits. AI education solutions are developed using massive amounts of educational data. And because this is the fundamental data structure, the possibility of pupils' and instructors' interpersonal connection, teaching conduct and practices, and many other data issues is greatly enhanced, and private information is called into doubt (Kaplan & Haenlein, 2020). AI systems are being created to accomplish activities

that cater to the needs of artificial intellect. For a long time, space opera artwork has alluded to the amazing and often disastrous repercussions of widespread usage of intelligent machines. Machine intelligence has become prevalent in our daily lives in some more areas than one. This study is to investigate the opportunities and challenges of AI Application in Education sector of China. Different variables are not considered in this research in this way giving space for promote study on the evaluation and analysis and the little example measure utilized does not have factual help for convincing outcomes or generalizing the findings. Moreover, this research will be limit in some school and area of China.

## II. LITERATURE REVIEW

The main issue is that artificial intelligence technologies are not available to every learner (Roberts et al., 2021). The categorical prediction suggests that a data set is seen and then allocated to a certain category depending on the data obtained from the set. Insurance firms, for example, utilize categorization predications to classify various varieties of claims. Structures within collected data are discovered utilizing algorithms to illustrate the measure of all results within value estimation. Multinationals use it to project the number of units of a product that will be sold in the near future. They are free to develop their manufacturing plans as they see fit. Aside from these expectations, there are two types of education controlled and unsupervised teaching. Despite the fact that instructors, researchers, representatives, and students all confront persistent challenges, new responses to these three groups' problems are being created with the help of AI. To begin, the quality of the teaching personnel should be upgraded in order to improve education systems. Second, in order to improve learning outcomes, it is necessary to understand the elements that contribute to teachers' burden. (Version, 2018).

AI will encourage instructors' roles to be transformed in order to adapt to the changing educational environment. Because of the use of AI education, the job of instructors will alter dramatically in the future. To begin with, the standardization of open data implies that instructors no longer have an advantage in terms of knowledge and skill. Instructors become drivers of learning methods instead of power structures, content creators rather than information specialists, and pupils and teachers share the same information framework. The premier educational approach is no longer appropriate; second, instructors who have been relieved of simple and repetitive tasks such as heavy academic revision and examinations evaluation must focus more than on students' individualized teaching plan creation and capacity building strategy study. When a result, as education evolves with the times, education training objectives and teaching methodologies shift, instructors must stay ahead of the curve to adapt to the changing school environment in order to better perform their function as a tried to learn topic. Also, can hasten the deployment of high-quality AI learning and encourage the accomplishment of confined training. The school administration is in desperate need of restructuring in light of the upcoming college admission exams. Decent

education, regarded as one of the key components of education reform, urgently requires a new stage of evolution of complete and accurate testing and evaluation systems for achieving entire business process publicity, from measurement development to methodological approaches, ready, honesty systems, and results notifications (Hee Lee & Yoon, 2021). Through comprehensive unification and implementation of latest educational theories and Artificial intelligence, new designation will be able to break free from the constraints of providing practice test training in the future and develop into a strong advocate of inclusiveness and knowledgeable higher education. Create a questionnaire design that is incorporated only with institution's perfectly natural learning and teaching tasks; attendance of student's growth data using a research and successful materials regulatory and truthfulness system; conduct methodology and evaluative reviews; and incorporate various examinations such as trainees, family members, education institutions, and private entities. The overall structure and might provide intellectual testing arithmetic operations of study findings depending on nationwide and regional specifications, having formed a single codebase of appropriate consultation and worked hard to keep, providing assistance academic security agencies in research selection, and achieving proper training of understudies' search, interpretation, and reading ability. Carry out a thorough and fair evaluations of individuals' general performance, and advise and support advancement of pupils' quality. (Hee Lee & Yoon, 2021).

## III. RESEARCH METHODS

This study is quantitative. Qualitative research examines and presents a local event to get understanding rather than evaluate a hypothesis. The study's purpose, questionnaire structure, and intellectual capital (useful objects) should guide its research approach. According to the expert, the interview started the analysis by gathering important material, expanding their grasp of the subject and past studies, and then devising a study approach. Despite learning AI education opportunities, the study used a qualitative design. Research design depends on natural or local event analysis. Individual ecological systems provided these data. The researcher wants to understand participants' contexts. The sample population's perspective on descriptive research design is more likely to be conveyed. Methodically plan the research. Methodology chapter refers to how a company chooses data collection and analysis methods for a study. Study technique selection includes choosing and determining knowledge limitations and training people to provide correct and timely data. Engaging research questions helps researchers understand respondents' interactions with the topic under study. One research method involves displaying oral stimulation and responding via structured interview. Interviewing methods include interviews. In recent years, cultural studies, particularly development studies, have valued research approaches. Study methodologies define the steps from general ideas to data collection, appraisal, and analysis. The research methodology used depends on the following. Research methods include descriptive, empirical, and mixed. Even the first research

