



Analyzing Artificial Intelligence in Indian Education: A Content Analysis on the Government Policies, Initiatives and Dedicated Websites

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Abstract: Artificial Intelligence has transformed the Educational pathway with innovation and creativity. It has significantly optimized the teaching and learning outcomes among students and teachers. Education, in recent times, has witnessed a remarkable transition with the advancement of AI-based technology, which has been put into practice. In India, with the arrival of the National Education Policy 2020, all levels of education seem to be affected by this new technology. The Government has evolved AI-based curricula, contents, and initiatives like teachers' AI-integrated training programs, webinars, seminars, etc. to reshape the education scenario following the recommendations. This paper is a qualitative-based Content analysis focusing on the relevant secondary data available in the Government portals, documents, and their dedicated websites. This systematic Content-based analysis will surely produce deeper insights into the minute details of the current scenario of Artificial Intelligence in the Indian Education sphere and present an empirical data pattern for the stakeholders to take the required steps further.

Keywords: Artificial Intelligence, Government Policies and Initiatives, Dedicated Websites, Higher Education Regulatory bodies.

1. INTRODUCTION:

Artificial Intelligence is revolutionizing the world since recent past. Every sphere of life is getting momentum with the use of integrated artificial machinery following a transfiguration in modern day's life. Modern day's Artificial Intelligence goes beyond the superficial, theoretical abstraction and robotic conception to the way forwards to make the hypothetical theory into practice. Artificial Intelligence can be considered a broader branch of computer science that can act intelligently and with some degree independently mimicking the human activities. It is a machine-based system that can operate autonomously and can be adaptive to generate results based on pattern recognition and prediction (European Commission, June, 2024[1]). Artificial Intelligence is based on algorithm which is entirely dedicated to perform rationally based on visual perception, speech recognition, language processing and capacities of handling large amount of data. We are already accustomed to use Artificial Intelligence in narrow format such as voice assistant like Amazon's Alexa, Google's SIRI, Netflix's recommendation for movies and social media tagging etc. But our generation is moving rapidly towards Generative artificial intelligence which is efficient enough to produce new contents like texts, images and even videos by analyzing a bulk collection of data. The proficiency of AI has made this generation to adapt the new technology vigorously especially in the field of education and professional aspects. The personalized learning recommendation and adaptive assessment based functionality of Artificial Intelligence attracts millions of students and at the same time supports the teachers (Jaiswal & C. Jo, 2021[2]). Artificial Intelligence in higher education provides enhancement in building world class institution, high skilled staffs and interactive learning environment providing systematized data pattern (Bhatnagar, 2020[3]). Indian Government is working tirelessly towards building AI-integrated robust ecosystem which can be boon to health development of governance and social development like health, education (Bhojwani, 2021[4]). A document published by NITI Aayog titled #AIFORALL had illustrated vision on how AI can be used in developing the educational and professional skills among students as well as teachers (NITI



Ayog, 2018[5]). According to the principal secretary advisor to the Government of India the mission dedicated to Artificial Intelligence will considerably change the academia-industry interconnectedness on developing the core research skill among the students with International collaboration which eventually push technology to spread the creation of Indian knowledge in deploying application. They have projected that AI has potential to add 1 trillion economies in Indian economy by 2035(PM-STIAC, 2022[6]). After the release of National Educational Policy 2020 the Government of India recognizes Artificial Intelligence as one of the modern way to embrace technology as a way of non-conventional learning. Ministry of Education with the collaboration of INTEL launched a self-learning online program ‘AI for all’ designed to make citizen AI-aware. A study has revealed a significant relationship between the use of AI and the student’s perceived usefulness, self-efficacy, behavioral intention to adopt in higher level education (Sharma, et.al, 2024[7]). The hyper-personalized learning instruction provided by AI has been termed as the futuristic learning aspect in Indian Education scenario (Singh & Malhotra, 2020[8]). Ministry of Electronics & IT is doing commendable job in making the vision of AI integrated Education and research in India into reality and published the journey in the verge of 75th years of Indian independence (MEITY, 2021[9]). Government led Educational regulatory bodies like UGC has introduced National Program on Artificial Intelligence (NPAI) based skilling framework and instructed all higher Education Institutions to upgrade the AI based courses from technical to non-technical backgrounds (Srivastava, 2023[10]). Other eminent standard setting bodies like CBSE, NCERT and the IIT’s tried to put AI-based curriculum into practice. Therefore, it can be assumed that education in India will soon embody Artificial Intelligence as a new way of knowledge evolution.

