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EXPLORING THE POTENTIAL OF E-BOOKS FOR ENHANCING ENGLISH LANGUAGE AND LITERATURE PEDAGOGY AND PROMOTING ENVIRONMENTAL SUSTAINABILITY

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Abstract:

E-books are an essential part of digital learning. We shall try to explore the potential of e-books as a tool for enhancing English language and literature learning and promoting environmental sustainability. This paper reviews myriad studies that compare the effects of e-books and print books on reading comprehension, listening skills, vocabulary development, motivation, and interest of students. It also examines the environmental impact of e-books and print books in terms of greenhouse gas emissions, carbon footprint, and material consumption. It concludes that e-books have several advantages over print books in terms of learning outcomes and ecological benefits, but also acknowledges the limitations and challenges of e-books in different contexts.

Keywords: E-books, English Language and Literature, sustainability, digital learning, khadi paper.

Introduction:

The first e-book, *The U.S. Declaration of Independence* was created in July 1971 by Michael Hart on Project Gutenberg (Lebert 5), before the inception of the internet protocol (TCP/IP) by Kahn and Cerf in 1973 (Leiner et al. 6), thereby making Project Gutenberg the first ever digital library.

Today, e-books and digital documents are ubiquitous, and used almost universally, with formats such as PDF being commonplace and operable by most digital devices, allowing for "cross-platform readability" (Marinai et al. 478). In classrooms, with the advent of computers, various forms of digital learning started phasing in from the 1980s, considered as the emergence of the "digital classroom" (Singh 21). Digital classrooms today are most useful for English language and especially literature classes wherein students taught using digital and audiovisual methods have shown to score better than their counterparts who were taught using traditional learning methods, with the former group of students even showing increasing interest towards digital learning and the "new methodology" (Mazhar Hameed 217-218). Furthermore, when we consider that "Mobile learning" applications "facilitate and increase effectiveness [in] communication [and] of learning" (Al-Said 178), such mobile learning applications must be introduced.

There are various sites which specifically provide non-copyrighted works and open-access books, especially Project Gutenberg and Open Library, and occasionally Google Books, Springer, and Routledge. On the other hand, the Internet Archive is a unique library which allows borrowing of e-books through its website, just like a real library would, allowing for different borrowing times; for one hour, which can be renewed each hour, or one week. The Internet Archive is especially helpful for those who are unable to access the library because of its distance or membership fee, and gives access to scanned books, which can be helpful especially for limited print run books.

Environmental sustainability is also a huge factor for using e-books, as they are more environment-friendly

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and can, in theory, last indefinitely and remain imperishable if stored on the cloud. A study even suggests that the conventional printed book system emits "almost four times the amount of [greenhouse gases]" as the e-reader (e-book reader) system, and can help lower the impact of carbon emission even further as the same e-reader can be used to read multiple books, therefore making them "less material intensive than the equivalent number of printed books" (Kozak 106-108).

Objectives and Methodology

The primary research questions considered here are:

1. Does the use of e-books enhance English language and literature learning?
2. Are e-books more environmentally sustainable than print books?

Using the qualitative research design, we will use a mixture of scholarship method, textual analysis and content analysis of secondary data obtained from various articles, journals, and books to answer the above research questions.

Pedagogical implications of E-books in the development of English Language and Literature Learning

English language and literature studies require students to constantly read and to frequently refer to various sources including textbooks, prose, poems, dramatic works, or other such anthologies, handbooks, articles, research papers, journals, etc. These works are available both in print as well as digital format these days, and most of the time the e-book formats are provided at concessionary prices when compared to their print equivalents. Students of English often refer to online sources for definitions or explanation of terms and concepts, including online dictionaries and encyclopaedias.