philosophy interacts with personal data from responses or interviewers' brains, while the other can be employed to assess empirical results using statistics. Empirical research also involves small-group studies. Quantitative research approaches, on the other hand, seek a large number of instances and examine results numerically. Recent mixed method strategies use mixed method material to answer research questions and identify difficulties.

Case research seeks viable explanations applicable to diverse people. The goal is to establish, corroborate, and interact and establish generalised claims that add value to conceptual frameworks. Survey questionnaires employ real data from a sample of people. Research studies aim to conceptualise reality to grasp the problem, analyse these dependent variables, and examine their relationships. Online business help was correlated through statistical analysis. According to the literature (Article, 2019), research methodology is a crucial part of any study and must be designed before beginning any line of exploration to provide all the necessary processes and methods for successfully completing the literature review. A study methodology is a structured research procedure. Methodology is a logical process based on basic concepts that organises a study to achieve its goals. The literature suggests many studies methodological designs. The three-layered model develops the study approach. The first level directs the 2nd and 3rd inner levels with the research approach. Study methodology includes surveys, interviews, observations, and focus groups, whereas "methodological approach" refers to research approaches. Methodological refers to study methods or a research topic's methods. The study's research methods matter. Data collection and presentation require methods. Descriptive survey methods and questionnaires can be used for several study methodologies. Ideas are descriptive, but numbers are quantitative (D-WIGO., 2018). Empirical qualitative research methods analyse quantitative data. Research approach studies data, including textual judgements, from the other extreme. Both methods can analyse survey data, but each has pros and cons.

#### IV. STUDY DESIGN

Systematic development's blueprint, structure, or framework is the research design. Layout and development can reduce errors and increase study outcomes. Those who claim that up for a great should be used to uncover developments throughout time in a scenario explain that the scheme's goal is to examine the issue area precisely and fully, therefore it often reveals credible correlations between components. Study participants' intelligence collection approach. It has been used to detail where respondents collected data, how they were chosen, how their data was processed, and how the findings were disseminated. To obtain valid, impartial, thorough, and cost-effective study findings, this is done. A survey design's main principles are its strategy, conceptual framework, focus, and data collection and analysis methods. The study process—empirical, statistical, or mixed—should guide pilot study processes. Research methods include hypothesis testing, description, and practical methods.

Experimental research methods are flexible by nature. However, explicit states appear well-organized and hierarchical, despite research methodologies' variability manipulation. This study used descriptive survey research. Academics use qualitative research to learn more about the world. Before starting a study, researchers should ask: Research subjects: who? Where will the study look? Assumptions? Data collection: where? The analyst's "framework" is the study design. It lays the groundwork for answering a research question. Descriptive research is used for assessing AI issues and prospects in education. The researcher's perceptions and insights guide the research. Focus groups, perception techniques, and interviews are used. Interviews are about understanding what respondents say. Empirical and descriptive qualitative research dominates. The research seeks to examine events, discuss issues, improve observations, and develop new theories. With an audience of novice researchers or non-researchers who may not grasp the research techniques, its conclusions are only valuable inasmuch as they may encourage more detailed and organised investigation (Appio et al., 2019).

Qualitative phenomenology research examines what could be and observes rather than intervenes in real events. Surveying was used to keep track of and describe what was happening in a general and specific setting. Demographic research methods focus on determining the study's purpose, designing the data collection method, finding a representative sample from the audience, performing research, evaluating results, and documenting. Surveys collect data on one or more groups and individuals' characteristics, viewpoints, attitudes, and background knowledge. It involves interviewing a sample of people and summarising their answers to understand more about a large group. Facial expression, structure, and questionnaire surveys are the most common. This multi-dimensional, multi-study used the structured questionnaire method. The bridge review collects survey data once. For statistical and quantitative study, this method shows component interlink ages. Focused merger studies will involve surveys. A structured questionnaire will be used as a measurement technique to gather pertinent data. The survey was chosen to obtain student perspectives, objectives, attitudes, and thoughts on work life supremacy. The research design selects and collects data from respondents. This study used a survey form for statistical research. Quantify the problem by using statistical methods on a small sample to generalise the results to the larger demographic (Nzabonimpa, 2018). The factors were linked using a specified manner. Research organisation involves arranging data-gathering conditions that balance study objective and procedural efficiency. The study was non-experimental. Non-experimental studies do not manipulate subjects' environments, situations, or experiences. Qualitative research lets you quickly investigate one aspect of a topic. This strategy is useful because it allows the study to collect public data again, including opinions, observations, and assumptions, and it reveals unanticipated concerns.



