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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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EMERGING NATIONS' LEARNING SYSTEMS AND THE COVID-19 PANDEMIC: AN ANALYSIS

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Abstract.

National learning systems improve training and proficiency. In order to support education during the COVID-19 epidemic, the rate of online and remote learning accelerated. Since there were some available technologies, strong, flexible educational infrastructures were required to accommodate a range of student demands. Digital resources and inclusive education need government investment. This study highlights the vital role that adaptable educational frameworks play in lessening the effects of the crisis and fostering resilience in the face of uncertainty by examining the complex relationship between the COVID-19 pandemic and the creation of national education methodologies. This study offers a detailed analysis of the intricacy, challenges, and opportunities that have emerged in this significant field by investigating the ways in which the COVID-19 pandemic has affected educational institutions in developing countries. Twenty selected, peer-reviewed scientific journal articles from 2019 to 2023 were included in the research after a comprehensive search of relevant literature. Taking into consideration the viewpoints of parents, children, teachers, and administrators, this extensive and professionally handled research study provides a critical and nuanced examination of many consequences of the COVID-19 epidemic on the educational system. By using a comprehensive analysis of 25 academic articles, it achieves this. A broad number of useful tools and tactics are highlighted in this research, which offers an in-depth analysis of the intricate area of information and computational model deployment. Employing analysis of variance (ANOVA) as a robust statistical method, this analysis uncovers and scrutinizes the complex dynamics at play with the educational systems of developing nations amidst the unprecedented challenges brought by the global COVID-19 crisis. The COVID-19 epidemic has spurred rising countries to rethink and improve their education institutions, accelerating technology-driven education. The epidemic has underlined the need for inclusive and resilient learning infrastructures that respond to emergencies despite the digital device and access inequities.

Key words. National learning, education system, analysis of variance (ANOVA), ICT resources.

Introduction.

The devastating COVID-19 outbreak has rippled throughout the country, jolting the basis of human civilization to its very core. Education has been one of the industries that has been struck to the hardest, putting the resiliency and flexibility of

academic institutions in countries all over the globe for testing. There has been a surge of innovation and change that information is transmitted ever since the epidemic to light the flaws that are inherent in the present system [1]. Educational institutions have embraced digital platforms, virtual classrooms, and hybrid learning methodologies to guarantee uninterrupted education amidst upheavals [2]. The swift transformation demonstrates how technology can create a level playing field for students and instructors globally. As a result of the increased inequality it has exposed, the pandemic has encouraged policymakers, educators, and stakeholders to assess the efficiency and diversity of educational institutions [3]. Given these concerns, ensuring that individuals from diverse backgrounds can afford a quality education is more critical. The reaction of the international community to the epidemic has also generated creative methods of teaching that emphasize students potential for holistic development, resilience in the face of adversity, and critical thinking [4]. For today's youth to thrive in tomorrow's that is constantly evolving, it has been requested of educational institutions that they place a higher priority on the provision of mental health care, broaden the range of options available to students for socio-emotional learning, and cultivate cultures that are open to change. As governments work to handle pandemic challenges, the new solutions offered by today's learning technologies will revolutionize schooling. Solid and flexible pedagogical frameworks are essential for the next generation, so teachers must collaborate, experiment, and maintain a sense of adaptability in the face of constant change.

The study [5] focused on the difficulties and variables that affect the popularity and implementation of e-learning in higher education. To adopt e-learning, it was crucial to create a long-term strategy and to technological advancements as a force for good in the world. The article [6] looked at the impact of the COVID-19 epidemic on Philippine schools, highlighting potential solutions to the problems and patterns that have emerged, and it was expected to continue as the disease progressed. The research [7] evaluated the usefulness of Covid-19 as a teaching tool. The bulk of the 214 respondents were students at secondary and tertiary institutions in Ghana, and they were asked to fill out a descriptive questionnaire with 11 items measured on Likert scales. The study subjects were chosen in a randomized fashion. The research [8] proposed how COVID-19-related online and DL course requirements affect college students in Pakistan. College and university students in Pakistan were polled to gauge sentiment towards online

