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E-BOOKS AND THEIR IMPACT ON THE EDUCATIONAL SECTOR

In the 21st century, e-books, which began their existence in the 1970s, are becoming an essential aspect of human existence. They are currently supported by practically all technological gadgets and are becoming more and more accessible to readers. In addition to examining the rise of e-books, this study aims to evaluate how they are used in the classroom, specifically by students and secondary school students. E-books have created new avenues for education and personal growth. The ability to access them at any time and from any location has increased the flexibility and accessibility of the learning process. A comprehensive review of scientific publications on the subject was carried out in order to carry out the study. Analysis was done on data regarding e-book usage in academic settings. The study's findings suggest that using e-books can boost literacy, boost student enthusiasm, and increase access to learning materials. However, it's important to remember the restrictions brought on by technical issues and eye strain. Even with the widespread digitization and advancement of e-books, more research is still needed on the subject of this study because e-books hold great promise for modernizing the educational system.

Keywords: e-books, Project Gutenberg, education, libraries, digitalization, literacy.

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Электронды кітаптар және олардың білім беру саласына әсері

20 ғасырдың 70-ші жылдарында өз тарихын бастаған электронды кітаптар 21 ғасырда адам өмірінің ажырамас бөлігіне айналууда. Қазіргі уақытта олар оқырмандар үшін барған сайын қолжетімді болып келеді және барлық дерлік техникалық құрылғыларда қолдау көрсетіледі. Бұл зерттеудің мақсаты электрондық кітаптардың пайда болуын зерттеу ғана емес, сонымен қатар олардың білім беру саласында, атап айтқанда студенттер мен орта мектеп оқушыларының пайдалануын бағалау болып табылады. Электронды кітаптар оқу мен өзін-өзі дамытудың жаңа мүмкіндіктерін ашты. Оларға әлемнің кез-келген жерінен және кез-келген уақытта қол жеткізу оқу процесін икемді және қолжетімді етті. Зерттеуді жүргізу үшін осы тақырып бойынша ғылыми еңбектерге жүйелі шолу жасалды. Мектеп және университет орталарында электронды кітаптарды пайдалану туралы деректер талданды. Зерттеу нәтижелері электронды кітаптарды пайдалану оқушылардың ынтасын арттыруға, сауаттылықты арттыруға және білім беру ресурстарына қолжетімділікті арттыруға болатынын көрсетеді. Сонымен қатар, техникалық ақаулар мен көздің шаршауымен байланысты шектеулер туралы ұмытпау керек. Жаһандық цифрландыруға және электронды кітаптардың дамуына қарамастан, бұл ғылыми жұмыстың тақырыбы әлі де қосымша зерттеулерді қажет етеді, өйткені электронды кітаптар білім беру саласын жаңғыртудың перспективалық құралы болып табылады.

Түйін сөздер: электронды кітаптар, Гутенберг жобасы, білім, кітапханалар, цифрландыру, сауаттылық.

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Электронные книги и их влияние на образовательную сферу

Начав свою историю в 70-е годы XX века, электронные книги являются неотъемлемой частью жизни человечества в XXI веке. В нынешнее время они становятся все более доступными для читателей и поддерживаются практически на всех технических устройствах. Целью данного ис-

следования является не только изучить появление электронных книг, но и оценить их использование в образовательной сфере, а именно студентами и учениками средних школ. Электронные книги открыли новые возможности для обучения и саморазвития. Доступ к ним из любой точки мира в любое время сделал процесс обучения более гибким и доступным. Для исследования был проведен систематический обзор научных трудов, посвященных данной теме. Анализировались данные об использовании электронных книг в школьной и университетской среде. Результаты исследования свидетельствуют о том, что использование электронных книг может закрепить мотивацию учащихся, повысить грамотность и расширить доступ к образовательным ресурсам. В то же время нельзя забывать об ограничениях, которые связаны с техническими проблемами и нагрузками на зрение. Несмотря на глобальную цифровизацию и развитие электронных книг, тема данной научной работы все еще требует дальнейших исследований, так как электронные книги являются многообещающим инструментом для модернизации сферы образования.

Ключевые слова: электронные книги, Проект Гутенберг, образование, библиотеки, цифровизация, грамотность.