2. STATEMENT OF PURPOSES: The extensive outlines of policies and initiatives taken by the government of India have perspicuously shown that India will indeed have bright futuristic prospects regarding Artificial Intelligence, especially in the educational spectrum. Thus, Researchers have decided to extract the pertinent documents related to AI in a systematic study and titled the topic “Artificial Intelligence in Indian Education: Exploring Status through Content Analysis on Government Policies, Initiatives & Dedicated Websites”.

3. RESEARCH OBJECTIVES: To make a comprehensive analysis on Government documents, policies, and specific websites for assessing the current situation of Artificial Intelligence in Indian educational sectors.

4. RESEARCH QUESTION:

- I.** What are the dominant themes and messages of Artificial Intelligence in Government Policy and Documents?
- II.** What are the omissions and silence in the Government document regarding implementing Artificial Intelligence in Education?
- III.** How do the dedicated Government and other educational websites portray the Scenario of Artificial Intelligence in Indian Education?
- IV.** What are the future opportunities of Artificial Intelligence according to these sources in transforming the Indian Education system?

5. Research Methodology:

A Content-based analysis was done to get a comprehensive outlook of the Artificial Intelligence-based agendas made by the government specifically in education. This study was dependent on secondary sources collected from the government’s recent policies, initiatives, Curriculum, and Institution’s websites. The researchers will collect data from the following Government Organizations and agencies only viz. NCERT, NCTE, UGC, NIEPA, ICSSR, NAAC, and Technical Educational institutions like AICTE, IITs, IIMs, and IISC. The researchers here did not consider the state government’s educational agencies.

6. ANALYSIS & RESULT: The result of the study has been divided into many dimensions each covering the data available on the specific government-related officials. The researchers here will analyze the data as per the following research questions and try to bring out the most essential core of the research study.

- I.** The dominant themes and Vision reflected in Policy and document regarding AI based Education:
To find the major themes in Government policies and documents it is mandatory to identify which Government Educational agencies and regulatory bodies are focusing more on developing policies and initiatives. A bar chart has been shown to present the mentioned information:

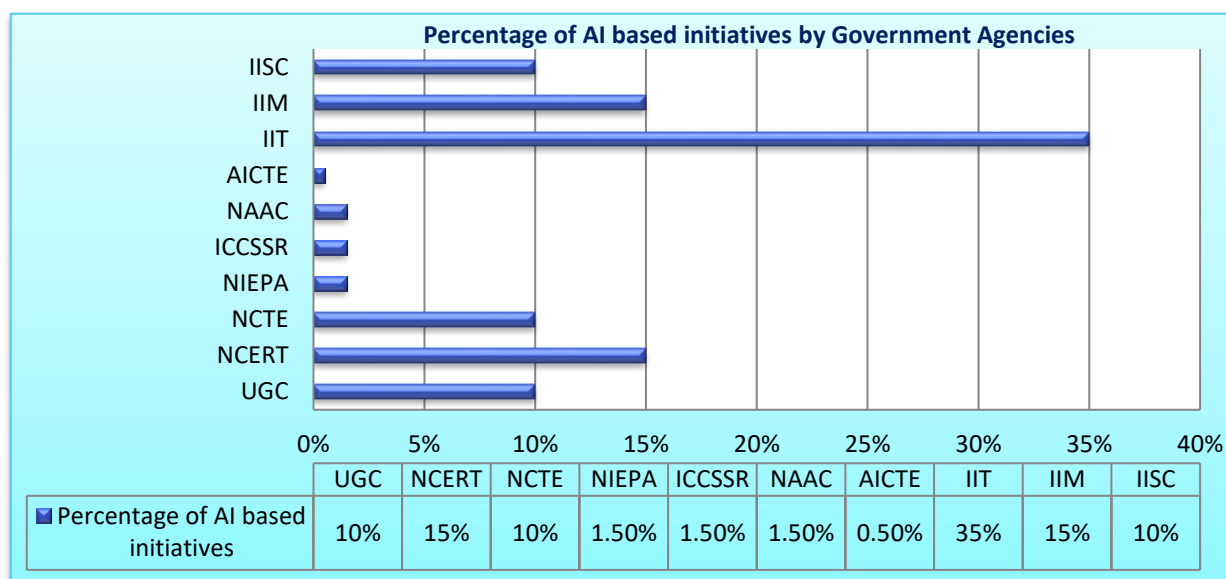


Fig 1.0:- A Bar graph showing the percentage of initiatives taken by the major institutions

In the above-mentioned graph, the different regulatory bodies are shown to be involved in bringing AI-based policies and initiatives among which some are Ministry of Government directed and others from the Government regulated agencies and institutions those are shown in the pie chart:

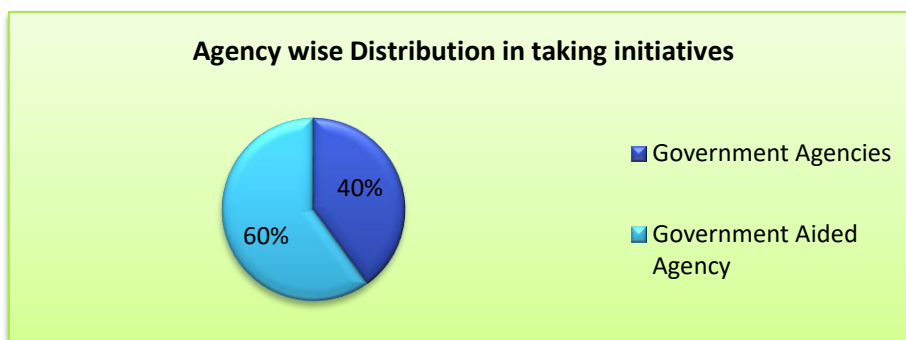


Fig 1.1: A pie chart showing agency wise distribution in taking initiatives

There are also divisions in the technical, non-technical, and professional education-based government institutions and agencies that have introduced Artificial Intelligence into policy and practice. A pie chart is presented to show the divisions of the institutions introducing Artificial Intelligence in practical application, curriculum, research initiatives, and policy drafts on a percentage basis.

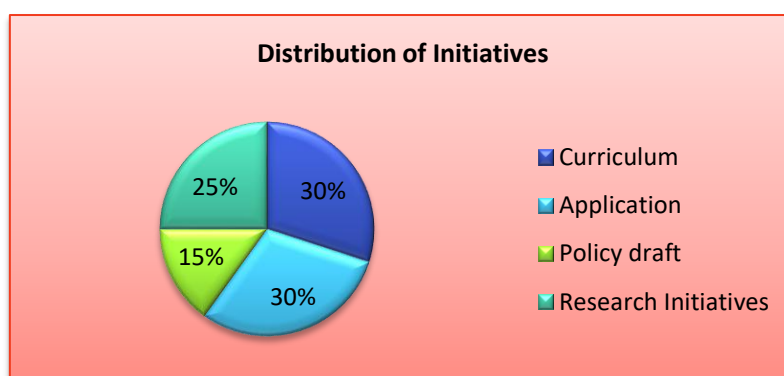


Fig 1.2: A pie chart showing distribution of initiatives



There are also divisions in institutions which are providing the draft based policy and others are also institutions which put the Artificial intelligence into practical application.