In India, with 2,59,678 persons declaring English as their mother tongue, of which 41% of them are from Maharashtra, and with people exhibiting bilingualism and trilingualism in English numbering in crores (India, ORGI 78, 150, 200), and with English being considered a "common language" and an "obligatory language" in universities and for higher education (Bhattacharya 278), and with English being used for transaction of "business" in the Indian Parliament and the "Legislature of a State," as well as for "official purposes of the Union" and "official purposes within the State," and for "proceedings in the Supreme Court and in every High Court," and furthermore for "authoritative texts… of all Bills… Acts… orders, rules, regulations and bye-laws," which come under the purview of the Indian Constitution (India, Legislative Department 56, 96, 203-205), we can consider that the importance of learning of English language by students in India is of utmost significance and practical.

The use of e-books helps students from the elementary schooling stage, as it can "develop student's positive attitudes toward reading" with its "engaging, interesting, more enjoyable, and motivating" formats which appeal to the students. It also helps to improve vocabulary and increases "motivation and interest" towards reading books (Dwipayana 21). A study shows that students between grades ranging from kindergarten especially to the 6th grade did not show "significant difference" in their reading comprehension and "reading outcomes" when comparing the use of e-books to print books (Swanson 1, 11, 15), showing that e-books are as effective a source of learning as print books. Another study highlights how digital books can affect six aspects of young children by impacting their "affective, shared, sustained, creative, personalised and interactive" facets while they engage in reading for pleasure (Kucirkova 1, 11). Furthermore, a study noted that the "tablet extensive reading group read significantly more books on average than did the print extensive reading group and exhibited the highest gains in literal reading comprehension" for students between 9-12 years old when reading e-books through tablets, compared to print books, alluding to the "potential of

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tablets as a new reading resource for developing literal reading comprehension" (Park and Lee 52, 55), implying the positive impact of e-books on different reading aspects.

Different e-book formats allow for addition of multimedia and audio recordings, thus, e-books have proven to be "more effective than the print book for developing listening skills" but it is dependent on the "learner proficiency" as the use of "visual aids," which are audio-visuals which can be added to e-books also improve students' ability to comprehend better to the messages. The study best portrayed that the effectiveness of e-books in improving the listening skills applied more to "low-proficiency" students (Hsieh and Huang 10-15). Another research also mentions how format can affect the "reading speed and comprehension" of students, correlating the reflowable format of EPUB to higher reading speed as well as greater reading comprehension among the participants, especially when read using "smart phones, dedicated e-book reading devices and tablets," while most participants read PDF format quicker on their personal computers or laptops (Kumbhar 165) thus showing crucial difference in performance of the readers according to their reading formats. Another study focusing mostly on undergraduate students of English noticed that the features of e-books such as their "audio-visual" and "interactive activities" made students interested and have a "significant positive influence on their intentions to use e-books" (Mizher and Alwreikat 161). Yet another study shows how e-books for English vocabulary studies can be effective and helpful in both "short- and long-term periods" and can additionally have other advantages such as "episodic learning affordance, easy access to all learning materials in one place, and enhanced motivation and enjoyment in the learning process" (Xodabande and Hashemi 1605) showing an advantage of e-books which cannot be easily replicated by print books.

There are certain advantages to e-books when compared to print books, especially the ones with re-flowable texts which utilise formats such as EPUB, MOBI, AZW3, or TXT, such as "adjusting font size or type, increasing brightness for easier readability, highlighting a favorite passage with the swipe of your finger, or following a link to find out more information about a particular topic," whereas other formats such as PDF, DJVU, CBZ and CBR formats can be zoomed in or out to read books more conveniently. Another large advantage to e-books, when compared to print books, is in their relative weights (Bradshaw 8). The Department of Education, Melbourne, Australia already suggested the use of iPad in education as they are "flimsy and handy," and the e-books used in them "can be updated in a timely fashion" (Suharti 543, 550). Most e-readers as well as portable electronic devices such as mobile phones, tablets, and even laptops, often weigh less than many large-sized hardcover books, moreover, an electronic device can store hundreds of books in it while students can practically carry only a finite number of books with them. In India, especially with the Policy on School Bag 2020 in place, the Education Secretaries of all States and Union Territories in India have been instructed to allow for a maximum bag weight of 5 Kgs. for Class XII and less than that for the lower classes (18-19), and the same is also reiterated in the National Education Policy 2020 which instructs various educational institutions to "significantly reduce the weight of school bags and textbooks" (17). Both these policies most certainly appeal for the use of e-books in educational institutions in India, as they can cut down on the number of books carried by the students. Various sources such as the National Digital Library of India, NCERT's e-Pathshala, Balbharati, eGyanKosh, University of Mumbai's Institute of Distance & Open Learning