Introduction

The early printed books of the 15th century, commonly known as incunabula, share the same technological and cultural significance as e-books today. Monks created illustrated manuscripts prior to this time, which may take anything from a few months to a few years. When the first printed books appeared, there was not the commotion that was anticipated. They were viewed as a subpar product on the one hand, yet as hazardous on the other, because they made books and reading more accessible, which took part of the power away from the people (Gomez, 2008).

Additionally, e-books have fallen short of the high hopes for their use and distribution. When Michael Hart's Project Gutenberg, a digitized collection of books, was introduced in July 1971, the history of e-books began. The US Declaration of Independence was the first e-book. According to M. Hart's theory, everyone ought to have access to a free digital library in the 21st century. The development of the World Wide Web in the 1990s and the establishment of Distributed Proofreaders, volunteers who assisted in the creation of e-books, in 2000 marked two significant advancements for the project. By 2008, the project was producing 340 new books a month on average (Lebert, 2009: 5).

There were only ten e-books in the project collection by August 1989. The development of e-books accelerated with the introduction of the first graphical browser, Mosaic, in 1993. By 1994, e-book №100, The Complete Works of William Shakespeare, had already been produced, and by 1997, the library had 1000 volumes (e-book №1000 was Dante Alighieri's Divine Comedy).

The purpose of Project Gutenberg was to encourage individuals to read books while seated at their computers. For this reason, the majority of the

works in their library collection were for the general audience. Although the project's objective was not serious literature, the management did not rule out future work in this field.

Every year, the number of e-books being released rose. In 1999, book №2000 was written, and the following year, book №3000. Large books may be loaded onto the disk thanks to the disk's growth from 360 KB to a typical 1.44 MB by 2002. The Magna Carta, which was produced in October 2003, was e-book №10000. Charles Franks' establishment of Distributed Proofreaders in October 2000, which involved volunteers editing books – typically one page every day – was the cause of this expansion. CDs and DVDs were used to record e-books, which were then made available to anyone who requested them. The first DVD with 9400 e-books was launched in December 2003, and the CD of the project's greatest books, which included 600 e-books, was issued in August of the same year.

By 2006, the library had over 50 languages, including uncommon ones like Mayan and Sanskrit. From Europe to Australia, Project Gutenberg has grown bigger. More than 70,000 e-books are currently available in its library (Lebert, 2009: 7-11).

Despite the free e-books of Project Gutenberg, at the end of the 20th century it was expected that by 2005 they could be sold for a total of up to 3.5 billion dollars. But these predictions did not materialize and there were different opinions about the reasons for this. Since traditional books performed their function flawlessly, certain industry professionals thought that e-books were not the answer to the world's problems.

However, several states additionally highlighted the positive aspects of e-books. An e-book could be accessed simultaneously from several different locations, but a paper book was prone to deterioration, could not be updated rapidly, and could only be used

by one person. E-books allowed for the purchase of sample segments, whereas traditional books required full purchases. In addition, one of the most significant features of e-books was their search function, which allowed users to locate any material in a matter of seconds, something that paper books did not have (Warren, 2009: 83).

The book "I Want You! The Evolution of the All-Volunteer Force" by Bernard Rostker, which included a DVD, deserves special recognition. Over the course of four years, the author gathered thousands of primary sources for this DVD. The footnotes led directly to the source material rather than to the several periodicals where they were quoted (Rostker, 2006). Thousands of paper pages could be contained in a single DVD. Such initiatives, of course, were not profitable. However, publishers may add more images, music, and video assets to their products to make them more appealing.

Hypertext, or electronic text, emerged as a result of advancements in computer technology. The name hypertext was first used by Ted Nelson in 1965, but Vannevar Bush first defined the idea of hypertext in 1945. Many experts recognized the potential of hypertexts in the 1990s (Landow, 1996: 209-237).

Traditional publications have also used hypertext-style storytelling. The Choose Your Own Adventure series, for instance, had a total circulation of 250 million copies and provided readers with a variety of plot twists (Gomez, 2008). Nevertheless, hypertext has established a niche for itself in online platforms and e-books. One of the most well-known instances of a hypertext connection is Wikipedia.

The future of printed books and the financial advantages of both will determine how e-books and printed books interact. The need for e-books in fields like science, education, and libraries will determine the future of printed books. Publishers cannot quit printing traditional books since the shift to digital formats is not quick enough, but the increased circulation may result in unsold volumes, which will cost them money.