education nationwide. The study found that online education does not provide the promised advantages in underdeveloped countries like Pakistan, where many students need more tools and infrastructure to access the Internet. The study [9] employed a comprehensive bibliometric and meta-analysis methodology to analyze sustainability-related papers indexed in the Web of Science. The results show that the research touches much ground but needs more depth. Most studies are undertaken in developed nations despite the significant challenges that the epidemic poses to the sustainable development of impoverished countries. The research [10] described Socioeconomic (SC) and listed the worldwide reopening dates. Information about the state of education nationwide is presented, emphasizing children's rights to re-enroll in school if they have previously dropped out. The research [11] conducted interviews with the directors of the libraries at seven different universities. The taped interviews were transcribed and translated, and thematic analysis was performed on both transcripts. Even though some university libraries were forced to shut down because of the outbreak, others who chose to stay open could retain links with their patrons. The libraries have improved their online presence, redistributed their materials, and developed innovative digital services that can be accessible through the Internet. During the outbreak's height, fewer people were present at colleges and social media sites. The study [12] identified factors that affected the satisfaction of aspiring healthcare professionals from nations with poor and moderate incomes. Online learning during the COVID-19 pandemic in China. The research [13] intended to investigate educators believe that they performed during Emergency Remote Teaching. The number of answers from Basque Country educators was 4586. These teachers from kinder garten up to college. The results indicate that the most challenging component of the lockdown is helping instructors cope up with the additional workload and negative emotions that due to a lack of digital skills training. The study [14] investigated whether the pandemic compels them to confront the inequalities that they have neglected for so long. They should prioritize efforts to make education more accessible, fair, and equitable for all people and think about how to rethink education. They compared the first reactions to school closures in the education systems of Australia and Finland.

COVID-19's effects on the educational system.

To stem the spread of the COVID-19 epidemic, most nations have implemented temporary closures of primary and secondary schools, as well as childcare institutions, nurseries, colleges, and universities. In addition to have an effect on children over the world, COVID-19 has an impact on parents and teachers. According to the UNESCO, more than one and a half billion students have been denied access to education as a direct result of the widespread shutdown of schools [15]. COVID-19 has the potential to lengthen the school year, which would have repercussions for the educational system as a whole, standardized testing, and the beginning of new term or semester [16]. Figure 1 and Table 1 shows how the COVID-19 has affected the country's educational system.

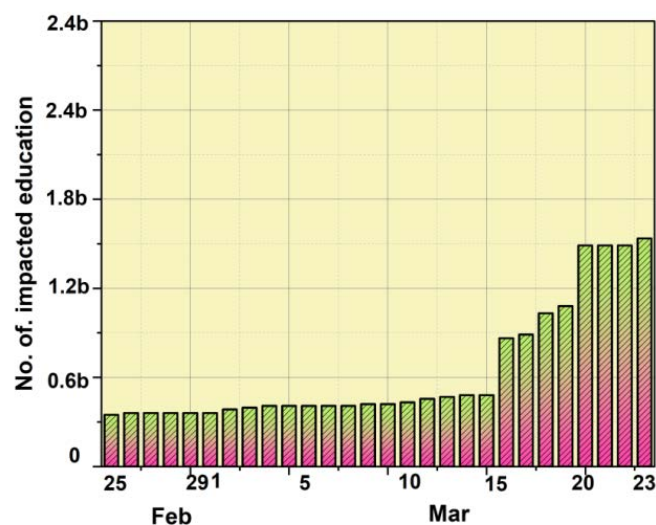


Figure 1. COVID-19's impact on national education learning system.

Table 1. Numerical results for national education learning system influence.

	No. of impacted education
1	0.29
2	0.3
3	0.3
4	0.3
5	0.3
6	0.3
7	0.32
8	0.33
9	0.34
10	0.34
11	0.34
12	0.34
13	0.34
14	0.35
15	0.35
16	0.36
17	0.38
18	0.39
19	0.4
20	0.4
21	0.72
22	0.74
23	0.86
24	0.9
25	1.24
26	1.24
27	1.24
28	1.28

Influence of COVID-19 Education on students, parents, and professional.

