

Kateryna Shvets

Master of Foreign Philology, The Municipal Institution «Kirovohrad Regional Institute of Postgraduate Pedagogical Education named after Vasyl Sukhomlynskyi», Kropyvnytskyi, Ukraine, shvets2019@ukr.net
ORCID ID: <https://orcid.org/0000-0002-6606-6614>

THE IMPACT OF THE COVID-19 PANDEMIC AND DIGITALIZATION ON THE PRINTED PUBLICATIONS USE IN THE EDUCATION SYSTEM

Abstract. *The article outlines the trends of the adherence to printed and digital information during the COVID-19 pandemic, and the peculiarities of its distribution and use. The research methods of this study are comparative analysis of statistical data, theoretical domestic and foreign content (psychological, pedagogical, literary, historical, futurological, journalistic, technological, and others). The study traces features of books selection, summarizes their role in the previous pandemics which are recorded in history; identifies current trends, advantages and disadvantages, new patterns and connections of both digital and paper versions of information; describes the peculiarities of its distribution and use by teachers, pupils, students in particular; highlights some problems arising first of all at publishers, authors, pupils, students, scientists, teachers and journalists; outlines modern trends, advantages and disadvantages, specifics of the digital and paper versions of information used by the education system during the digitalization and pandemics; characterizes publishing features in quarantine conditions, along with the likely future prediction; the conclusions are given according to the predictions of some scientists made several years ago, regarding the type of information today. Particularly noteworthy is the education system, which has found itself in the epicentre of events, in the harsh conditions of using electronic textbooks instead of the usual printed ones. The article focuses on new quantitative and qualitative indicators of research in Ukraine and the world, which explain the new level of information development and its value and will be needed by educators, students, scientists, journalists, IT technologists, etc. in the pandemic and after overcoming it.*

Keywords: *printed publications in the education system, the pandemic COVID-19 and education, benefits of printed publications, digitalization in education, publishing on the Internet.*

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If you believe in what you are doing, then let nothing hold you up in your work. Much of the best work of the world has been done against seeming impossibilities. The thing is to get the work done.
Dale Carnegie

In different eras, the fate of many people and civilizations often depended on the impact of pandemics. They brought chaos to private and social life, rearranged values, and devastated

countries. History repeats itself today, and the modern world community has witnessed significant changes, particularly in the information space. Updates are both in the market, and in education,

science, and communications. Problems arose primarily for pupils, students, teachers and scientists. This material is devoted to information trends during the pandemic and the forced attitude of society and the education system (as a part of it) towards the use of books, magazines, and newspapers.

Firstly, the pandemic affected the choice of books. It reiterated the importance of ones describing life during the invasion of diseases and wars. COVID-19 forces entire countries to consume information on specific topics, emphasizes the special attitude of mankind to the inner world of the book. Secondly, the new circumstances forced the world community to choose one way of perceiving the text from two well-known ones: this is an electronic version. As a conclusion: the pandemic leaves the printed version in the past, forcing the education system and society to choose the electronic one; emphasizes the special attitude of people to the inner world of the book. The purpose of the study is to determine the trend of readers' forced attachment to printed or digital information during the pandemic and the peculiarities of its dissemination and use during teaching in particular.

The theoretical basis of this material is quite extensive. It concerns the study of the experience of historians, modern journalists, authors of foreign and Ukrainian literature, futurists and scientists who have studied the impact of the book on psychology and human life, teachers, sociologists, Internet connection companies (Ericsson, Kyivstar), IT technologists, partly doctors, etc. Books and media cover all levels of public life in the world, so the study of the topic is extensive. Among the sources, in particular, are: «Statista» (website), «Radio

Svoboda», «Ukrayinska Pravda», «The Innovation Journal», «The New York Times», «Forbes», works by scientists from the University Of Toronto Press, the Institute for Research in Social Communication, etc.