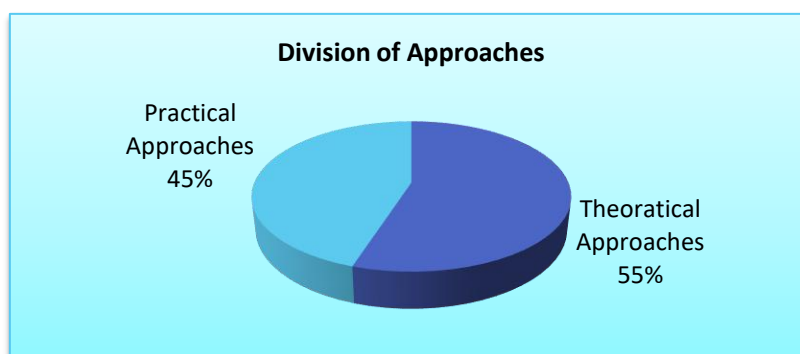


Fig 1.3: A pie chart showing division of Approaches

The researchers now tabulated themes, visions, goals, and main initiatives extracted from the Government policies, initiatives, and Curriculum. Each column represents the following constructs whereas the rows define the institutions and following ministries providing the same.

Table 1.0: Showing the areas, initiatives, visions and Implementation in the field of Artificial Intelligence by major Educational Bodies

INSTITUTION/R EGULATORY BODIES	AREA	MAJOR GOALS/ INITIATIVES	VISIONS	IMPLEMENTATION
UGC	Higher Education	UGC to disseminate National skill-based framework (NPAI) on AI UGC approved guidelines to run short-term courses on Artificial Intelligence in machine learning and Robotics [11] UGC issued guidelines for using AI for translating study materials [12] UGC will introduce an AI-based curriculum in the school curriculum and Undergraduate programs [13]	To upgrade the knowledge and performance competence of students of India toward an AI-ready generation	UGC launched 2-week refresher program on Artificial Intelligence through the Human Resource Development Centre [14][15]
NCERT	School Education	CBSE launched an AI-integrated curriculum handbook for school students [16] Published scholarly article on the emerging trend of AI Launched online training, workshops, and webinars for teachers and students.	To prepare teachers and students for the AI-based classroom with the skill and knowledge	NCERT, CBSE already implemented AI in school education curricula across the nation and also started a refresher program for teachers. [17]
NCTE	Teacher Education	NCTE still has not declared any specific curriculum, initiatives, or programs for Teacher Education.	NCTE has not given any written report regarding Artificial Intelligence intervention	NCTE has not implemented any initiatives or program on this issue.



NIEPA	Educational Management & Administration	NIEPA did not declare any notification, initiatives, programs regarding Artificial Intelligence	NIEPA also did not set any vision for Artificial Intelligence integrated education.	NIEPA did not set any AI-related strategy in planning and administration. Some articles have been published in their journal
NAAC	Accreditation Body	NAAC recommends using AI primarily for data processing, employing crowd-sourcing methods to detect errors and help reduce human intervention. It will also help in the complex categorization and accreditation process of NAAC. [18]	NAAC has not published any visions regarding AI integration in any policy individual notices or any public addresses	This streamlined process is set to be implemented in September 2024.
ICSSR	Social Science Research Institution	ICSSR has proposed other institutions to collaborate in a development study on Artificial Intelligence: Socio-Political Impact [19]	ICSSR did not disclose any vision on AI initiatives	There is no mention of any implementation reinforcement on the ICSSR websites
IISC	Science-based Research Institution	IISC funds collaborative research projects on Artificial Intelligence, Machine Learning, etc. IISC launched a certification course in AI and Automation programming [20] IISC started the B.Tech and M.Tec program on Artificial Intelligence. IISC started an interdisciplinary Ph.D. program on Artificial Intelligence.	To make world-class experts in Artificial Intelligence, Machine learning, etc.	IISC has implemented the research project and education program from 2023 onwards
IIMs	Management Institutions	IIM Kolkata- AI for leaders program IIM Bangalore- AI for senior leaders IIM Indore- Program on AI for executives and technical support for students IIM Mumbai- AI-powered supply chain IIM Kozhikode- Postgraduate course on Artificial Intelligence IIM Ahmedabad- startup initiative for AI implementation [21]	To make human resources fully equipped with skills of Artificial Intelligence and source of leading supply chain.	All IIMs have already started the ventures with practical implications.
AICTE	Technical Education Regulatory Body	AICTE in collaboration with UGC is all set to start a National skill framework on Artificial Intelligence AICTE released an AI-integrated tool to translate technical language Started an internship program for AI-based skills [22]	Making India a Global digital talent hub To create 97 million jobs in the AI market	Most of their initiatives are in theoretical provinces and yet to be implemented