Schools, teachers, students, and parents are impacted by the COVID-19 virus. Differences in education are made worse by COVID-19. Those with means may afford to send their learners

to schools with modern amenities and trained educators. Some institutions can have advanced computer laboratories and extensive online resource collections. Many children from low-income families are forced to attend schools that lack the basic Information and Communications Technology (ICT) and other educational resources. More affluent students are signing up for online classes after COVID-19. Schools in remote areas that are less well-off financially need more appropriate equipment to provide distance education. Public and private schools use different textbooks [17]. Private schools have a better track record than public schools. A survey taken by teens over a school vacation found unprecedented levels of worry, depression, and stress. It is challenging to sustain an effective educational system in developing countries where many adults need to complete secondary school and where there is a lack of ICT infrastructures such as computers, radio, and television [18]. Learning from requires the use of computers and the Internet. Both educators and school leaders need to feel at ease while employing devices in the classroom. Teacher stress is high due to problems with technology and facilities. In other cases, private schools may not even compensate their employees. Due to a lack of funding, many low-income students are unprepared for COVID-19. Once educational institutions were phased out in favor of online education, student study time, stress, and motivation were decreased.

Details and Resources on ICT Devices for Online Education.

Information and communication technology resources, or ICT resources are comprised a broad range of tools and technologies used to manage and transmit data. According to the data that was presented, the percentages demonstrate the regularity with a certain demographic, or a specific environment makes use of a specific sort of information and communication technology resource. To be more precise, the percentages indicate the proportion of people or households that own certain electronic devices. These percentages can be broken down into categories. As an example, twenty-five-point five percent of houses have computers, twenty-point four percent of households have laptops, and eighty seven point eight percent of homes have mobile phones. These statistics illustrate the various degrees of accessibility and use of technology that exist in a certain demographic or geographical location. Students reported getting disconnected from the internet more than once due to connectivity or power problems during online courses [19].

The ICT resources such as computer, laptop, and mobile phone utilized for national online learning are displayed in Figure 2 and Table 2. Zoom, YouTube, and school websites are prominent online education sources in India. Students prefer YouTube-based digital classes, without a personal connection to their professors; they don't want to finish their homework. Students from wealthier backgrounds are more likely to participate. Online lessons were most challenging for the 33.8% of students who lived alone, the 36.0% who shared a home, and the 12% who had more than three rooms. Because parents place more value on educating boys and girls, they often have to share a single computer with their brothers and sisters. Many parents of online students who choose to live together are not well-educated because they can't provide their children with a proper

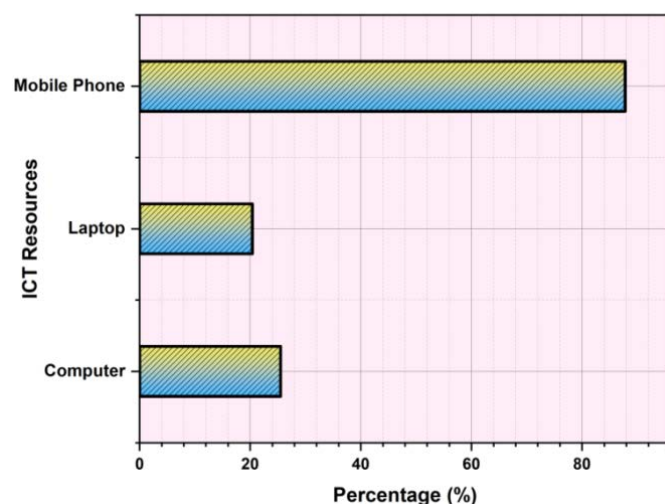


Figure 2. ICT resources used for national online learning.

Table 2. Numerical results of ICT resources for national online learning.

ICT resources	Percentage (%)
Computer	25.5
laptop	20.4
Mobile phone	87.8

upbringing. The wide-scale use of online courses can exacerbate existing inequalities in educational opportunities [20].

Statistical analysis.