Many scientists have been talking about the fate of printed publications for a long time. In particular, Herbert Marshall McLuhan, Professor of English Literature, (recognized in the world of futurology and sociology, Toronto, the '60s), claimed about the rapid decline of the book business. He was fascinated by the «electric» means of communication and information that have become modern. «Any extension of the sensorium by technological dilation has a quite appreciable effect in setting up new ratios or proportions among all the senses» [1]. The professor did not pay due attention to the deterioration of interpersonal communication. The book «La Faim de lire» by Robert Escarpit and Ronald E. Barker was published in 1972 by the order of UNESCO. The authors found out that «the letter sign is ambiguous and plural in meaning» [2]. Books are great means of communication, the information they contain can be decoded by anyone who can read. The question of creating a communication network that would meet the needs of industrial society arose in the 19th century. The movement towards mass literacy was also important for the development of education. Saving time and improving the processes of encoding and decoding information became important. The authors state that the system of printed communication gradually failed. Visual information has conquered society and become important in the educational process. The main task of the book business is to properly organize the

distribution of books, to choose the «right» reader today [2]. The conclusions of Escarpit and Barker coincide with modernity.

The research methods were selected:

- analysis of statistical data;
- comparative analysis of theoretical domestic and foreign experience of psychological, literary, historical, futurological, journalistic, technological areas (modern and last years’).

There is a well-known sentential that nothing matters in life like life itself. Nowadays many people remember this; they diligently search for the «truth of life» in books. They are looking for answers to the question: «How to live in new conditions?» In the era of YouTube and social media, different cultures of the world choose books such as:

- «The Plague» by Albert Camus (1947);

- «Decameron» by Giovanni Boccaccio (1348);

- «Death in Venice» by Thomas Mann (1912);

- «The White Disease» by Karel Čapek (1936);

- «Vongozero» by Jana Wagner (2011) [3].

The book «The End of October» by The New Yorker journalist Lawrence Wright is of particular significance. This thriller was written in 2019, but its events take place as if today when the pandemic occurred due to the coronavirus. The author predicted a modern epidemic from an unknown virus with impressive accuracy, described the response of medical and other systems to it [4].

New books on coronavirus are being created as educational and introductory literature for children. For example, there is a fairy tale «My hero is you» produced by the Reference Group of the

Interdepartmental Standing Committee on Mental Health and Psychosocial Support in Emergencies (with the participation of WHO, UNICEF Ukraine, Office of the United Nations High Commissioner for Refugees, International Federation of Red Cross and Red Crescent Societies) [5]. It collects the experience of children, parents, and psychologists in the fight against the virus. A Ukrainian writer Halyna Budilova wrote the book «Robbie and the grouch in the crown» [6]. «Coronavirus. A book for children» was created by Elizabeth Jenner, Kate Wilson, and Nia Roberts [5]. There is no doubt that samples of foreign and Ukrainian literature on coronavirus will be included in the programs of universities and schools for a certain period.

Medical students, virologists, microbiologists, sociologists, and historians will also study according to updated programs and textbooks. The society studies the history of quarantines, the effectiveness of disease control methods, and human behavior. Many authors created fiction and historical stories about diseases. The ancient Greek «father of medicine» Hippocrates wrote the first detailed reports on the physical aspects of epidemics and their impact on society. Thucydides wrote about the Peloponnesian War and the epidemic in Attica (430 BC). He described the «Plague of Athens», which became an example for many historians from different countries. The historiography of diseases changed in the 19th century. They disappeared from civil history then. Microbiologists began to actively study the causes and course of diseases, and realized that they were caused by germs. Some viruses have been eliminated. The AIDS virus, hepatitis, and plague are still incurable [7], and a new

one, coronavirus, has emerged today. These facts are described in the literature that is of interest today.

Of course, there was a trend towards digitalization before COVID-19. The reader could hardly be seen with a printed book before this epidemic. The days when students and pupils worked for hours in libraries to complete assignments are gone. Downloading a source to work on any topic in just a minute has become almost the only way to obtain information in recent years.

That is how people answered the question «Do you use e-books for your academic work?» in 2011 (Table 1) [8].