IITs	Engineering & Technology Institution	IITs of Madras, Kharagpur, Roorkee, Roper, Bhilai, Guwahati, Gandhi Nagar, Hyderabad, and Patna have started to offer 4 year Bachelor of Technology on Artificial Intelligence Most IITs started a comprehensive research project, granting funds, collaborative projects, and designing AI-based tools.[23]	To develop world-class technology expert to make India globally competent in the field of AI	All the initiatives taken by these IITs have already implemented.
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The above table has elaborated all possible details of the prevailing scenario regarding Artificial Intelligence in educational practice. All the institutions have some common thrust areas where that they are focused on achieving shortly which eventually creates some common thrust areas of inculcating Artificial Intelligence in non-technical, professional, technical, and management studies.

II. Major Omissions or gaps in the relevant document, policy, and initiatives provided by Government agencies and Institutions:

The Government has started to embrace Artificial Intelligence in all possible ways of Education there are still major gaps that are prevalent in the existing scenario. Most of the Institutions have taken steps towards integrating AI in theoretical mode or giving verbal recommendations. As a result, the implementing strategies in the case of most of the institutions are still ambiguous. There are certain challenges such as inadequate infrastructure, shortage of expert personnel, outdated curriculum, and limited access to networking or basic equipment in rural areas (ETV Bharat, 2024). In this study, the researchers have spotted some major emissions where the existing policies are completely silent. That is-

- Curriculum gap
- Limited Access
- Shortage of proper Training
- Lack of Adequate fund
- Institutional Gaps
- Misconception regarding AI
- Attitudinal Problem
- Infrastructural Barriers
- Technological rift

The major points are presented in a graphical diagram with stress on the percentage distribution:

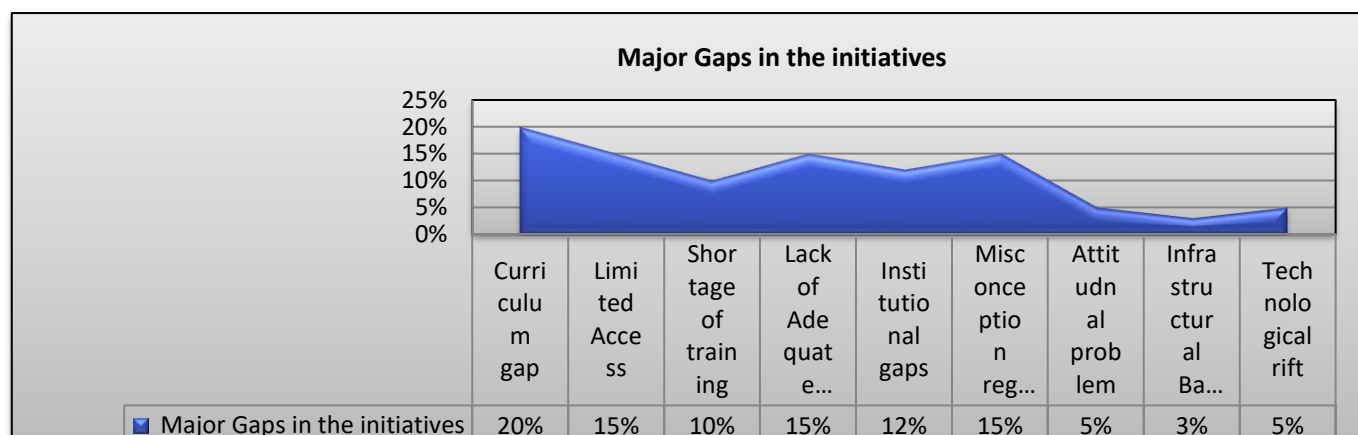


Fig 1.4: An area graph showing the gaps within the initiatives taken by the major bodies



III. The portrayal of the current scenario of Artificial Intelligence in Education by Agencies and Institutional websites:

Most of the Government Educational agencies are keeping their visions regarding AI at the forefront. The websites are keeping their regular updates and posts regarding Artificial Intelligence intervention in their respective field of Education. Some of the institutions have put their policies and briefings associated with AI initiatives. Among all the institutional websites from where the data have been collected UGC, NCERT, and IITs seem to be most frequent about their websites in terms of publishing their policies and initiatives integrating AI into the system. The rules, regulations, and strategies regarding AI implementation in these institutions are changing as per the context and it is duly updated within the proper time frame. The other institutions also update their vision, rules, and initiatives regarding Artificial intelligence which are comparatively low. Observing the activity patterns and maintenance of the respective websites the researchers have graphically represented the trend:

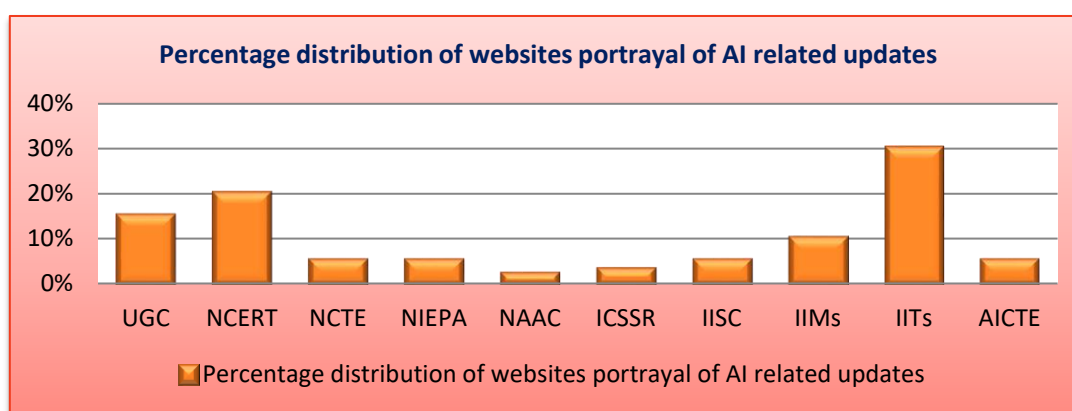


Fig 1.5: A Bar graph showing the percentage of websites Portrayal on AI related updates

IV. The futuristic Opportunities and Perception regarding Artificial Intelligence in Education according to the data sources:

Researchers have discussed the vision and mission of these educational agencies and institutions regarding their approaches to Artificial Intelligence in Table 1.0. Each of the institution has its way of integrating Artificial Intelligence into the education system. There was a clear portrayal of each institution and how the initiatives can create opportunities for the futuristic generation within their published news and articles. Researchers have mentioned their addresses regarding futuristic opportunities [24]. The table has been mentioned below:

Table 1.1: Table showing perception showing futuristic opportunity

INSTITUTION	PERCEPTION OF FUTURISTIC OPPORTUNITY -RELATED AI
UGC	To upgrade the students' knowledge with AI
NCERT	To improve school education with AI
NCTE	Still has not released any futuristic perception
NAAC	To infuse AI in data-driven mechanisms for complex accrediting process
ICSSR	Not Declared
NIEPA	Not Declared
IISC	To produce world-class AI- knowledge expert
AICTE	To make India a Digital job hub in AI-related skills
IIT	To provide proficient AI technology provider
IIM	To provide AI- infused Human resource



All the statements mentioned in the table significantly show the implementation regarding how the bodies are opting for the implementation strategies resulted the consequences of their initiatives in creating future opportunities and employability in the field of education with the help of Artificial Intelligence. Researchers here only mentioned the documents published in their websites and published government news.

7. DISCUSSION:

Artificial Intelligence has been instrumental in bringing a paradigm shift in the education sector. This study's findings and conclusions are well supported by evidence and demonstrate a deeper understanding of the complex interplay between technology, education and existing policies. Researchers have found studies that discussed the dimensions and scope of where Artificial Intelligence can contribute. Researchers could not find any specific studies that are entirely related to the Government policies, programs, and initiatives related to Artificial Intelligence with references to their websites. Researchers tried to classify and differentiate all the extracted data in all possible forms. After looking into the deeper details it has been found that Artificial Intelligence is turning out to be a vital force for transforming the educational notion, especially after the National Education Policy 2020. The higher education and school education along with the renowned technology-oriented educational institution tried to rejuvenate the traditional norm by introducing AI-infused curriculum, skill-based framework, AI-chat bots and models, and application software to facilitate support to all the stakeholders and make the accessibility inclusive and equitable [25]. This research provides a foundation for all the policy makers, educators, and researchers to build strategic mechanisms as India is continuously navigating towards the complexities of AI integration.

8. RECOMMENDATION:

This research paper provides a comprehensive content analysis of Government policies, documents and dedicated websites related to Artificial Intelligence in Indian Education. Through a rigorous analysis of policies, documents, and dedicated websites, the researchers identified key themes, trends and gaps in the government's approach to Artificial Intelligence in Education. This research study tried to put a significant contribution to the field, offering a nuanced understanding of the roles of major regulatory bodies and eminent educational institutions in escalating AI education in Indian context. This paper will surely provide valuable insight for the policymakers, stakeholders, researchers and the practitioners to gain perspectives regarding the current scenario and also on the major drawbacks as researchers already pointed out the gaps in the mentioned data. The policymakers will be able identify the issues as well as the teachers and students will be able to utilize the resourcefulness those already exist. The researchers furthermore can cover a large-scale study including the AI-based initiatives adopted by the state government-led educational agencies all over India, or can have an in-depth analysis at each organizational level. They can look into the possible futuristic opportunities regarding Artificial Intelligence that can change the landscape of AI education in Indian with the help of advanced and skilled academic practitioners who will be capable to administer more equitable, effective and innovative education system.

9. CONCLUSION:

Artificial Intelligence in the Indian education system is the newest sensation that is slowly knocking off the attitudinal and perceptual stigma of dehumanizing education which according to the experts and scholars can derail the emotional and social competence of teachers as well as students, the two most important shareholders of the education system. Despite all the discontent, Artificial Intelligence is vigorously accepted by modern Educationists and teachers for its tools and software that have impacted remarkably in providing automated grading, personalized instruction, and real-time feedback which is paving grounds for sustainable and lifelong learning rendering equity and attainability. This research study tried to cover the major efforts of Government agencies and institutions to put AI into practical aspects. Though the study has a limitation of collecting secondary data from the websites and portals of Central Government organizations only, the study will surely grip the attention of readers toward the existing scenario of AI education in India. Henceforth, this research study signifies that the successful integration of AI in Indian Education prerequisite a sustained commitment to collaboration, transformation and inclusivity. We, Indians can ensure that Artificial Intelligence accelerates the learning experience for all students and helps to build a dynamic future for India's next generation.

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