One of the things that has affected reading is the Internet. Its text component cannot be entirely disregarded, even though it can be characterized as a visual tool for viewing images and movies. The rise in online publications is directly correlated with the development of online writing and reading.

The range of e-book formats (such as PDF and ePub) and reading devices has expanded along with the quantity of e-books. Amazon released the Kindle e-book reader in November 2007. Due to the subsequent introduction of similar devices by other firms,

e-books and audiobooks now account for over 25% of all books sold (<https://dtf.ru/read/2846381-mirovoi-i-rossiiskii-knizhnye-rynki-v-2024-godu>). You may now read e-books on practically any portable electronic device, including smartphones and tablet computers, in addition to e-readers.

Studies have indicated that students' reading comprehension and speed are impacted by the e-book format they choose. Researchers discovered that students understood the content better and read ePub format more quickly than they did PDF format. One of the explanations offered was that PDF was typically used on laptops and personal computers, whereas ePub was read on smartphones and other reading devices (Zeng, Bai, Xu, He, 2016: 319-330).

Even though there are many different types of e-book readers, none of them can satisfy absolutely all the needs of the reader. Some do not have any additional functions except for displaying digital publications, some can connect to the Internet via Wi-Fi, support MP3, etc. If we compare electronic and traditional books, then each has its own advantages and disadvantages. Thus, working with e-book readers requires, at a minimum, basic skills in working with technology, which is not necessary when reading printed books. At the same time, one device can store as many books as its memory allows. At the moment, the situation is such that modern tablets and smartphones are still preferable to special reading devices, as they are more universal technical means.

Materials and methods

This article uses a descriptive research method and a systems approach to identify the role of e-books in educational areas. The study is aimed at solving the following problems:

- identifying and collecting materials related to this article;
- analyzing the collected data;
- revealing the history of e-books and analyzing their impact on education.

The materials of the work are scientific works of Western, Chinese and Turkish authors. The study revealed that digitalization of the printed world and the emergence of e-books have a significant impact on educational processes.

Results and Discussion

Digitalization has had a profound impact on scientific communication and education. Numer-

ous paid and free resources of various quality levels offer interactive learning opportunities. Numerous active elements that are unavailable in traditional publications are provided by e-books and scientific articles. However, there is a drawback. Due of their lack of technological knowledge and students' confusion with complicated interfaces, many teachers are unable to create an interactive curriculum. Due to the high expense of producing multimedia material, the major participants in this market are big publishing firms with substantial financial resources. This is a lucrative industry for them. As an illustration, consider the yearly sale of e-textbooks to students, which, like printed books, are not available for purchase in secondhand bookstores.

The result of this type of learning will be a combination of various elements of video, audio, text and graphics that will change the way we read and publish. As an example, we can cite Innovative Digital Education and Learning in New Mexico (IDEAL-NM), a nationwide organization that is a combination of all educational spheres – from school to political education. It deals with learning management systems, web conferencing and the creation of online courses. (Ormand, 2008). The Digital Media Sandbox Consortium (DMSC) at Tennessee State University was created to give students the opportunity to finish projects in digital picture, text, audio, and video forms, giving them the digital proficiency abilities, they must acquire to navigate their careers in the future. The DMSC program includes peer-review, competition, the publishing process, and distribution as essential components (Denny, 2008).

The construction of the next generation of scholarly information infrastructure is at a pivotal point. Our knowledge of the technology's current and future applications has not kept pace with its advancements. Designing tools, services, and platforms requires a social study on scholarly activities. Whether the Internet of the future fosters creative new kinds of learning and scholarship or merely perpetuates the duties, procedures, regulations, economic models, and incentives of today will depend on the design choices made today.

The vast majority of students still favor traditional books since they are simpler to use, take notes on, or work with, which facilitates their educational experience. The ability to sell books to future students was another significant benefit they saw. People who opted for digital textbooks valued how simple it was to search for the information they needed using keywords. However, the overwhelming majority of them acknowledged that reading

from a screen was too taxing on their eyes for them to do for over an hour (Leyva, 2003: 137-157). As a result, students typically used e-books for leisure or to quickly scan and become acquainted with the material in academic books. The primary use of traditional books was for prolonged and attentive reading (Goertzen, Bakkalbasi, 2016: 83-92).