Analysis of variance (ANOVA) methods were implemented to evaluate the efficacy of individualized support platforms and interventions for addressing mental health challenges among adolescents in the context of the COVID-19 pandemic's impact on education. Example of the pandemic has affected the educational institutions of countries is shown, and prompted a reevaluation of educational methodologies and the exploration of innovative approaches are determined by equation (1):

$$\begin{cases} M_0: \mu_1 = \mu_2 = \dots = \mu_o(1) \\ M_1: \mu_1 \neq \mu_2 \neq \dots \neq \mu_o \end{cases}$$

The variance of all observations is split into two groups (i.e.) within-group and between-group variance (SSW and SSB, respectively) as shown in Equation (2-3) by using the ANOVA.

$$SST = SSB + SSW \quad (2)$$

SSB is calculated by.

$$SSB = \frac{1}{o-1} \sum_{m=1}^o c_m (t_m - \bar{t})^2 \quad (3)$$

Where v_z is the number of samples in the Z_{th} group, \bar{y}_z is the mean of the Z_{th} group, and \bar{y} is the mean of all models in Equation (4).

$$SSW = \frac{1}{(o-1)y} \sum_{m=1}^o \left(\sum_{a=1}^y (t_{m,a} - t_m)^2 \right) \quad (4)$$

Where $y_{z,s}$ represents the S_{th} sample of the Z_{th} group, then the F-statistic is constructed to test the hypothesis, which is described in equation (5)

$$K = \frac{SSB}{SSW} \quad (5)$$

The level of significance for the test is determined to be $P = 0.04$, and the results are shown using mean and standard deviation (SD). A statistical software program was used to conduct the statistical analysis of teenagers' prediction by using two-way ANOVA.

Results and Discussion.

This study emphasizes the need for individualized interventions and all-encompassing strategies to address the challenges and opportunities inherent in digital learning platforms during the COVID-19 pandemic, which highlights the significance of recognizing the diversity of student experiences and perspectives on online learning.

Nations Learning System in COVID-19 Pandemic of Different Age Students.

Table 3 shows the proportion of students, various ages who engaged in online, offline, and hybrid learning during the COVID-19 epidemic. Students ages 7-17, 18-22, and 23-59 are assessed for online course participation, independent study, and social media usage. All cells have an average rating, with higher numbers indicating greater involvement. Self-study is popular with all ages, according to average scores. Online courses and social media learning are most popular among 7-17-year-olds and 18-22-year-olds, respectively. Learning preferences and methodologies vary by age group, revealing how students of different ages have reacted to COVID-19's instructional challenges. Figure 3 shows various internet-based learning environments for the country.

Students' Positive and Negative Views on Online Learning.

Students' opinions of other countries' online learning systems differ depending on various criteria, including technology

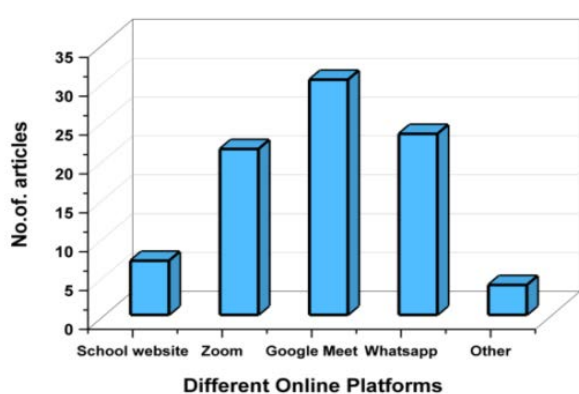


Figure 3. Different online platforms for national online learning.

Table 3. Various online learning environments for the entire nation.

Different Online Platforms	No. of articles
School website	6.972
Zoom	21.35
Google Meet	30.27
Whatsapp	23.3
Other	3.852

competency, individual learning preferences, and resource availability. Student's perceptions of online learning platforms influence their experiences and attitudes in both good and negative ways.

Student's bad feelings about online classes.

Student dissatisfaction, isolation and lack of interest during the COVID-19 epidemic, there was a rise in online education. The idea that online education needs to be improved in national learning systems, along with a lack of exciting learning experiences and connectedness with instructors and peers, was reinforced by technological restrictions.

Absence of Communication with Teachers.

The pandemic forced schools to employ online or hybrid education, causing teacher-student communication issues. Teachers needed help to provide timely assistance, advice, and feedback due to technology, online training, and communication problems. During the pandemic, communication issues can have lowered student involvement, motivation, and isolation, harming education and learning.

Uninterested in Online Education.

