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Difficulties And Problems In The Implementation Of E-Learning In India's School Education System

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ABSTRACT

India's educational establishments—colleges, schools, and universities—are currently based solely on conventional learning methods—or, at the very least, they follow the customary arrangement of in-depth discussions in a lecture hall. Even though a significant portion of the academic community initially engaged in group learning, the vast majority of them were still challenged by previous advancements. The implementation of e-learning has a number of advantages and disadvantages for the school education system. As is common knowledge, the adoption of e-learning in India's school education system faces numerous challenges because 60 percent of the country's rural areas lack adequate access to electricity and internet. This paper analyzes and evaluates the experience of e-learning in India's school education system, focusing on technological issues. It also looks at privacy, security, and ethical concerns about how students' data is used.

Keywords: E-learning system, School Education, Data Privacy and security, Traditional Teaching.

INTRODUCTION

Understanding how to use the industry's digital tools and social media platforms is essential for students of the 21st century because people's learning habits are changing as a result of the digital revolution. The technology of community centers, museums, and libraries is getting better so that younger people can use digital facilities during the day. This gives them new opportunities to learn anywhere, at any time, and at any speed. The

way people learn has changed as a result of the growth of information and communications technology, and the tools for teaching and learning are also changing blindly as a result of the massive expansion of educational institutions. Consequently, the use of e-learning has skyrocketed in all kinds of businesses and educational establishments.
The school education system in India is currently undergoing change. a time when significant shifts have occurred and more shifts in cycles and considerations are desired. Any nation's framework for advanced education needs to be rethought. Education has been helped by computers and the Internet, which have made it possible to use a variety of teaching, learning, and assessment strategies in the classroom, online, or off campus. Digital social media and the internet have made it possible for anyone, regardless of age, gender, or employment status, to learn a new skill at a low cost [1-3]. Online learning platforms like Coursera, Show Academy, and Udemy offer classes online to anyone who wishes to learn, in contrast to traditional education, which necessitates a presentation at a predetermined location and time and requires students to be a certain age and have certain skills.

Mixed-style digital and conventional learning spaces have developed as a result of the obvious advancement of Information Communication Systems (ICT) and the emergence of smart electronic devices [4]. In addition, the emergence of Web 4.0 and social networks has made it possible for more advanced learning and teaching tools to be made available, resulting in improved educational practices and outcomes. E-learning is associated with a few disagreements. A few of the contentions that are associated with the online instructional method include openness, reasonableness, adaptability, the learning teaching method, long-term learning, and strategy. It is said that online education is accessible to all and can even reach rural and inaccessible areas. Because of the lower overall cost of institution-based learning as well as the lower cost of transportation and lodging, it is regarded as a mode of education that is somewhat less expensive overall.

Another interesting aspect of online education is its adaptability; A student can schedule or plan their time to complete online courses. Blended learning and flipped classrooms are the results of combining technology with live lectures; Students' potential to learn can be increased in an environment like this. Students can learn whenever and wherever they want, gaining new abilities and paving the way for lifelong learning. In this ever-changing world, the government also recognizes the growing significance of online education. The public authority is also aware of the growing significance of online education in this particular world.

The amount of data in the world grows every day. Data has grown as more people use the internet, smartphones, and social media. The term "Big Data" refers to a collection of massive and intricate data sets. Typically, the amount of data is measured in petabytes or exabytes. This volume of data cannot be captured, stored, or analysed by traditional database systems. The amount of Big Data grows with the internet. Big Data analytics can be used by businesses and government agencies to examine intricate data in novel ways.

In today's IT industry, one of the most talked-about topics is big data. It may have a significant impact on India's school education system's future direction and reform. Big Data is transforming the way data is handled and used. Among the uses are healthcare, traffic control, finance, retail, education, and others. Companies are now much more open and flexible. New obstacles will also be presented by new types of data. This study aims to determine whether an e-education platform for Indian school educational curricula is feasible to design and implement.

The proposed work has the following goals:

- To investigate the expansion of e-learning startups and online education.
- To conduct an online learning Strengths, Weaknesses, Opportunities, and Challenges (SWOC) analysis.
- To offer some recommendations for the success of an online learning method in a crisis-like setting.
- The benefits, applications, and issues of Big Data technologies in India's school education sector are also the subject of this study.

BACKGROUND

In order to evaluate privacy, security, and ethical concerns pertaining to the use of students' data, this section contains previous research data on the adoption of e-learning in various education systems in light of technological considerations.