The ability to study outside of the library, which may be closed at specific times, and the availability of books at any time were the primary drivers of e-book use. In addition, there was no need to wait for the few printed publications that were available. There was a multi-user mode for e-books. E-books were a crucial learning aid since they met expectations, were interactive, allowed for conscious self-control, and improved efficiency (Liaw, Huang, 2016: 625-643). According to studies done on education majors, reading books in electronic format increases their sense of competence and achievement (Johnson, 2016: 1551-1566).

An understanding of the accessible nature of digital versions of specific books, supporting formats, and other features is directly correlated with e-book usage. One important factor in the use of e-books is the availability of search in online libraries. For readers, the absence of platforms and licensing becomes a barrier. It was observed that whereas printed books were meant to be “an extension of their personality”, readers who used reading devices felt less connected to the book (Seth, Kelly, 2016: 433-452).

Access to books and knowledge is made easier by the growth of e-books and their growing quantity. Research on student perspectives also helps shape the process of enhancing the collection of digital books (Hobbs, Klare, 2016: 9-24). This was mostly due to the economic factor and the simplicity of use of reading gadgets. The financial difficulties that libraries are facing are well known and are linked, among other things, to the increase in the price of printed books. Additionally, it makes financial sense to switch from print textbooks to electronic ones. The sharing of books among faculties was another method to lower the price of books (Ferguson, 2016: 252-258).

Several approaches for buying e-books have been implemented by universities, including bulk deals, demand-driven acquisition (DDA), and patron-driven acquisition (PDA). There were benefits and drawbacks to each. DDA was the best model for tiny libraries. Bulk deals were helpful for larger libraries (Shapiro, 2016: 287-290). It is challenging to develop a single model that would satisfy librar-

ies, consumers, and suppliers despite the variety of models. The Triangle Research Libraries Network and Oxford University Press have developed a consortium model that is both financially sustainable and equitable for both parties, which is the closest thing to this (Swindler, 2016: 269-285).

Libraries require both paper and electronic literature, according to experience. They must have procedures in place for choosing, obtaining, and overseeing these two categories of publications in order to do this (Oliva, 2016: 37-47). The present image demonstrates how libraries all over the world are expanding their e-book collections.

Libraries also serve the purpose of educating readers about the advantages of e-book platforms and formats, as their variety can occasionally be confusing and hinder users' ability to select the best alternative. Libraries can develop programs to educate e-book readers by carrying out a number of surveys. To promote the usage of digital books, numerous libraries are funding various studies. The e-book collection's transfer to the popular digital platform OverDrive, for instance, was a crucial step in enabling global reading (Thomas, Noble, 2016: 326-334).

The emergence of digital technologies has affected not only the education of students, but also secondary school pupils. E-books play an important role in improving the literacy of schoolchildren. For primary school pupils, such elements of e-books as talking characters and highlighting of texts and words were useful in developing language and phonetic-phonological competence (Korat, Shamir, 2008: 110-124).

Consequently, e-books have started to be used more frequently as teaching resources in secondary education institutions. One such instance is the FATIH initiative, which was founded in Turkey on November 22, 2010 and stands for Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi (Movement of Enhancing Opportunities and Improving Technology). The project has given nearly 1.5 million secondary school pupils access to tablets over the course of five years. (Kaynar, Sadik, Boichuk, 2020: 912).

The 21st-century generation has the advantage of having grown up in the age of advanced technology. Being surrounded by technology as a child makes it easier for them to adjust to the rapid changes in the digital world. Even though e-books, particularly those with audio or visual features, are useful for education, they can also be used as gaming and personal tools if they are not properly supervised. Be-

cause not all e-books satisfy the requirements of all secondary education organizations, teachers should be involved in both student supervision and e-book selection.

The study's findings demonstrated that certain e-books were badly made and hindered pupils' ability to learn. Pupils were distracted by some of them since the animations and pictures did not correspond with the material. Learning became less focused as a result of the numerous audio effects. However, well-designed e-books with lots of digital capabilities made it easier to accomplish a lot of learning objectives (Skibbe, Thompson, Plavnick, 2017: 419-426).

Pupils, particularly those in the younger grades, feel good after reading such novels. Pupils are more emotionally invested and comprehend the lexical meaning of words when visual aids are used, which encourages them to keep learning. Texts' sound reproduction aids in focusing on proper pronunciation, while e-books' integrated dictionaries expand their vocabulary. However, it is important to remember that, despite all of its benefits, research has shown that when pupils used e-books on their own, their impact was short-lived. E-books were only highly and sustainably beneficial in schoolchildren's education when used under the supervision of parents and instructors (Troseth, Russo, Strouse, 2016: 54-62).