The COVID-19 outbreak impacted to many nations' educational systems, many students need more interest in online learning. Issues may cause disinterest in adjusting to online learning, a preference for in-person education, technical limitations, limited resources, or more social and interactive features. Thus, this attitude requires schools to offer inclusive and compelling learning experiences for all students, especially during pandemics.

Hard to Maintain an Online Class Study Schedule.

In the nation's learning systems, students and educators struggle to maintain a regular and effective virtual study routine through extraordinary pandemic. Due to the rapid transfer to internet platforms, lack of coordinated training, limited resources, and probable technical disparities, student time management. Online class study schedules harmed academic performance, student engagement, and socioeconomic access to quality education.

Not Understanding Online Class Content.

Many students in national learning systems have struggled with course content because of the COVID-19 epidemic, which has coincided with the shift to online education. Student's ability to interact with teachers and internalize the information is diminished when they lack direct instructor connection, encounter technological barriers to communication, or need access to in-person.

Lack of Interest in Online Learning.

Indifference and apathy in modern teaching methods have increased because of the COVID-19 pandemic and online schooling. Lack of classroom dynamics, difficulty adjusting to virtual surroundings, technical issues, and lack of face-to-face interaction that increases the disinterest. This made online education less popular and effective.

Not as comfortable as offline learning.

National learning systems faced issues when students and instructors transitioned from person during the COVID-19

epidemic to online education. The absence of direct physical connection, limited social contact, and probable limits in virtual learning methods and technology cause discomfort. It represents doubt, interruption, and the difficulty of recreating in-person education. This discomfort emphasizes the pandemic's considerable impact on educational institutions and the need for innovative solutions, broad support systems, and inclusive policies to bridge the gap and smooth the transition between offline and online learning.

Table 4 and Figure 4 cover online learning challenges and their prevalence in percentages. Due to the absence of in-person interaction and virtual environment limits, 49.77% of students find online learning unpleasant. Online learning can be unpopular with 45.94% of students owing to study schedules (37.44%) and course content (29.94%). Without instructor interaction, 47.82% of students feel alienated and disengaged, and 25.48% are uninterested in online learning. These findings show that instructors must enhance online learning for students by encouraging active participation, communication, and tailored support.

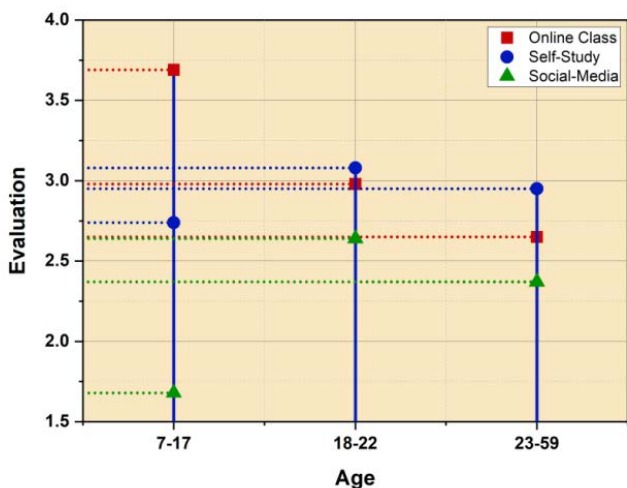


Figure 4. Different-aged students in a nation's learning in COVID-19.

Table 4. Age-specific COVID-19 education in a national education.

Age	Evaluation		
	Online Class	Self-Study	Social-Media
7-17	3.69	2.74	1.68
18-22	2.98	3.08	2.64
23-59	2.65	2.95	2.37

Students have a favorable view of online classes.

Students with a favorable impression of online learning environments perceive them as places where they may get customized feedback, access various learning materials, and choose their own pace. The negative impacts of online learning on pupils are depicted in Figure 5 and Table 5. They place a premium on managing their time between school and other commitments, have ready access to a wealth of digital learning resources, and participate in educational programs around the globe, providing a dynamic and enriching learning environment

that encourages independence and creativity. The positive emotions of students regarding national learning online are depicted in Figure 6 and Table 6. Online education is convenient and accessible, with 49.97% signifying that it reduces the time spent on transportation. 44.45% believe that online education improves students' technological literacy. About 24% find online schools more accessible than traditional ones, while 19.32% show the potential for better learning. These results indicate that online education improves student perceptions of digital learning platforms by promoting convenience, technological skill, and accessibility.