This study shows how the E-Education platform improves student learning or how it helps teachers do their jobs well as a whole. The current Indian tool for addressing as well as the program implementation methodology in education have been analysed prior to presenting the concept of this e-education method. The authors have compared Indo-Finnish educational establishments to the current state of e-learning in Finnish research universities [1].

The opinions on the constructed system (Ville E-Education System)'s relevance to Indian primary school courses as well as anticipated implementation effects are included in this discussion. In addition, the authors demonstrated that the chosen method is eco-friendly, eco-friendly, and closely aligned with the goal of future large universities to reduce paper use [2].

The possibility of using e-learning in higher education is the subject of this study. In educational establishments, it is essential to make use of the most recent data and knowledge technology for learning. This study examines the literature and provides a scholarly context for the study to examine some of the contributions that various academics and organizations have made to the concept of e-learning, particularly its application in e-learning at higher educational institutions. It reveals some of the perspectives that individuals and organizations from all over the world have regarding the acceptance and implementation of e-learning technologies in schools through questionnaires and other studies. It examines the various academic interpretations of e-

learning, the role that e-learning plays in educational institutions in relation to the teaching process, as well as the advantages and disadvantages of selecting and implementing it [3].

International law and regulations, where sensitive data is frequently regarded as constitutional freedom, also represent data reliability. In order to construct a comprehensive privacy and data protection structure for the LEA's BOX project, current laws, practices, and regulations were utilized. It is made up of eight guiding principles from which one can draw implications for ensuring the ethical consideration of private information in a learning analytics solution and its offerings. The project's learning analytics tools incorporate the application's information privacy policy, which could serve as a model for other teaching analytics initiatives [4].

Key metropolises in the Asia–Pacific region, including Beijing and Singapore, Hong Kong, Taiwan, and Singapore, have developed and implemented state policies on e-learning to raise educational standards. The experiences of these four major Asian urban centers in the development of E-Learning strategies in the areas of transportation, curricular linkage, student learning, teacher performance, leadership, and institutional capacity are evaluated and lessons are drawn from their experiences.

Each of the four key urban areas has been identified as having a specific expertise in the management of future e-Learning policy measures, with Singapore focusing on scaling up good practises of e-Learning among these teacher society, Hong Kong aiming to create digital classrooms supported by wireless access for student-cantered lessons, Taiwan concentrating on nurturing teachers and students with 21st century learning through daily enhancing student learning, and Beijing is focusing on providing To help other cities and regions create future E-Learning strategies for education in the twenty-first century, five more regulations for e-learning are offered. [5,6].

Students' attitudes and perceptions of e-learning, as well as their enjoyment of technology and previous experiences with e-learning, are all considered success factors for upcoming e-learning initiatives. E-learning and its potential benefits for developing nations have received little attention in the literature, and user perceptions of E-learning in those nations have also received little attention. This study presents the experiences and perspectives of engineering students at two Libyan educational institutions regarding innovation learning.

In addition, the relationships between students' perspectives on e-learning, as well as their demographic characteristics, access to technology, use of technology for learning, technological proficiency, and contentment with new technologies, are examined.

The findings may be relevant to academics, executives, and decision-makers involved in the planning, development, and implementation of potential E-learning methods in Libya and other emerging nations [7].

E-learning's current and future capabilities are dramatically, immediately, and disruptively altering educational establishments. Increased global competitiveness, enhanced educational experiences, the removal of situational barriers, and economic viability are all outcomes of the increased utilization of e-learning technology in all educational settings. This article examines the acceptance and utilization of e-learning in Ugandan educational institutions [8].

The economic players in the digital nation are becoming more and more dependent on massive data collection and exchange. Researchers and practitioners in e-learning should train users on how to use and disclose online data, which can be long-lasting and vast. On the basis of a comprehensive literature review, this study investigates concerns regarding personal data privacy that are connected to curriculum strategies and e-learning. Instead of repeating that, users need to be aware of the useful and long-lasting characteristics of internet information. The authors want to know how instructors and curriculum developers deal with online data security issues. There were two categories that emerged from the literature review. The first paradigm recognizes privacy concerns as a special concern in the curriculum strategies of E-learning, while the second paradigm includes the presence of data security as a specific subject in the educational development of E-learning. The implications of the review's findings for the future are then examined [9].

