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ARTIFICIAL INTELLIGENCE (AI): THE NEW FACE OF EDUCATION AND RESEARCH

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Abstract:

Artificial Intelligence has transformed our lives and our world. It is not only a big part of our future but also has the potential and the ability to tackle some of the major challenges in the field of education. Besides that, AI also will be able to innovate the Teaching and Learning Practices and in the realization of Sustainable Development Goal 4 which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." Future ChatGPT integration should promote a healthy coexistence between human educators and AI-powered learning aids, enhancing and completing conventional teaching approaches. Although ChatGPT has a lot of potentials, it's crucial to create a balance between using AI in education and keeping the human element. The tools accessible to students and teachers have been made more democratic by technological interventions, but this has also led to wider inequities and distractions in the classroom. Technology in the classroom is here to stay, for better or worse, and new solutions are always being provided.

Keywords: Artificial Intelligence, ChatGPT, Digitization, Research and Analysis, Sustainable Development Goals.

Introduction:

The variety of tasks has expanded along with the complexity of teaching and learning. Even after hours, teachers need more time on their hands to create, alter, and regenerate assignments. Simply put, they require an unbelievable 26 hours or even more per day to finish the jobs they are overwhelmed with! Over time, it became clearer that moving towards automation was necessary in order to boost productivity.

Our daily lives now include artificial intelligence. We are surrounded by technology, including personal help, clever sensors for producing amazing pictures, and automatic parking systems. The impact of AI on education is also being felt, and the status quo is being fundamentally altered.

The world is moving towards digitization, and artificial intelligence (AI) is a technical development that has addressed the aforementioned inefficiencies and enabled us humans to get highly comfortable with computers and handle sophisticated decision-making using machine intelligence. By making it easier to connect with people across the world and learn about a range of issues pertaining to finance, marketing, business, social media, advertising, and agriculture, it has revolutionized the world. Aside from this, the education industry has mostly prospered due to system responsiveness and teaching experiences with AI.

A human-centered approach to AI is naturally required by the UNESCO mandate. In order to ensure that AI does not exacerbate the technical gaps inside and between nations, it strives to reframe the discourse to include AI's role in addressing present inequities over access to knowledge, research, and the diversity of cultural expressions. The goal of "AI for all" must be to ensure that everyone has access to the benefits of the current technology revolution, particularly in terms of innovation and knowledge.

Artificial intelligence has made it easier to manage classrooms, plan lessons, prepare for tests, grade papers, and assess students. The use of AI benefits educators and students alike. It has become easier for them to do paperwork because it is automated, and teachers could concentrate on student involvement. After the lavish use of technology in online resources worldwide, students were exposed to a broader system of connecting with their teachers by using augmented tools and simulation.

In 2022, the public was first given access to the generative AI Natural Language Processing (NLP) software *ChatGPT* by *OpenAI*, a corporation that does artificial intelligence research and development. Anyone with a device and internet connectivity can use *ChatGPT* for free, making it broadly available, especially for students who are all current digital natives.

Artificial Intelligence (AI):

Artificial intelligence refers to the ability of robots to accomplish any task that a human brain would normally perform conscientiously, negating the necessity for human labor. When making decisions, machines receive information, analyze it, and draw conclusions. Deep learning and natural language processing is its foundations. Expert systems, face and speech recognition, and machine vision are all examples of artificial intelligence.

Artificial intelligence is built on human insights that may be made into decisions that allow machines to easily

perform jobs, from the most basic to those that are much more complex. The processes of learning, resolving issues, reasoning, and observation are what lead to manufactured insights. This phrase can refer to any devices that mimic human intellect in ways like analysis and judgement while increasing productivity. Robotics, control systems, face recognition, scheduling, data mining, and several more tasks are all covered by AI.

Scope of AI in Education:

AI is able to weigh learning styles and provide tailored information to its end users by using pre-existing knowledge that is input into machine data systems. Because instructor dependence has been greatly decreased to a minimal level, asynchronous learning has significantly increased as a result.

In addition, artificial intelligence is transforming the field of education in the following ways:

1. The integrity of the examination
2. Chatbots to increase enrolment and retention
3. Learning management systems, or LMS
4. Plagiarism monitoring
5. Message boards on the internet
6. Networked campus

According to the most recent statistics from Global Market Insights, with the growing trend towards personalized learning, the market for AI in education has already reached USD 4 billion in 2022 and is expected to increase at a rate of over 10% through the year 2032. (https://www.gminsights.com/industry-analysis/artificial-intelligence-ai-in-education-market)

Artificial intelligence is essential in today's educational system for several reasons, among them:

1. It cuts down on the idle time needed to complete tasks.
2. Significant cost savings are achieved.
3. Self-handling chores are beneficial for those with disabilities.
4. It handles previously difficult tasks using techniques for natural language processing.