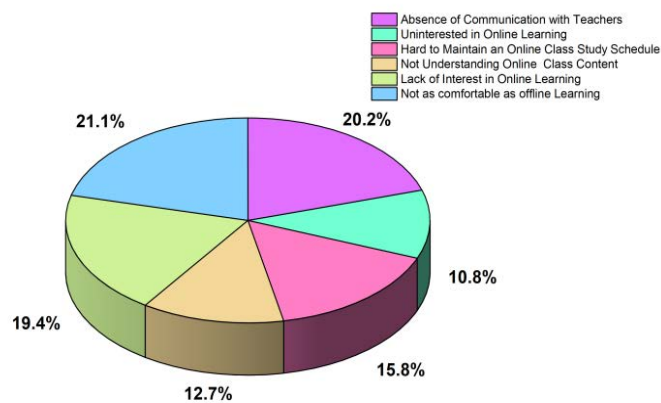


Figure 5. Online learning's adverse effects on students.

Table 5. Student's bad feelings about learning online.

Student opinions	Percentage (%)
Absence of Communication with Teachers	47.82
Uninterested in Online Learning	25.48
Hard to Maintain an Online Class Study Schedule	37.44
Not Understanding Online Class Content	29.94
Lack of Interest in Online Learning	45.94
Not as comfortable as offline Learning	49.77

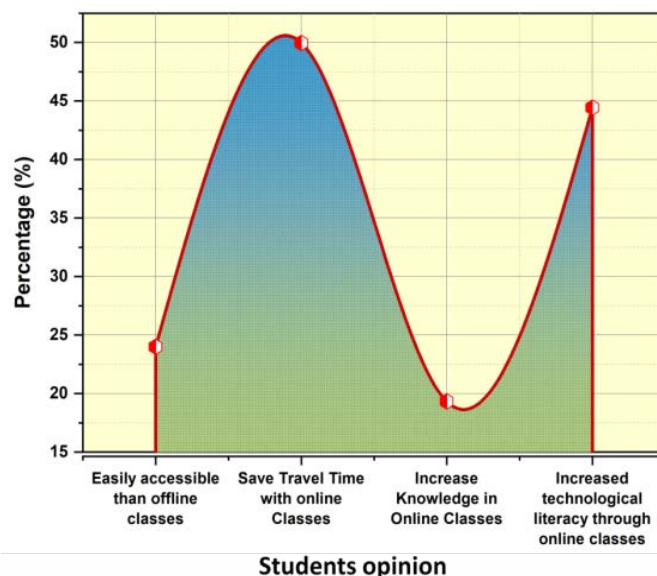


Figure 6. Online learning's positive effects on students.

Table 6. Student's good feelings about national learning online.

Student opinions	Percentage (%)
Easily accessible than offline classes	24
Save Travel Time with online Classes	49.97
Increase Knowledge in Online Classes	19.32
Increased technological literacy through online classes	44.45

Conclusion.

During the COVID-19 epidemic, developing countries of learning systems showed the need for robust and adaptive educational frameworks to provide an excellent education under unprecedented circumstances. The epidemic has enhanced technological and resource inequities, highlighting the need for digital devices and remote learning inclusion solutions. Online learning's rapid expansion has ensured the sectors to be continued viability, but more infrastructure, Internet access, and technological knowledge are needed. The epidemic has highlighted that governments, politicians, and schools must invest in digital infrastructure, teacher training, and inclusive educational policy to create a resilient and equitable learning environment. These nations must use pandemic lessons to build sustainable and flexible learning systems that address the needs of various learners to ensure long-term educational resilience and equal access to excellent education for everyone.

Future scope.

High-speed internet connections and other digital infrastructure must be enhanced to offer students across the globe access to digital learning tools. We can create a more dynamic and engaging learning environment for children by teaching instructors how to incorporate technology. Create flexible, user-friendly e-learning systems that can meet the linguistic, cultural, and pedagogical demands of rising countries. Implement inclusive education programs emphasizing disability access to ensure that online tools and courses are designed for a wide range of students. Teachers require robust communities of support as they adjust to online instruction. Examples include peer networking, career development, and digital learning resources.

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