This research identifies and evaluates a variety of education technology paradigms and e-learning systems. The research then examines and proposes a novel framework for large data convergence. The study also looks at the range of prospective data analysis and the significance of large datasets in the context of e-learning. Through a European collaboration that includes the EU construction LACE, the SURF SIG Learning Predictive analysis, the Apereo Foundation, and the EATEL SIG Datatel, the authors hope to gain a deeper understanding of the issue and attempt to resolve issues related to the moral and confidentiality context of education analytics practice. This interactive session aims to raise awareness of significant privacy and ethical issues. It will be put to use in the development of real solutions that will enhance the utilization of learning analytics technology [10].

This study aims to learn about the fundamentals of e-learning and the various evaluation methods that are available. Also discussed are some free learning resources (OER) projects in India. Because technology makes it possible to include files for sound, video, and animation in an educational setting, a variety of methods of learning are made available in a digital environment. This article provides an in-depth analysis of some of the available e-learning and learning evaluation methods as a result of the expanding E-learning ecosystem. It discusses cutting-edge methods of evaluation [11].

In 2014, the Aspen Center's Education Working Group and the Internet conducted research on how young people learn today. The Task Force consisted of innovative and well-known thinkers in the fields of technology, public policy, education, and business safety. They discovered that serious trust, safety, confidentiality, numeracy, and equity of access must be resolved for the 21st century environment to fully benefit from Inter. The

working group found, among other things, that the best way to set up online learning environments is for all parties involved—primarily civic authorities, community organizations, families, teachers, students, and businesses—to set local, state, and national student achievement goals [12,13].

EFFECT OF E-LEARNING ON INDIA'S SCHOOL EDUCATION SYSTEM

For the past 50 years, India's government has fully supported the construction of one of the largest schools in the country by contributing a sizeable amount of public funds [1]. With a few notable exceptions, these institutions have not been able to maintain high standards for education or stay up with advancements in fields like science and skills. As a result of financial constraints brought on by increased student enrolment and a high demand for basic and secondary education, the government's financial assistance has gradually declined.

Finding an inclusive learning solution is crucial, especially for the most disadvantaged and disenfranchised students. By 2024, 85% of Indian households are predicted to utilise mobile internet, thanks to the rapid advancement of this technology. High-speed connectivity and individualised instruction are now possible everywhere, even in the most rural parts of the world. This will alter the educational system and improve both teaching and learning, giving both students and teachers a wide range of possibilities. For the active delivery of education, many ambitious districts have created cutting-edge, mobile-based learning models that others might use.

Its progress has also been hampered by a systemic framework of numerous regulations and a constrictive bureaucracy. Since most people reside in rural areas, it is quite difficult to educate them about e-learning. Inadequate infrastructure for displaying the relationship, Internet connectivity, and other issues are further challenges. Many measures are being pursued by the government to alter the communication infrastructure, and new technologies [2], such 4G in the telecommunications industry, have already started to help.

The social consequences of e-learning are another area of research that is crucial to comprehend for the efficacy of e-learning in India. E-learning poses a number of challenges for society, including those related to access to technology, economics, geography, spirituality, numeracy, and sexual and gender identities. The cultural problems area includes content, multimedia, information creation, writing styles, website design, as well as shifting developments [3]. Even while certain course material is mandatory, some students may find it offensive or unpleasant. If the teacher or instructor is aware of the conversation's context or coverage area, how may they tell the class to add or remove topics? Even the use of language can affect how an online course is conducted.

The saying "various measures for various people" should be followed — preferably with minimal measure of interference to the class time. Geological qualifications and difficulties become profoundly clear [5], especially when seen from a worldwide viewpoint. In the event that a discussion board commitment is to happen, for occasion,

all impacted time regions should be taken care of. Heartless neighbourhood humour will likewise fall under this gathering. Indeed, even the innovative issue of Web association should be taken into account. Coordinated schooling, versatile instruction, electronic learning, activity learning, as well as development learning are totally made conceivable by current E-learning advancements. Learning the board frameworks, content the executives' frameworks, carrying out instructive, openly distributable part object models, as well as application program interfaces [15], were utilized in instructive programming drives to upgrade as well as extend learning structures to a more extensive skyline.

Both students and teachers must be aware of the guidelines for writing assignments. What levels of engagement are expected and/or tolerated, and who is in charge of keeping discussions and assignments on track if the objectives are not met? Sexual issues continue to be discussed in the classroom even though people are separated by kilometres or even countries [4]. It may be the instructor's responsibility to supervise facilitation and rotate group leadership roles in order to achieve gender neutrality. All behavioural issues should be found out and corrected soon away. The instructor must be careful to ensure that all students are treated equally, regardless of their lives and interests, as lifestyle disparities can take many different forms. The students will occasionally be responsible for their own supervision, but occasionally the teacher may need to step in.

