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Adapting Education: Digital Textbooks in Indian Education with Special Focus on North Eastern Region

Himi Saikia[1], Dr. Garima Kalita[2]
[1]Research Scholar, Department of English, University of Science and Technology Meghalaya
[2]Professor, Department of English, University of Science and Technology Meghalaya

Abstract

In both primary and secondary classrooms across our country, students of varying abilities and linguistic backgrounds encounter teachers who primarily use textbooks for teaching. While most states provide textbooks for free, distribution challenges in remote areas can cause delays. The pandemic exposed a critical flaw in our educational system which was being unprepared for remote learning. The sudden absence of physical textbooks, traditionally pivotal in knowledge dissemination, disrupted the system. Despite connectivity issues, educational institutions transitioned to online teaching methods. This shift led to the adoption of digital textbooks, a new experience for administrators, educators, and students. This study examines the impact of digital textbooks on students in India's North Eastern states, analysing their implementation and effects on education. It reflects the broader trend of moving from print to digital resources, emphasizing how digital tools adapt to shape learning experiences, especially in resource-constrained regions like the North East.

Keywords: Digital textbooks, E-Textbooks

Introduction

Textbooks, stories, novels, articles, non-fiction in different languages in digital form are very important resources for school education (NCFFS, 2022). Technology in education, especially during and after the pandemic, has surged in popularity. Different teaching and learning technologies, including digital textbooks or e-textbooks, are increasingly prevalent. Digital textbooks are like regular textbooks and offer the same content but in digital form. Digital Textbooks can be best described as the use of any digital content to enhance student learning and it can range from digital forms of traditional print textbooks to computer based and web-based materials. Digital Textbooks can also be referred as the electronic versions of a text that can be read on a computer, laptop, mobile phones or e-reader devices such as Kindle. Unlike printed textbooks, digital versions may incorporate supplementary features like multimedia content, hyperlinks, and dictionaries. Additionally, they can offer interactive activities like self-assessments and guided questions with instant feedback, along with online assignments, quizzes, and homework.

Study Objectives:

1. To examine the idea of Digital Textbooks.
2. To provide an overview of how Digital Textbooks are implemented and their impact on school students in the North Eastern regions of India.

Methodology of the study:

To achieve the study's objectives of this study, the investigator used secondary sources like books, journals, e-materials, e-journals, e-library and different free education websites.

Delimitation of the study:

The scope of this study is restricted to secondary data only and to Digital Textbooks only.

The Transition from Traditional Textbooks to Digital Textbooks

Records in history have shown that as long as writing and some form of schooling has existed, textbooks have existed in various forms. They have been printed on such medium as clay tablets, scrolls and papyrus up to bound, mass produced books. The earliest known textbooks, dating back to the 16th century, were written in Latin, the common language of schooling and scholars. These textbooks were probably developed to help students to learn the language Latin. Historical records indicate that textbooks were used in ancient China, Egypt, India, Greece, Rome, and other early societies (Encyclopaedia of Education, 2008a). In the 15th Century printing presses with movable type was invented and books could now be reproduced quickly and easily. Before this, textbooks were rare and only available to a few people, generally the affluent. This rarity was partially because these books had to be handmade. When it became possible to mass produce books, it opened up schooling to many more people, creating an increasing loop of higher demand for books.

During the period of colonization, textbooks were imported from the mother country and taught as facts for the new territory, even if the facts did not match the history of that region. These texts served in part, as a form of indoctrination to the history of the mother country. However, when these territories gained independence, becoming nations through revolution or their succession from the colonizing country, they have changed their textbooks to reflect their new realities (Encyclopaedia of Education, 2008a).

Throughout the 19th and 20th centuries, textbooks primarily served as a fixed method for delivering curriculum. Printed textbooks have been the medium for organizing and disseminating knowledge. They have functioned to compile a body of knowledge, introduce learning concepts, and serve as reference materials (Bierman, 2006).

With the turn of the 21st century and with the help of technology books have slowly started appearing in digital form, carrying with it the additional benefits of easy accessibility, convenience to carry and being budget friendly. The first ever e-book to be published was in 1971, when Micheal Hart launched Project Gutenberg and digitized the US declaration of Independence. However, it was not until the 2000s that electronic textbooks became a familiar name. The transformation of the textbook from paper to electronic form is associated with the release of iBook Authors by Apple. With this software, publishers were able to produce electronic books that could be read with iPads. Although E-Books were already around before iPads, the problem was that they were not compatible with iPads. Publishers took advantage of this innovation and the school themselves utilized it to give a hand to their instructors to publish or to make available for their students, different kinds of resources. In the higher education level, E-books became very popular as the devices where E-book could be accessed were more light weight to carry.

