The need of taking online geography lessons during states of emergency situations

Stefan Stajić (iD), **Smiljana Đukičin Vučković** (iD), **Anđelija Ivkov Džigurski** (iD), **Ljubica Ivanović Bibić** (iD) **and Jelena Milanković Jovanov** (iD)
Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad, Novi Sad, Serbia
milankovicjovanov@gmail.com
Aco Lukić (iD)
Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad, Novi Sad, Serbia
and Department of Preschool and Primary Education, Faculty of Education, University of J.E. Purkyne, Usti nad Labem,
Czech Republic

The purpose of this research was to determine whether there is a need for students to take online geography lessons during states of emergency situations when schools are temporarily closed as a result of unforeseen events such as pandemics, natural disasters, technological mishaps, the effects of terrorism, war, and other significant catastrophes. With this research we investigated whether the number of online geography lessons was increasing or decreasing and whether students searched for online help during school closure. Research was conducted through an online survey. Our study will contribute to the understanding of investigating how students at any school in the world are prepared for online learning. The results show that students need online assistance and tutoring when learning geography in unpredictable situations when schools are closed.

Keywords: education; emergency; geography; home-schooling; online lessons; survey

Introduction

As it is an essential right, all children must have access to education – even those who are impacted by natural or man-made emergencies. The question arises, how should children living in such challenging circumstances be taught? Educational activities must be started or renewed as quickly as possible under emergency situations. Having a strategy for preparedness during emergencies is important in many countries, as is knowing how to support education in the event of a catastrophe (Benigno & Trentin, 2000; Pigozzi, 1999). Of course, the preparedness varies from country to country and depends on the economic development of each. In states of emergency situations, students enrolled in primary or secondary education are compelled to continue their learning from home (Coates, 2007). One of the crucial questions is whether they need to take online lessons in particular subjects, such as geography (Delfino & Persico, 2007).

Over the last 30 years, distance learning has spread worldwide – especially in economically advanced countries. There are now examples of thriving open and distance education and e-learning initiatives operating across all subject areas, at all academic levels, and on every continent (Bates, 2005; Surry & Land, 2000). Digital technologies are ever-present in almost every aspect of modern life, and they have an influence on how learning environments are changed (Daniela, 2019; Livas, Katsanakis & Vayia, 2019). There is a worldwide trend towards online teaching and learning. The development and analysis of activities for learning online may be very helpful (Stojšić, Ivkov-Džigurski & Maričić, 2019). However, educational activities must be organised in a manner that goes beyond the traditional method of instruction in order to fully appreciate the benefits that online learning offers. During the long history of teaching, classical teaching has been confirmed as one of the best ways to acquire knowledge. Knowing this fact, teachers should think carefully about how to organise online teaching as a new way of teaching, in order to find a balance and use the best from both ways (classical and online teaching).

The worldwide spread of the coronavirus (COVID-19) pandemic at the end of 2019 and during 2020 is an example of an emergency situation. Most schools were closed and forced to use online teaching. As Kong (2020) states in a report of a case study of the Hangzhou Liuxia Elementary school in the Zhejiang province in China, students shifted from traditional classroom instruction to online learning at home during the pandemic. Students with poor self-control have been less engaged in online learning in the absence of face-to-face teaching with teachers and parental guidance, and their home study outcomes have not been sufficient. Furthermore, according to Kong, it was challenging for teachers to adjust to the brand new atmosphere of online learning. Instructors were unable to express themselves during live broadcasts. Their inflexible teaching styles and candid, illogical styles failed to hold students' interest (Guo & Li, 2020). Xie and Yang (2020) found that the effects of the pandemic prevented schools from conducting regular educational activities. The school actively reacts to national policies and encourages students to study independently at home to avoid interfering with regular teaching progress. Numerous studies of primary and secondary schools reveal only some of the problems in education processes when schools are closed. In the last couple of decades, students, parents, and teachers have been required to choose alternative ways of learning, such as online teaching (Xie & Jang, 2020; Zhou, Li, Wu & Zhou, 2020).

In the last couple of decades, the use of computers and digital tools and materials in geography lessons has been discussed in numerous journal articles. Learning geography online can be done using virtual globes, online tests, and simulations. Modern technology can be successfully applied in the teaching of geography, which helps when schools are compelled to close (Ivkov-Džigurski, Ivanović & Pašić, 2009; Stojšić, Ivkov-Džigurski, Maričić, Ivanović Bibić & Đukičin Vučković, 2016). Therefore, the goal with this research was to show the need for students to take online geography lessons when schools are closed. We show how this need differs according to gender, places of residence, levels of education, and age.