Dial-up access is the sole way to connect to the internet in some places; there are no other options. Religious and spiritual considerations must to be respected and taken into account [6]. Given that different religions may observe certain days as holy days, it may not be best for a teacher to enforce work on those days; instead, suggest a period of time during which chores can be assigned. Religious tolerance is crucial. Although it must be assumed for an online course, literacy should not be ignored. No matter the level of the school, there would undoubtedly be some students who lacked (or could improve) some skills. Encoding (typing), reading, and writing are all crucial but developable skills. Disability shouldn't be disregarded. The Generation Divide is the final topic to be discussed within these societal ramifications. No matter how the word "internet" is used, it indicates a division, whether it be between men and women, the general public and those with disabilities, or the younger and older students at the school. It all boils down to making distinctions between people who lack something and those who possess it. Access to technology and training in its use will help close the digital divide [16], or the difference between those who have and those who do not [17]. Several elements that impact the E-learning process are shown in Figure 1.

In the current educational system, intermediaries are used to facilitate interactions between teachers and students. Since they simplify analytics and insights, BDUs aren't very safe. Thanks to cutting-edge technology like blockchain and its sophisticated secure payment mechanism, learners and instructors can exchange information and engage directly to complete the teaching-learning activities without employing middlemen. Since no one controls data entry or authenticity, blockchain's scalability allows for enhanced security and data integrity. Also, each computer on the network is constantly confirming

the integrity of the blockchain, making it unchangeable (the data stays in the same state as long as the network is operational). The block's services and access are only available to authorised users on the same system. Nevertheless, incorporating blockchain into education requires developing a proper database architecture [17], training and employing new employees, and convincing directors and investors that bitcoin is worthwhile to invest in. To ensure learning continuity in public schools, immediate action is necessary. Using open-source learning management systems and digital learning tools will encourage teachers to undertake instruction online. The DIKSHA (Digital Infrastructure for Knowledge Sharing) platform covers the entirety of India and can be expanded to further ensure student learning is close at hand.

Strategies are being developed to create the School Education System in India to meet the expanding demand-supply dynamics across the globe, particularly those related to teacher and student urban growth. Also, quick action is required to minimize how a disease outbreak may affect academic research, training programmes, and employment possibilities.