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Study Materials, and e-PGPathshala, allow students to easily access e-books and other digital resources, helping to cut down on the weight carried by students of various academic levels.

E-books as a vehicle for sustainability and green learning:

As e-books can be stored digitally and do not require papers, and since it does not require specific e-reading devices, e-books contribute towards green-learning and may be considered a model for promoting sustainability. Informing customers about the environmental impact as well as the features of e-books is the first step towards developing green practices, as a well-informed customer base can lead to higher "purchase intention toward e-books" (Hsu et al. 272-273). A study highlights that a "hardcover book (360 pages)" and its e-book version emits 1.3 kg and 0.87 kg of carbon dioxide emission respectively (Ravichandran and Ramakrishna 40-41), which suggests that an e-book emits lesser carbon dioxide than its print counterpart. A study even highlights that the carbon emission of e-books would be much lesser than that of paper books when the devices used for reading them, in this case the iPad, is used for over 45 minutes for the reading session (Shimizu et al. 30-33), suggesting that e-reading is better for the environment especially if used for longer reading times.

A study focusing on the comparison of greenhouse gas impact between print books and e-books show a clear indication that print books have a greater impact than the latter, having 40%, 76%, 99% and 70% more impact than an e-ink tablet, cell phone, smartphone, and portable music player respectively (Tahara et al. 59-66). Comparable results were reiterated in another study which "suggest[s] that the environmental impact of e-books read on iPads is less than that of reading printed books" (Naicker and Cohen 76-77) as the latter largely requires wood products in its manufacturing process.

There have been alternatives to papermaking, especially in the form of Khadi paper or paper made from cotton fibre being more eco-friendly when such handmade papers are made from recycled "cotton rags" (Kumar et al. 104), which was envisioned by Gandhi in his ingenious creation of "kalamkhush" originally made from a mixture of "flowers and grass petals" and a "pulp of waste and rags" (David). Though such sustainable practices are encouraged, cotton farming, instead of recycling cotton rags, is still considered to produce "considerable amounts of carbon dioxide equivalent (CO_{2e}) emissions" (Singh et al. 2079–2119), thus the use of e-books may be able to mitigate such carbon emissions further in the long run if we read them on the devices we already own, instead of opting to buy new devices which can lead to further increase in carbon footprint.

Conclusion and Discussion:

The potential of e-books in contributing towards better reading comprehension of the English language and literature may be perceived from this research, thereby satisfying our first research question. There are certain limitations which these studies had posed, such as the capabilities of the students themselves and a preference towards print books because of convention, so the inference needs to be treated carefully and more research is necessary for better understanding such individual and demographic differences.

E-books have also consistently shown to be better for the environment, assuming more books are read using the same electronic device instead of buying new electronics for this purpose, and generally assuming that more modern devices are used for e-reading, which are usually energy efficient. The studies we have consulted show that using e-books especially for long reading sessions will greatly reduce greenhouse gas emissions, thereby answering our second research question. There are limitations as well as challenges to the aspect of e-books for sustainability, as the amount

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of time spent and the number of books covered can play a crucial role in determining whether print books emit lesser greenhouse gases or whether e-books do, lastly the energy requirements of the device can also affect the impact of e-book reading on the environment. Further studies are needed to accurately determine the effects of the device and the reuse value of e-books.

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