We also discuss whether students are prepared for emergency situations, and whether they need more help in geography than in other subjects. Research on the attitudes of responders can aid in the understanding of different uncertainties and is applied in many scientific research studies (Đukičin Vučković, Ivkov-Džigurski, Ivanović Bibić, Milanković Jovanov & Stojšić, 2019; Haq & Mundia, 2012; Hill & Davis, 1999; Huang & Diamond, 2009).

Literature Review

Institutions use various online teaching methods to continue teaching when schools need to close, such as live streaming of classes, video conferencing, WeChat teaching, Massive Open Online Courses (MOOCs), and micro-classes. However, students and parents are not familiar with such platforms and software because of a variety of factors, such as the separation of teachers and students from teaching situations. Thus, there is a lack of efficient teacher-student interaction and monitoring. The network learning attitude of "entertaining" and "exclusion" has an impact on students. Online classes do not have any allure. The web-based teaching platforms, WeChat, QQ, electronic mail (email), and micro-classes are frequently combined in the online teaching model. Teachers need to present lectures online, record micro-class videos, and address students' issues using social software (Yang & Wang, 2017). Students have access to a broad range of "virtual learning environments" when several forms of online learning are combined. The motivation and interest of students to attend lectures rise because of this. Several findings from this study support the above. Retaining students' attention and motivation is the main issue in online education. Given that students find it difficult to follow online lessons for extended periods, some people may think that it is easier to understand subject matter in traditional teaching.

It is obvious that the themes for teaching and the efforts of the teacher have a direct impact on students' contentment or discontentment with online geography learning (Milanković Jovanov, Ivkov-Džigurski, Stanisavljević, Ivanović Bibić, Petrović & Đukičin Vučković, 2022).

Schools, training centres, and institutions of higher education in most countries were forced to close because of lockdown and social isolation measures brought on by the COVID-19 pandemic and emergency conditions. The way teachers offer high-quality instruction across different online platforms has undergone a fundamental shift. Besides the difficulties teachers and students both face, online learning, distance learning, and continuing education have emerged as potential alternatives. Students and teachers may both encounter a completely different learning environment when switching from traditional face-to-face learning to online learning, yet they are obliged to adjust since there are few or no alternatives. Using a variety of online platforms, the educational system and teachers accepted education in unexpected situations, and are now required to adopt a system that they do not agree with (Pokhrel & Chhetri, 2021). Students must be able to perceive, define, and decide for themselves how to proceed with their planned learning in order for online learning to be successful. Moreover, internet communication skills are critical for students. Online learning is instruction that occurs through a computer network and has the following features: accessibility, connectivity, flexibility, and the capacity to provide a variety of learning interactions (Moore, Dickson-Deane & Galyen, 2011).

Due to school, college, and university closures for an undetermined period of time because of the COVID-19 epidemic, there has been a rising trend towards teaching online (Martinez, 2020). As a result, it is time to seriously rethink and rebuild the education system following the very demanding and unusual circumstances. In times of crisis, informal and non-formal schooling are also impacted greatly. Nonetheless, there is the widely held belief that no pedagogical strategy can fully replace formal education because it involves face-to-face contact between teachers and students. Online education represents a pedagogical transition away from old methods towards more contemporary ones that transfer the classroom instruction to platforms like Zoom. During the COVID-19 lockdown and other emergency situations, some of the most widely used online communication tools that could change the trajectory and direction of the whole global education system, include Start.me, Neo, Classtime, Classwize, Ted-Ed, Coursera, Google Classroom, Bakpax, Pronto, Skillshare, ClassDojo, Edmodo, Blackboard Learn, Parlay, Docebo, Feedback Fruits, Udemy, WeVideo, WizIQ, Flipgrid, Codeacademy, Gynzy, Adobe Captivate,

Seesaw, Edx, GoGuardian, Elucidat, Kami, Pluralsight, G Suite, Otus, Articulate 360, Floop, Future Learn, Hapara, Shift, Lectora Inspire, Kialo Edu, Buncee, LanSchool and many more (Martinez, 2020).