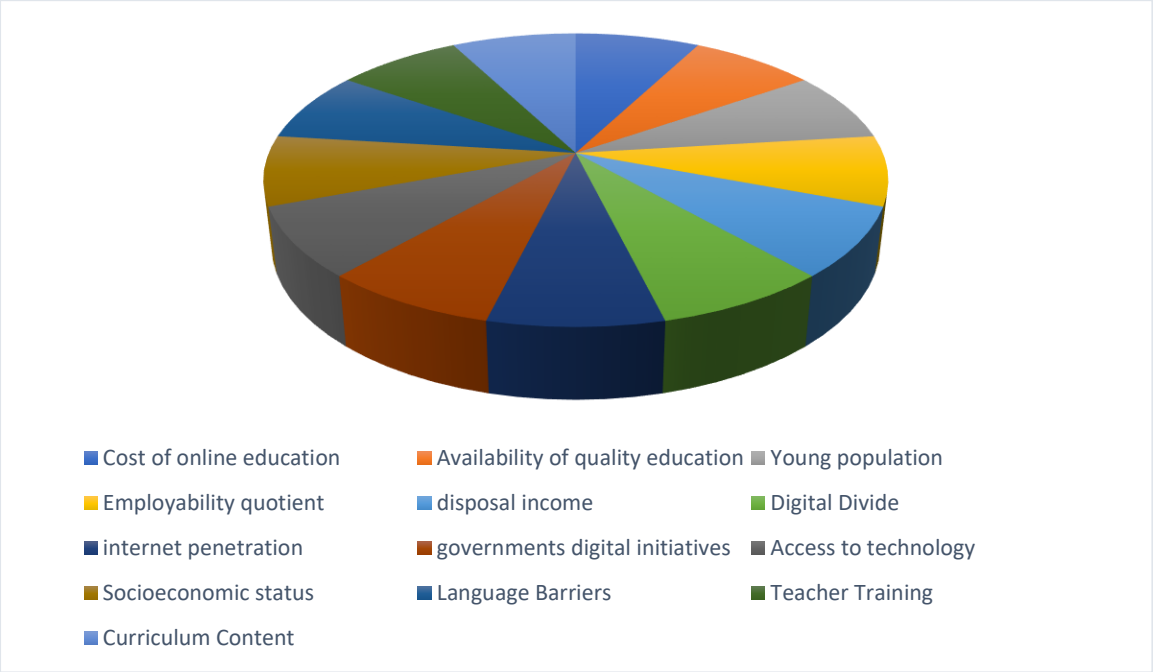

Fig. 1: Factors affecting Indian schooling online

DIFFICULTIES OF E-LEARNING IN INDIA'S SCHOOL EDUCATION SYSTEM

There are several difficulties with online learning, including problems with students, teachers, and content. Institutions find it difficult to include students and get them involved in the teaching-learning process. Teachers find it difficult to switch from offline to online mode, change their pedagogies, and manage their time. Creating content that engages children while also covering the curriculum is difficult. E-learning programme quality is a significant concern. The government's educational policies include no explicit mention of e-learning initiatives. Lack of quality control, development of e-resources, and delivery of e-content standards. The solution to this issue must be found right away if

everyone is to benefit from high-quality online education. One should consider developing and improving the quality of virtual courses offered in such circumstances rather than only concentrating on the benefits associated with the use of online learning during disasters. E-learning takes a lot of effort and money. It is not as simple as it may seem; a large investment is required to acquire the tools and equipment, maintain the equipment, educate the staff, and create the online content. As a result, to deliver education via the internet, an effective and efficient educational system must be created.

A complex and hybrid data architecture can be used to access the huge amount of educational data that makes up e-learning data. Collecting student achievement data, student evaluations, and customer survey results are additional evaluation issues addressed by e-learning software systems. Combining student data with instructional data for analysis requires a complex system framework. The marketability of a company's goods and services depends heavily on customer happiness. Individually identifying and extracting data attributes remains a significant problem in almost every business because to the ever-changing nature of the internet and the proliferation of blogs, forums, and user feedback. The process of gathering information is time-consuming and labour-intensive. Businesses must use big data operations to focus on customers by implementing high-quality data processing to guarantee product quality and customer satisfaction in order to overcome these issues.

In these difficult times, it is essential to ensure digital equity. Not all teachers and students have access to the internet, Wi-Fi, and other digital gadgets. Lack of appropriate digital tools, no internet, or shaky Wi-Fi connections can be quite problematic and result in many students missing out on educational possibilities. Institutions should make an effort to guarantee that all students and faculty have access to the necessary materials. In case pupils don't have laptops, they must also make sure that all the instructional apps are compatible with mobile devices. It is necessary to take action to bridge the digital divide.

ASSESSMENT OF PRIVACY, SECURITY, AND ETHICAL CONCERNS INVOLVED WITH THE STUDENTS' DATA

Computers have just introduced a new problem: figuring out how to use them effectively, according to Edsger Dijkstra in 1972 [18]. This is especially true today's circumstances when it comes to state-of-the-art educational technologies. In this article, we'll talk about the challenges that educational technologists working in the twenty-first century encounter and will face as they try to incorporate new technology into educational institutions and learning environments. It is challenging to create effective learners and educators in light of the growing Internet, increasingly sophisticated mobile devices, and other improvements, especially given how quickly these technologies are developing. Although these technologies have many benefits, they also pose serious hazards to system security and personal privacy. Also, as these abilities develop, ethical issues like equal access to resources will become more crucial. Educational technologists must improve their forward-thinking management and organisational skills to ensure the effective application of new technologies.

To bridge the gap between learning analytics research and individual privacy, learning analytics programmes must effectively handle ethical, security, and data protection concerns. When thinking about these challenges in the context of studying statistics, there are a few general guidelines, model codes, and regulations for handling ethical concerns as well as adequate data and personal privacy that may be helpful. Yet, the researchers have found that issues with data privacy are a significant problem in online learning. Large-scale data collection, aggregation, and computation from various educational websites and digital environments have sparked concerns about privacy and the environment as well as potential harm to individuals and society. These kinds of issues have in the past influenced a wide range of disciplines, including computer programming, legal studies, and monitoring studies.