Society does not stop reading, both pupils and students are still learning. The explanation for this situation is that the current generation has a different consciousness. The new society's imagination is not used to working fully. Attention cannot «stay on a paper page» for a long time [9; 10]. Learners answered the questions during the research of the importance of choosing an

online version of books in 2011 as follows (Table 2) [8].

Communication strategy has become extremely important in the educational process for interaction and support, coherence with the onset of the pandemic. Some countries do not have enough teachers. For them, the pandemic became an opportunity to teach children online with the help of their parents as teaching assistants. Most countries around the world noted that their governments had done «nothing» for their education aside from encouraging the online resources using. These are the results of a survey conducted in 98 countries [11]. Teachers, lecturers and other participants of the educational process were interviewed on March 18-27, 2020. Some respondents stressed that the recommendations from the ministries of education did not correspond to the realities of schools. Only a few countries had clear plans to implement a new crisis strategy. Several schools were able to use professional

Table 1

Use of e-books: users and non-users; n = 2569

| Yes | No | Not sure |
|----------|---------|----------|
| 58% | 38% | 4% |
| N = 1491 | N = 974 | N = 104 |

Source: Li C., Poe F., Potter M. et al. (2011). UC Libraries Academic e-Book Usage Survey. URL: <https://escholarship.org/uc/item/4vr6n902>.

Table 2

Selected e-book features rated by importance

| When doing your academic work, how important are the following e-book features? | Very / Somewhat Important | Neutral | Not Very / Not at All Important |
|---|---------------------------|---------|---------------------------------|
| Annotate, bookmark or make notes | 68% | 18% | 14% |
| Search within the full text of items | 95% | 4% | 1% |
| Download chapters or portions of the e-book to computer or laptop for later use | 93% | 5% | 2% |
| Read on a mobile device (e.g., iPhone, Blackberry) | 36% | 24% | 40% |
| Read on a dedicated e-book reader, (e.g., Kindle, Sony Reader) | 32% | 27% | 41% |

Source: Li C., Poe F., Potter M. et al. (2011). UC Libraries Academic e-Book Usage Survey. URL: <https://escholarship.org/uc/item/4vr6n902>.

online learning platforms (Australia). Some countries used online broadcasts of educational programs via television (Belgium). Costa Rica used a combination of resources in various subjects to create state television, web pages, and use social media. Estonia has always had a well-developed education system. That's why it was able to quickly organize online education without any loss in the period of this crisis.

For Ukrainian education, in particular, the epidemic has become a disaster. The system was not ready for both distance teaching and learning. On the one hand, innovative methods are supported, and parents have the opportunity to spend more time with the children who are doing their assignments in new conditions. On the other hand, technical, informational and methodological support, work planning, interaction in this situation remains far from ideal. Teachers do not have enough technical and pedagogical skills to work remotely [11]. Many of them used online resources and textbooks from school libraries to end the 2019–2020 academic year. 41% of educators gave their students paragraphs to study and exercises from textbooks in most cases because they could not use online resources. Only 18% of pedagogues delivered online lessons [12]. Many students do not have self-study and processing skills, and cannot find the necessary information online. The PISA surveys (2018) correspond to such results: 9% of learners (aged 15) do not have a special place to study online at home (in particular, every fifth student in Korea). Many of them do not have access to a computer or the Internet.

In general, most educational systems in the world were not ready to teach

online. There are many inequalities between them. For Ukraine, modern technologies can provide continuous access to special materials without textbooks. They orient on new ways of teaching, various forms that focus on students as active participants [11]. Quarantine has affected almost 7 million learners in Ukraine [12]. New means of digitization have to replace printed textbooks; destroy the familiar rhythm of the educational process. However, they are not able to replace the teacher. Changes in the use of printed and digitized information are irreversible. Mankind pondered the tendency to anachronize printed books before the advent of the coronavirus. But the pandemic has accelerated this process, particularly in systems such as education.