It is important to note that some teachers have trouble using e-books. These include the necessity to involve parents, literacy concerns among pupils, and technical issues. The majority of technical issues were related to platforms and systems that housed e-books. It is also mentioned that certain pupils, particularly those in lower grades, may find novels challenging. It was challenging for some pupils to adjust to e-books because they prefer paper books. One crucial element that made instructors' jobs simpler was including parents. Reading motivation was higher among pupils who worked on assignments with their parents than among those who did not. This was influenced by the schedule of parents, who typically return late from work and do not have time to devote time to their children, which affected their academic performance (Kaynar, Sadik, Boichuk, 2020: 915-917).

Understanding the cognitive processes involved in reading is crucial to raising pupils' academic performance. W. Kintsch (Kintsch, 1998), C.A. Perfetti and others (Perfetti, Landi, Oakhill, 2005) stand out among the scholars who have examined these processes in reading conventional books within the framework of cognitive psychology. Some aspects

of mental processes have been impacted in one way or another by the widespread use of e-books. Sequential linear reading is a feature of printed literature that made it feasible to follow the author's reasoning. Reading e-books requires a different cognitive interaction than reading printed books because the reader must constantly switch between different interactive and multimedia features, follow hyperlinks, etc. It's also important to be aware of any advertisements or other alerts that can appear while reading and prevent you from fully absorbing the content (Baron, 2015).

These extra components, which are not present in printed books, could raise cognitive pressure and have a detrimental impact on readers' cognitive abilities and learning process. Compared to printed books, skimming the content and not paying steady attention resulted in less attentiveness (Sweller, van Merriënboer, Paas, 2019: 261-292). Readers of e-books must thus keep an eye on their focus and the use of metacognitive regulation, or control over intellectual activity (Dumay, La Torre, Farneti, 2018: 11-39).

In addition to the many benefits of printed books for memory development, electronic books' interactive features aid in the development of the following cognitive skills in students: finding and verifying information, multitasking, which enables them to process multiple pieces of information at once, and solving challenging problems. When reading e-books, memory and focus are crucial components. Assimilation of digital materials was also impacted by the ability to use technological gadgets (Tarchi, Pinto, 2016: 518-530).

In contrast to scrolling on a screen, some research has indicated that tactile engagement with paper enhances cognitive capabilities. As a result of this process, a person deliberately finds time for and is focused on reading conventional literature, which allows them to absorb knowledge more. Because e-books have these features, people utilize them more when they're looking for information rapidly. Therefore, it may be concluded that each reading choice has advantages. Therefore, enhancing digital literacy – which will be a helpful supplement to traditional reading – is the most crucial aspect of education in the context of digitalization (Singer, Alexander, 2017: 155-172).

Conclusion

Even while research indicates that readers still prefer conventional periodicals, the Internet and technology gadgets are driving up demand for electronic reading. There may be a variety of future developments for e-books that are currently impossible to fully forecast. It will be up to the authors and publishers to make them better, incorporate interaction, use fresh commercial ideas, and gauge how readers react to these developments.

An essential component of the expanding digital world are e-books. However, they haven't been able to totally replace traditional books yet, even with their increasing popularity. Since each of these publication formats has unique benefits and drawbacks that may affect reader preferences, it is likely that these two formats will coexist.

The benefit of e-books, according to students in higher education institutions, is their easy accessibility and lack of reliance on libraries. Reading them at any time and from any location is crucial for learning, as is their interactive nature. Students' use of e-books has made it possible for colleges to create an electronic library and offer a variety of e-book purchase options. As a result of global digitization, libraries must add more electronic books to their collections in addition to printed ones.

Another study looked at the effects of using electronic textbooks in secondary schools. The majority of educators said that they help kids become more literate. Technical equipment, parents' active involvement in their children's education, and the preparedness of the pupils were the primary determinants of their development. There will be more opportunities to learn about the potential of integrating electronic books into the classroom as more study is done in this field.

An important element is also the cognitive processes that occur when reading e-books, especially in comparison with the traditional reading of paper books.

In any case, e-books are already influencing how books will be published in the future. Numerous cutting-edge media goods that would never be possible in print could be produced through additional study and digital development.

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