Although the advantages that Big Data technology offers in terms of wide educational opportunities, there are still certain challenges to be solved, such as those related to security, privacy, a shortage of educated personnel, data analysis, retention, and compatibility. Big Data can have both benefits and drawbacks. The likelihood of non-public private information being breached will increase as the amount of information increases. Due to several developments and advancements that permeate our daily lives, such as smartphones, social network apps, and IOT of Things-based expert machines, the enormous number of data produced in modern society has increased [19].

Private information may be exposed quickly during data gathering, retention, and utilisation, making it challenging to understand data. To discover privacy concerns and merge this range of data into a single platform for Big Data processing. One of the most important concerns posed by Big Data is privacy. On the other hand, research into Big Data privacy is still in its infancy. We think that the current body of security discipline research underpins the emerging Big Data privacy ideas and technologies.

ANSWER TO E-LEARNING'S PROBLEMS AND DIFFICULTIES

The educational teams and managers of E-learning systems now have access to crucial methods and digital APIs that they did not have before [8], enabling them to pick from a variety of cutting-edge learning strategies and make better judgements. The emphasis should be on developing a system for choosing courses that will intelligently identify each student's needs and guide them through the learning process. E-learning materials may now be converted beyond geographical boundaries thanks to modern technologies.

Incorporating the newest technical advancements, in particular Big Data developments, into human learning data centres that are committed to online courses is the aim of this project. Massive volumes of data produced by students as a result of their interactions with a conceptual perspective may be distributed and parallelized in high-performance ways thanks to big data [7]. It makes it possible for high-level frameworks to offer a number of advantages that may be employed in online learning to significantly develop this sector of education. Big data design in the context of e-learning combines education with student or customer data, and mining this large data from diverse requests or

information discoveries calls for inventive solutions. Because of this, our approach has the potential to dramatically advance the field of web-based learning, enabling every student to enjoy the highest perceived benefits.

Additional big data technologies aimed at forecasting student behaviour and enabling real-time monitoring of students' behaviours ought to be integrated into the Indian school system's e-learning platform. Despite the many benefits of implementing Big Data technologies in education, there are still a number of barriers that limit their full implementation. Consider the complexity of creating and developing big data, particularly in light of the history of educational institutions, the lack of expertise, the security risks, and ethical considerations when using big data technologies in education [20].

Big Data in the context of e-learning refers to the information that students produce when enrolled in an e-learning course or training module. The term "Big Data" describes both the quantity of data collected and the specific information being collected. Big Data analysis may be done to provide businesses or E-Learning professionals with information about how and how quickly students are learning material as well as to spot any potential problems with the E-Learning strategy. Implementing Industry 4.0 will need the use of data mining techniques and concepts in a variety of production process models, as well as observational study on information retrieval from databases and data mining techniques' potential application to the brand- and service-based industries.

By assisting institutions, administration, educators, and students in improving educational quality, the learning experience, developing predictive teaching activity strategies, making better decisions, and analysing the market, big data technologies are essential to maximising education intelligence. Moreover, Big Data technologies are being utilised to assess, pinpoint, and predict learning tasks, risk factors, and results to enhance teaching and ensure the calibre of academic programmes. The article [21] claims that several educational institutions and authorities have used some Big Data principles to aid students in making the transition from conventional to technologically advanced education. Ethics is an essential component, despite how challenging it is to handle since it is full of ambiguity, competing viewpoints, and hazy definitions, according to Stephanie Moore in 2008. Individual beliefs, attitudes, and preferences have an impact on scientific research and development, especially when it comes to creating, implementing, and testing educational software and learning theories. Our data security and privacy framework establish the foundation for a suitable code of conduct by mandating that all techniques and software created as part of the project, as well as any third-party technology used, abide by these standards. So, we ought to incorporate an "ethical by design" technique into the pertinent ideas.

CONCLUSION

On the basis of the aforementioned, we recommend that an E-Education system be adopted in Indian school courses in order for students to reach the desired level of

learning. After adoption, children's learning objectives will advance, while managing the curriculum, instruction, and evaluation will be considerably simpler than before. The process is green and friendly to the environment. As a result, a nation like India would greatly benefit from implementing an E-Education system for learning and teaching. Academics, enterprises, and industry professionals interested in applying the stated Big Data approaches in the fields of e-business, e-management, e-learning, and e-education might use this research review as a resource.

In order to get better results, this study has highlighted important Big Data concepts that can be employed in Indian schools. This article has also looked at a number of Big Data components. We have thoroughly examined recent privacy and security research discoveries and achievements from both an operational and conceptual standpoint, with the goal of giving interested parties a solid platform on which to address the challenges of big data in India's school education system.

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