Publishers of textbooks, books, and periodicals (including scientific and methodological) are also in quarantine. Firstly, it is necessary to preserve the health of their employees, readers, distributors, drivers and mail carriers. Secondly, publishers cannot organize the timely printing and sale of newspapers, magazines, and books. Newsstands and shops selling newspapers and magazines have been closed for a long time. Ukrainian media have suffered primarily at the local level where they are most needed. Journalists work remotely or in combination with the office hours. However, there are media that are funded by 90% of subscriptions, i.e. the situation is not bad for them [13–17].

Book printing was suspended until the end of the quarantine due to compliance with laws and regulations of the authorities to combat the emergence and spread of coronavirus. For example, 145 publishing houses in Italy announced that 23,200 books will not be

published and 2,500 ones will not be translated into Italian in the current 2020 [18]. The publishing houses note that these circumstances are considered force majeure. «Publishing's first quarter in 2020: a good start, then the virus: publishing sales got off to a decent start in 2020 – but as the new coronavirus increased its grip on the country's economy, sales have softened» [19]. A huge number of bookstore and library employees lost their jobs. Many students, pupils, teachers, scholars, and book lovers are unable to obtain the required publications. Author's tours have been canceled; printing according to the plan has been temporarily suspended. The industry, which did not develop rapidly before, is completely frozen now.

The only way out for periodicals and book editions is the Internet publishing. Many of them have been printed on paper and duplicated in electronic form for a long time. However, most publishing houses cannot do this. Many of them are waiting for the transition and transformation, and some have already adapted and offer online book services (including audio), promotions and discounts, free reading, and listening to books. For example, the English-language resource Scribed offers free reading of books for 30 days. Cambridge Core offers books and articles in scientific and educational journals in English in free access (especially if a reader is interested in information about the coronavirus). Educators, learners and others can buy a book in printed form by ordering its delivery home or to the post office if they have money and time to wait. Difficulties arise if the book is too expensive or not available on the web sites at all. Like society, publishing houses are trying to «survive» during the prevalence of the disease by

counting losses, or «die in a book apocalypse» [20]. Online ordering does not bring the same profit it was before.

However, there is a demand for printed publications. Amazon.com, Walmart recognize profit growth several times more than usual [21].

Production and sales schedules require 1–2 years to work on one book. Therefore, the end of quarantine will mean a slow recovery [21; 22]. On the other hand, textbook writers and other authors have maximum time to work today. But who will publish and distribute their books after this pandemic is a completely different question [20; 23].

The benefits of e-books in quarantine are:

- they can be quickly and easily downloaded from the Internet. Software for a phone, a computer, or other equipment is also easy to find and install;
- one tablet or computer can hold a huge number of books in its memory. A reader can use one or more e-books at the same time;
- information messages or books can be created by anyone without censorship.

The last advantage should also be called a disadvantage, since such information is of poor quality. It is necessary to trust only those sources that have gained a positive reputation, where facts are verified, books and researches are written by scientists – specialists in relevant fields.

However, the Internet cannot provide access to valuable, rare books. Libraries often have rare book departments. Such books can be held in hands, though not all.

The disadvantage of the electronic version is the necessity to charge a gadget to find information, and to have an

Internet access to download new information.

The main reasons for the decline of a printed book are the growing demand for the Internet, an increase in the intensity and duration of network use [8; 24]. The number of mobile devices is the last factor, if we do not take into account the forced quarantine with closed shops and libraries. 26 billion devices with Internet access, 6.1 billion smartphone users (in 2014 there were 2.6 billion smartphone owners in the world), 80% of new connections to the mobile Internet network have been projected by 2020. The level of mobile coverage on the Earth is 99% in 2020 [25].

Among the disadvantages is the fact that a constant search for the sources necessary for work during the epidemic leads a user to find information about the dangers of coronavirus accidentally. It affects the psyche negatively. This situation is repeated in particular with students, their parents, and teachers. The Chinese, who were locked in their homes for a long time during the pandemic (including Seoul, Beijing), advise to turn off computers, telephones, and TV sets and use printed books. They already rated them as salvation and a way to filter out interfering information. All participants in the educational process (and not only them) are encouraged to learn media literacy. For example, to use the manual «Educational practices for the prevention of infodemia, or how not to be isolated from the truth» (O. Volosheniuk and others). It is specially designed to guide the critical evaluation of pandemic and virus media reports. The manual can be used in various educational institutions primarily [26].