Advanced Applications of AI in Education:

The use of AI into school has raised educational standards. Through digitized interfaces, AI has ensured successful outcomes in cognitive modelling, reasoning, planning, and language processing. Institutions of higher learning are searching for innovations that could increase student retention. Once universities go on the path of student retention, their rankings will thereafter

improve. There are specific ways that AI can benefit the education sector.

The following are a few techniques:

1. AI algorithms used to match skills to appropriate career possibilities
2. Utilize LMS tracking tools to monitor your progress in self-education.
3. AI-enabled smart content creation helps to personalize, analyze data, and save time during in-depth research.
4. Automation and accessibility for all

ChatGPT in Research:

Open software based on artificial intelligence, like *ChatGPT*, is increasingly and continuously being used in research. Data analysis, natural language processing, image and video analysis, simulation and modelling, drug development, and personalized medicine are just a few of the jobs that AI can do. In comparison to human researchers, it can be trained to analyze huge, complex datasets, spot patterns, and draw conclusions.

It can be used to create predictive models based on data, which enables researchers to predict trends and events in the future with greater accuracy. Recently, *ChatGPT* has upended the global AI industry as a whole. In order to conduct their study, many academics, researchers, and educators use open-source AI-based language model software, which has the potential to be a lucrative market for global tech giants. This software aids in data sourcing, searching, and analysis.

The global AI in research market is anticipated to reach $2.2 billion by 2025, expanding at a CAGR of 30.8% from 2020 to 2025, according to a report by *ResearchAndMarkets.* This suggests a large investment in AI for research. (https://indiaai.gov.in/article/ai-impact-on-india-ai-in-education-is-changing-india-s-learning-landscape)

These open-source AI tools help accelerate research workflows and automate tedious chores, freeing up academics to concentrate on more challenging and creative projects. It assists in the analysis of personal data, such as genetic or medical records, and offers tailored recommendations for interventions or treatment.

Usage of _ChatGPT_ in Research and Analysis:

According to *ASMA* (Adoption of Social Media in Academia), “The use of artificial intelligence-based open software such as *ChatGPT* in research is constantly evolving and expanding. Today, many research scholars, academicians, and educators are using open-source AI-based language model software that helps in

resourcing, searching, and analyzing the large amount of data in order to conduct the research work, making it a potential business market for the big giants in the world." The following are the various applications of *ChatGPT* (https://www.asmaindia.in/blog/top-10-usages-of-chatgpt-in-research-and-analysis/):

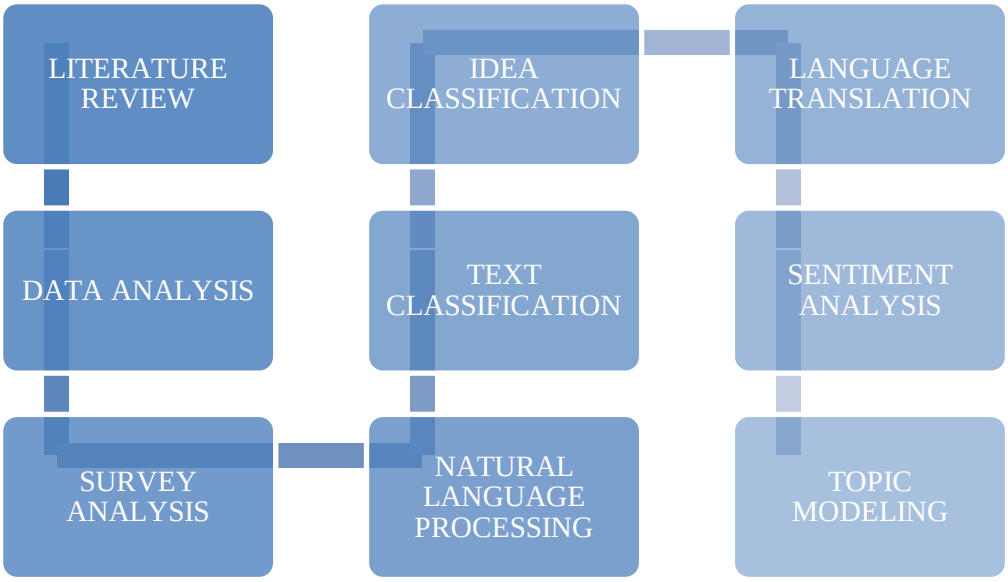

Fig: *Application Of Chatgpt In Research And Analysis*

Literature Review:

Researchers can save time and rapidly find the most pertinent information by using *ChatGPT* to generate summaries of academic articles and research papers. The percentage of papers published in the natural sciences that mention AI has climbed from 0.6% in 2010 to 10.6% in 2020, according to a survey by Springer Nature.