## V. FINDINGS

The fundamental challenge is that not every learner has access to artificial intelligence technologies (Roberts et al., 2021). The categorical prediction implies that a data set may be observed and then assigned to a certain category based on the data obtained from the set. Insurance companies, for example, use categorisation predictions to identify different types of claims. Structures in acquired data are discovered using algorithms to demonstrate the measure of all conceivable outcomes in value estimate. Multinational corporations use it to forecast the number of units of a product that will be sold in the near future. They are free to create their own manufacturing plans. Aside from these requirements, there are two types of education: supervised teaching and unsupervised teaching. Despite the fact that instructors, researchers, representatives, and students all face recurring obstacles, AI is assisting in the development of novel solutions to these three groups' problems. To begin, in order to improve education systems, the quality of teaching people should be improved. Second, understanding the factors that contribute to teachers' stress is crucial in order to improve learning results.

In order to adapt to the changing educational environment, AI will encourage instructors' duties to be modified. The role of teachers will change in the future as a result of the application of AI education. To begin with, the standardisation of open data implies that instructors no longer have a knowledge and skill advantage. Instructors become instructional designers rather than power brokers, content creators rather than information experts, and students and teachers share the same information framework. The primary educational approach is no longer appropriate; second, instructors who have been relieved of simple and repetitive tasks such as heavy academic revision and examinations evaluation must focus on students' individualised teaching plans and capacity building strategy study rather than on students' individualised teaching plans and capacity building strategy study. As a result, as education grows with the times, education training objectives and teaching methodologies shift, instructors must keep ahead of the curve in order to adapt to the changing school environment and better execute their duty as a tried-and-true topic. Additionally, can accelerate the distribution of high-quality AI learning and stimulate the completion of limited training. In view of the approaching college admissions tests, school administration is in serious need of reform. Decent education, which is regarded as one of the most important components of education reform, urgently requires a new stage of evolution of complete and accurate testing and evaluation systems for achieving entire business process publicity, from measurement development to methodological approaches, ready, honesty systems, and results notifications (Hee Lee & Yoon, 2021). The new designation will be able to break free from the constraints of providing practise test training in the future by comprehensively unifying and implementing the most recent educational theories and Artificial intelligence. Create a questionnaire design that incorporates only perfectly natural learning and teaching tasks from the institution; attendance of

student growth data using a research and successful materials regulatory and truthfulness system; conduct methodology and evaluative reviews; and incorporate various examinations such as trainees, family members, education institutions, and private entities. The overall structure and may provide intellectual testing arithmetic operations of study findings based on national and regional specifications, having formed a single codebase of appropriate consultation and worked hard to keep, providing assistance academic security agencies in research selection, and achieving proper training of understudies' search, interpretation, and reading ability. Conduct thorough and fair evaluations of individuals' overall performance and advise and promote students' quality advancement. Hee Lee and Yoon (2021).

## VI. CONCLUSION

The purpose of this study is to evaluate both the opportunities and the obstacles presented by the application of AI in China's education sector. And One of the advantages of conducting such research is that it gives academics the opportunity to gain a deeper understanding of the potential and difficulties posed by artificial intelligence. The most recent study illustrated both the challenges and the opportunities that are given by AI in the educational setting. The current study utilised two different types of mediators and moderators, namely significant educator identification and interactivity, in order to determine whether or not these two qualities had any impact on the relationship between mixed realities and acquisition intents. In this paper, we investigate the research methodology and sample strategy that were utilised in the primary study. In addition to this, a concise description of the tools utilised for the research analysis technique of the primary study was provided. In addition to that, it included an explanation of the data analysis process. This method predicts future sales patterns by analysing historical data while ignoring the effects of seasonality and other variables that can be inconsistent. This method of predicting the future is made easier by the availability of increasingly accurate sales data, which reveals the manner in which particular customers and types of customers will shop in the future. The analysis of this data can lead to the discovery of novel approaches to the marketing and sales of products.

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