Digital Books in Education

Digital textbooks, or e-textbooks, have surged in popularity globally, with over 20 countries, including Singapore, the UK, the US, South Korea, Japan, France, and Malaysia, integrating them into their education systems. For instance, Singapore initiated the BackPack.Net Project in 2003, aiming to enhance student learning through tablet PCs and emerging technologies. The UK launched the Electronic books on-screen interface project from 2000 to 2013, focusing on e-textbook design guidelines and collaboration with publishers. In the US, the Free digital textbook initiative began in 2007, providing affordable digital college and high school textbooks. South Korea embarked on a multi-phase e-textbook development plan from 2002 to 2013, intending to deliver the entire curriculum digitally. Japan initiated the vision for ICT in education in 2011, emphasizing the use of digital textbooks. France started the Digital textbooks through the digital working platforms project in 2009 to innovate educational resources and reduce reliance on physical textbooks. Malaysia introduced the Electronic book program in 2009 to distribute e-textbooks and alleviate the burden of heavy school bags.

In May 2020, under the Atma Nirbhar Bharat Abhiyan, the Ministry of Human Resources Development in India launched PM e-Vidya to ensure widespread access to education for around 25 crore school children across the nation. This initiative includes several key components: DIKSHA, which serves as the country's digital infrastructure for high-quality e-content in school education across states and UTs, featuring QR-coded energized-textbooks for most grades (one nation, one digital platform); dedicated TV channels with one channel per class from Class 1 t o12 (One class, One channel); extensive utilization of radio, community radio, and the CBSE Podcast, Shiksha Vani; and special e-content for visually and hearing impaired students, developed on the Digitally Accessible Information System (DAISY) and available in sign language on the NIOS website and YouTube.

The Ministry of Education has placed significant importance on digital textbooks or e-textbooks. The DIKSHA portal and mobile app developed by the ministry serve as a repository for a vast collection of e-books and e-content produced by States/UTs and national organizations. These e-content resources, linked with QR codes, are accessible through the DIKSHA website. Currently, e-content on DIKSHA is available in 32 Indian languages and covers material for grades 1 to 12.

E-Pathshala is another initiative introduced by the ministry of education, Government of India, aimed at distributing digital books and e-content. Through the e-Pathshala web portal and mobile app, students, teachers, teacher educators, and parents can access over 696 digital books, including 377 e-textbooks for Classes 1 to XII, as well as 40,000 audio and video resources from NCERT in multiple languages such as Hindi, English, Sanskrit, and Urdu. The e-Pathshala portal has attracted nearly 13 crore visitors and been downloaded 45 lakh times. Additionally, the National Repository of Open Educational Resources web portal serves as a comprehensive source of e-content for students, teachers, teacher educators, and parents, offering around 19,723 e-resources from NCERT and other partners for free across various school subjects (classes I to XII). These curriculum-based materials can be accessed

via the NROER website, which reports approximately 2.5 lakh visitors and 9,000 unique visitors per day (IRDE, 2021).

The India Report on Digital Education 2021 by the Ministry of education, has reported that many states in Northeast India are actively engaging in the digitization of the education system.

Digital Books Implementation and Impact in the North East of India

According to the "India Report on Digital Education 2021", released by the Ministry of Education Government of India, many states in the north-East of India are actively engaged in digitisation of the education system.

In Assam, DIKSHA serves as an e-content repository, creation platform, training platform, and energized textbook creation platform for supporting students and teachers. Approximately 4,900 e-content items, including audio, video, practice resources, and interactive content, have been uploaded on DIKSHA-Assam. Additionally, e-content in sign language and audio lessons for children with special needs are available. Most of this content is created by local teachers and educators. From April 2021, 152 textbooks have been enhanced with 2,564 QR codes, which link to various educational resources. These QR codes are printed on each lesson and the inner cover page of the textbooks, enabling students to access the content through the DIKSHA mobile app and portal.

Assam government has also launched e-textbooks from pre-primary to Class 12 on May 13, 2023, in a bid to make education accessible and readily available to students. The e-textbooks are released in 8 mediums and 19 languages, making it easier for students, teachers, and guardians to get access to the textbooks anytime and anywhere. 475 titles of textbooks available in downloadable formats in the portals of SCERT, SEBA, and AHSEC has been made accessible by the Government of Assam. This will enable students to access their required textbooks easily from anywhere at any time.

The India Report on Digital Education 2021 did not mention the adoption of e-textbooks or digital textbooks in Arunachal Pradesh. However, the state employs other digital platforms such as WhatsApp groups, webinars, and Google Meet, allowing teachers to stay in direct contact with their students. These platforms are used selectively due to network connectivity issues in certain areas. On May 27, 2023, Arunachal Pradesh inaugurated its first sustainable smart government school, 'Digi-kaksha,' in the remote district of Tirap.