Data Analysis:

In areas like social sciences and marketing, *ChatGPT* may be trained to analyze big datasets and spot patterns. Large and complicated datasets can be analyzed using AI to spot patterns and learn new things. This can be helpful in industries including social sciences, healthcare, and scientific research. Cross-disciplinary research collaborations are also being fueled by AI.

Survey Analysis:

AI may be used to develop sophisticated simulations and models that can help researchers explore and test hypotheses in a virtual environment. *ChatGPT* can be used to analyze open-ended responses from surveys, which can give insights into people's attitudes, beliefs, and behaviors.

Natural Language Processing (NLP):

AI can be applied to NLP applications including entity recognition,

sentiment analysis, and text classification. This can facilitate more accurate and efficient text data analysis for academics.

Text Classification:

ChatGPT may be trained to categorize text, which is helpful in disciplines like content analysis, sentiment analysis, and natural language processing. It can be used to locate and categorize identified textual entities like individuals, businesses, and locations.

Idea Generation:

Researchers can use *ChatGPT* to produce fresh concepts and theories for their studies, opening up new lines of inquiry.

Language Translation:

Text data can be translated from one language to another using *ChatGPT*, which is helpful in areas like international trade and communication.

Sentiment Analysis:

The ability of *ChatGPT* to detect sentiment in text data can be valuable in industries like marketing and customer service.

Topic Modeling:

The primary subjects and subtopics that are present in a sizable corpus of text data can be found and extracted using *ChatGPT*.

ChatGPT can be a potent research tool, particularly in the areas of machine learning and natural language processing. It's crucial to keep in mind that *ChatGPT* is a language model and ought to be utilized in addition to, not in lieu of, human expertise.

Conclusion:

Applying AI to learning is nothing new. Edward Thorndike presented his concept for The Learning Machine in 1912. If necessary, the system might quiz the student and make reading recommendations. The Learning Machine used punch cards to perform adaptive learning features 100 years before the idea of Adaptive Learning became widespread in practice because there weren't any modern computers built at that time.

We can refer to adaptive learning as AI because it uses computational techniques that are part of the AI family. Adaptive learning has two generations as well. Adaptive learning prior to the 1990s was based on guidelines that were built into machines using data from scientific study. Real-time data has been used since the 1990s to give learners with highly personalized learning experiences and thorough learning analytics. To support AI, this needs additional technologies like a fast internet connection, large memories, personal computers, and processing power.

We must concentrate on one of the main global difficulties we face in education, namely the lack of enough

instructors to provide education for everyone, if we are to comprehend the tremendous opportunities associated to AI. This is crucial in early childhood education, but it's also noteworthy in higher education, career training, and lifetime learning.

The human instructor is irreplaceable in the early years of education, such as in elementary and primary school. No way. Critical thinking, problem solving, teamwork, and communication are examples of soft skills and transferrable skills that need interaction with others. However, we may offer teachers AI-based teaching assistants and helpers, allowing them to deal with larger classes. However, to do this requires AI pedagogy, which we do not currently have. To fully appreciate the potential of AI in elementary education, we must make significant investments in pedagogical research.

Since a few years ago, we have had AI support that compiles a real-time research report on skills seeking by reading through terabytes of job opportunities, curriculums, future forecast reports, and labor market analyses. If we had millions of people to carry out this work, we could also do it with humans.

AI is able to create parallel models of a person's skills at the micro level and can quickly display a customized career path, including direct occupations that take advantage of a person's present skills as well as low-hanging fruit that become available once a person acquires a few specified skills. Additionally, when AI is aware of curriculums, it can identify educational possibilities that are pertinent to a particular person.

We must unleash India's creative potential in order to make her *atmanirbhar*. To help our nation become a new India, we must create a growth model that is innovation-driven. A crucial component in attaining this goal will be artificial intelligence. There are more effects of AI in India than one can imagine. And it'll continue to expand over time. The next generation must be ready to work with AI. Making Indians AI-ready and ensuring India's place as a global AI leader depend on AI's participation in the education sector in India.

When the skill gap is identified, AI can create tests and content packages specifically for the person. In other words, AI can create online courses from identified skills, enabling billions of learners to receive career training and lifelong learning.

Finally, while AI won't alter how we learn, it may alter how people around the world can access education.

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