Attitudes toward e-books vary from country to country. Through low costs,

this option is more profitable for the United States than for Ukraine. European publishers are more cautious than American ones. The main issue in the revival of printed books after the pandemic lies in how developed the country is. The next question is which of the sellers will benefit from selling printed products. The strategy will be individual and will depend on the country's policy [14]. And this factor means a lot.

According to analysts, the thesis that e-books can completely replace printed books is wrong. Despite everything, Ukrainians read much more than usual during the quarantine. The Association of Book Publishers and Distributors (UAPB) has published data according to which 33–35% of Ukrainians generally read, and 10% of them choose e-books (2010) [27]. The results of a survey conducted by Info Sapiens in March 2020 among 751 respondents aged 16–59 are eloquent. It turned out that the number of book buyers has increased over the last 6 years: 62% instead of 31% in 2014. Printed publications were more popular than electronic ones in 2014: 65% to 48%. Most books are read in Ukrainian (24%). Ukrainians began to better navigate through the work by their contemporary writers. Lina Kostenko is the leader among the chosen (22%), followed by Oksana Zabuzhko (4%), Vasyl Shklyar (5%), Serhiy Zhadan (5%), Irena Karpa (4%). In total, 72% of Ukrainians responded that they had read at least one printed book in the last three months. In 2014, 30% of the books purchased by readers were printed ones, and in 2020, their number rose to 59%. However, there is another piece of news: there were 3% of e-book buyers in 2014, and there are 51% in 2020. The number of purchased books

is slightly higher than the number of read books [28].

The advantages of printed books are:

- fast reading, without distractions for advertising and beautiful photos from the Internet;
- focusing on information to read large volumes and concentrate on them;
- the ability to make notes in the margins to return to it later;
- the human brain perceives information much faster while reading from a printed page;
- many people like the smell of paint and paper, the weight, the rustling of pages;
- some books cost millions of dollars and are not available on the World Wide Web;
- specific publications of narrow specialization (for example, devoted to certain hobbies) cannot be digitized;
- the printed book was, is and will be the art: digital processing does not convey the details of design, artistic uniqueness or exclusivity;
- the value of memories (for example, a family has a library, and each member prefers certain publications and keeps them; someone likes to keep a book of fairy tales that his mother read at bedtime in his childhood. The same fairy tale from the Internet has no soul and associations) [24; 25].

When users, including students and pupils, read texts on the Kindle, the stories and order of events in the text are much less memorable than when reading a printed book. A person much better recalls the story, which was perceived from paper. A brain remembers the location of the text on a specific page, in a specific place. A brain processes such information more easily. The chances of reading a large book in print

format to the end are far greater than on an iPad. At the same time, the physical sensation of a book weight in hands means the expected volume of the text. It happens subconsciously. A «real» book allows intuition and imagination to work and control the reading process with the help of margin marks and page folding. It does not limit memory and imagination. In 2006, a study was conducted which concluded that attention is focused on the length of the entire line of the printed book. If a person reads from the screen, his gaze focuses only on the left edge of the line. This seriously hinders the assimilation of information [29; 30]. In addition, researchers at the Universities of Munich and Stanford note that children raised in a house with two rather than one bookshelf have achieved much more success in life [20; 23]. It is a tool for moving forward. Printed books are on the essentials list in the UK, the USA, Australia, and many European countries.

Among the disadvantages of the printed version is the high cost and time spent on visiting the library or store.

Still, books and other forms of printed literature turn into an anachronism, and thousands of volumes collected in a single library over a lifetime can be downloaded with a click [24]. At a time when the coronavirus is forcing schools, universities, and society as a whole to stay at home, the extinction of printed books is inevitable. «The Plague» by Camus and other literature from the shelves of libraries and shops are often available in electronic form now.