On April 16, 2020, in reaction to the nationwide lockdown, the Manipur government launched e-textbooks for students in classes 8 to 10. This e-textbook initiative was undertaken by BOSEM, with textbooks for classes 1 to 8 prepared by the State council for Educational Research and Training, and those for classes 9 and 10 managed by BOSEM. A total of 71 e-textbooks for classes 1 to 10 were uploaded and are available at bosemebook.in. Additionally, the Manipur government introduced electronic comic textbooks for classes III, IV, and V to address academic gaps. The Department of Education (Schools) spearheaded this initiative. Furthermore, a mobile app named "LAIRIK" was launched, offering digital e-

content for students from classes 1 to 12. This initiative, spearheaded by Samagra Shiksha Manipur, aims to offer students convenient access to educational resources.

Recognizing the importance of quality digital content in enhancing teaching and learning outcomes, Meghalaya initiated the development of Energized Textbooks with QR codes for classes 1 to 10, making the content available through the DIKSHA learning platform. In East Jaintia Hills, the state launched the "KaLawei" project for digital education. Additionally, the AniPrep Digital Class initiative was introduced, providing English medium content for the students in grades 8 to 12. The curriculum covered subjects such as Mathematics, Science, History, Civics, Geography, and Economics, and included additional subjects like Computers and English Grammar, in alignment with the Meghalaya State Board.

The DIKSHA Mizoram landing page was launched on September 24, 2020. Since then, 316 pieces of content have been created, curated, and uploaded to the DIKSHA Mizoram portal. These materials can be accessed via QR codes printed in textbooks for Mizo (first language), Hindi (third language), and EVS (Mizo medium version).

In Nagaland the digital initiatives taken were of Digitization of SCERT Textbooks. Energised SCERT textbooks are available of Mathematics from Class 3-8, Science Class 5-8, Social Science Class 3-8 and English Class 3-8. From Class 9 up to Class 12, NBSE was managing with NCERT Textbooks and other publisher's textbooks.

The Education Department of the Government of Sikkim has made all e-textbooks available for all classes through the e-Pathshala link on its official web portal, ensuring easy access for users. In Tripura, textbooks for classes I-XII have been digitized and uploaded to the SCERT website. Additionally, QR codes have been printed for each chapter of Science and Mathematics textbooks for classes VI to VIII, enabling students to access these subjects through the DIKSHA app by scanning the QR codes.

Findings

DIKSHA platform alone hosts more than four thousand Energized Textbooks resources (MoE,2021). While not all energized textbooks seem to fulfil the grand promise with which they were introduced, and many QR codes have found to be empty/dead URLs. Besides Assam, the state boards of education from the north east, have still not uploaded their books or other e-content in the website of DIKSHA. Some of the state educational boards have still not uploaded their textbooks in their official websites. The adoption of Digital textbooks is not completed as yet and hence the impact cannot be assessed. Digital Books can have a great impact on students, especially those students who live in remote areas. As stated in the National Curriculum Framework for Foundational Stage 2022, Digital books are beneficial as it overcomes physical barriers when it comes to accessing the books, even when they do not have access to physical books in their local environment. Digital books are also portable and can be accessed from anywhere, anytime and with any device. It is also easier if the textbooks need to be modified and updated quickly as it is in digital form. Delivery delays are easily overcome. Inclusivity is another factor that comes with Digital books. There are options to enlarge the size of the font, change the colour of the page, use of read-aloud and access to audiobook formats can be enabled. The process of implementation if completed successfully

can bring in large scale changes and benefits for the young school going generation of the country.

Conclusion

The use and research on Digital Textbooks as learning materials is still in its infancy. Digital Textbooks is still considered as a novelty as they have just found their way in the teaching learning environment in some countries. Although the concept is new, it cannot be denied that Digital Textbooks have special features and their usage can benefit students, teachers and parents. Apart from reducing the burden of carrying heavy physical textbooks, the use of Digital Textbooks can benefit students both academically and psychologically. Students get impacted as Digital Textbooks are engaging with alternative features. These features make learning fun and encourage student's creativity as well as learning. It also encourages students to learning in autonomy and self-study. All the important agencies related to the education sector of any country should consider Digital Textbooks as a kind of technological innovation in the field of education and think how it could be adapted in the teaching learning scenario. Policy makers, administrators, teachers, parents etc. should play an important role when it comes to the use of Digital Textbooks. While Digital Textbooks will not be replacing print books all together very time soon in the future, it will definitely complement print textbooks. A balance between technology and real-life experiences has to be maintained for the overall development of a child and both Digital and Print Textbooks used in a complementary manner will definitely fulfil the purpose.

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