The pandemic emphasizes the benefits of online publications; highlights books with a special and forgotten history of epidemics in human history. COVID-19 changes the way people live,

the use of literature in all areas, makes humanity forget about a real library with textbooks and a bookstore. The emergency forces everyone to adapt immediately. This process turned out to be especially difficult for the education system of Ukraine and other countries of the world. At the same time, circumstances emphasize a simple truth for people: nothing can replace a printed book. It is inaccessible today and therefore valuable. There is a lot of discussion around this issue.

Three options for the future of printed books and media can be predicted. Some of these publications are being converted to the Internet format («small» publications), but for many of them, this way means closure. Online versions are not sold so fast today, and the main reason for it is piracy. Monetization of online versions and the payment «wall» will develop in Ukraine. To reach a wider audience, some publications will have to use the third way: to distribute information for free instead of pre-paid.

However, the problem of the future of digital technologies requires a separate large-scale interdisciplinary and international study. This is a new way to disseminate and exchange information within the education system at the mass level. Ukraine has already experienced difficulties in the education system during the pandemic emergency. The inevitability of further digitalization of education is obvious. That is why, researchers should focus on overcoming existing problems: technical support of the educational process, software, planning, reliability and quality of content, dosage of educational material, and children's health while using electronic means, methodological support, training teachers and parents, etc. The issue of printed textbooks for pupils and students remains open and highly desirable, as nothing can replace them fully. Which type of training is more effective: on paper or online? However, no one knows what will happen tomorrow and how digital technology will develop further.

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Швець К. В.

магістр іноземної філології, методист, КЗ «Кіровоградський обласний інститут післядипломної педагогічної освіти імені Василя Сухомлинського», Кропивницький, Україна, shvets2019@ukr.net
ORCID ID: <https://orcid.org/0000-0002-6606-6614>

ВПЛИВ ПАНДЕМІЇ COVID-19 ТА ЦИФРОВІЗАЦІЇ НА ВИКОРИСТАННЯ ДРУКОВАНИХ ВИДАНЬ У СИСТЕМІ ОСВІТИ

Анотація. В статті окреслено тенденції прихильності до друкованої й цифрової інформації під час пандемії COVID-19 та особливості її розповсюдження і використання. Методами дослідження є компаративний аналіз статистичних даних, теоретичного вітчизняного й зарубіжного контенту (психологічного, освітнього, літературного, історичного, футурологічного, журналістського, технологічного й інших напрямів). У дослідженні відстежено особливості вибору книг, коротко охарактеризовано їхню роль у вивченні попередніх пандемій, що відображена в історії; окреслено сучасні тенденції, переваги та недоліки, нові закономірності і зв'язки цифрового й паперового варіантів інформації; відображено особливості розповсюдження і використання її педагогами, учнями, студентами; виокремлено деякі проблеми, що виникають передусім у видавців, авторів, учнів, студентів, науковців, учителів, журналістів; окреслено сучасні тенденції, переваги та недоліки, особливості використання цифрового й паперового варіантів інформації у системі освіти під час цифровізації та пандемії; охарактеризовано особливості видання в умовах карантину поряд з імовірними прогнозуваннями на майбутнє; зазначено висновки за прогнозами окремих вчених декілька

років тому щодо вигляду інформації сьогодні. Особливої уваги заслуговує система освіти, що опинилася в епіцентрі подій, у жорстких умовах використання електронних підручників замість звичних друкованих. Стаття зосереджена на нових кількісних і якісних показниках досліджень України та світу, що роз'яснюють новий рівень розвитку інформації та її цінність і знадобляться освітянам, студентам, науковцям, журналістам, технологам ІТ тощо в умовах пандемії й після її подолання.

Ключові слова: друковані видання у системі освіти, пандемія COVID-19 і освіта, переваги друкованого видання, цифровізація в освіті, видання в інтернеті.

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