Theoretical Framework

Education in emergencies mainly refers to providing safe, pertinent, and high-quality education to anyone impacted by emergencies and crises, regardless of the nature or origin of the situation. This involves emphasising the cycle of emergency response and recovery as well as emergency prevention and preparation (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2010). The kind of crisis, its size, and its stage, among other things, have an impact on how education responds. Although emergencies do not neatly fit a predetermined taxonomy, three general typologies of crises exist: conflict (such as war, insurgency, and terrorism), natural disasters (such as earthquakes, tsunamis, floods, and droughts), and epidemics (such as Ebola, human immunodeficiency virus [HIV], and the coronavirus), with complex emergencies involving a combination of the aforementioned situations (The International Federation of Red Cross and Red Crescent Societies [IFRC], 2015). In emergency situations, education serves many purposes. It is essential in helping children cope with their future more confidently and effectively, and it can be an instrument that will help them progress in life (Kong, 2020; Li & Wang, 2012; Pigozzi, 1999; Xie & Jang, 2020). During the suspension period many schools adopted various online teaching methods such as live broadcasting courses, video conferencing, WeChat teaching, MOOCs, and micro-classes. However, due to many factors such as the separation of teachers and students from teaching scenarios, students were unfamiliar with the platforms and software. In the field of education, the sharing of teaching resources, the opening of teaching forms, the individualisation of teaching methods, and the virtualisation of the teaching environment all provide the possibility for keeping on studying while schools are closed in primary and secondary schools so that the education will gradually become mobile and immediate (Guo & Li, 2020; Yang & Wang, 2017).

School closures have a big impact on parents. According to a survey of the general population by the Harvard School of Public Health, 86% of families with children aged 5 to 17 would have at least one adult who would continue to work if lessons were cancelled for up to 3 months. By encouraging families to comply without worrying about losing their jobs, employment safeguards and alternatives (such as the opportunity to work from home) might decrease the impact on society. Such arrangements give freedom to choose which family member(s) should take care of the children at home (Centers for Disease Control and Prevention, 2007; Hodge, Bhattacharya & Gray, 2008).

For those living in the interconnected world of the 21st century, geography is an important topic and resource. Students learn crucial 21st century skills and how to use strong digital communication tools such as Geographic Information Systems (GIS) and unique investigation tools such as maps and fieldwork (Commission on Geographical Education of the International Geographical Union, 2016). A body of research has been developing over the last decade to address the efficacy of online education in geography (Jain & Gettis, 2003; Maričić, Ivkov-Džigurski, Stojšić, Cvjetićanin & Ivanović Bibić, 2020; Stojšić et al., 2019). In some countries geography is integrated with other disciplines while it is presented as a separate subject in other countries.

Methodology

The objective with this study was to determine whether and to what extent students' opinions about important issues related to online geography lessons were alike or different. One of the objectives was to reach as many respondents as possible to analyse how their responses varied based on various sociodemographic and other factors. It was assumed that respondents of various genders, nationalities, educational levels, and ages would have had various experiences with online geography lessons and, as a result, have varying perspectives in this regard. The initial assumption was that respondents agreed that online geography education was necessary. The premise was that responses from respondents with various sociodemographic variables would show statistically significant variations.

Data Collection

This research was carried out between March and April 2020 using an online survey (Google Docs). The questionnaire design was based on the original study – it was not based on any other similar research currently accessible. The basic goal with the study and the fact that participation was anonymous and voluntary were explained to the respondents. Respondents were also asked to invite other students who enrolled in primary and secondary education to participate in the research. As we have rich experiences in online teaching, personal contact with teachers across the world was of great importance in contacting the participants for this research. The questionnaire was forwarded to the students in order for them to submit their answers online. This means that the sample was selected randomly. This research included students from different parts of the world and different sociodemographic backgrounds. It was explained

that parents may help students younger than 12 to complete the survey just in case they did not fully understand the questions.

The results of this research are interesting because geography in primary and secondary schools is often more difficult than other natural or social science subjects. This research presents a summary of the results from both scenarios – geography as an integrated or a separate subject.

Research Instruments

The survey contained 15 questions in five sections. The first section was on items related to the sociodemographic profile of the respondents. In the second section a 5-point Likert scale was used for responses (1 – not important at all, 2 – slightly important, 3 – neutral, 4 – very important, 5 – absolutely important). The third part of the survey included five questions referring to online lessons. A Likert scale was used for the first two questions (1 – strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – strongly agree), while short answers were required in the second part. The Likert scale was used to measure the respondents' agreement or disagreement with the given statements. All the obtained data were quantitative. The first question of the fourth section was measured using categories (extended writing, map work, numeracy, remembering key words or other), while the rest was measured using a 5-point Likert scale. Finally, the fifth part of the survey included questions about resources, challenges, and frustrations relating to online learning. All the questions were closed questions, in order for the answers to be easily transformed into quantitative form. Using Cronbach's alpha, the value obtained for survey reliability was 0.82. The questionnaire reliability is adequate when considering that reliability coefficients greater than 0.7 are satisfactory. The final number of correctly completed questionnaires was 204.

Data Analysis

Version 23 of the Statistical Package for the Social Sciences (SPSS) program, which has been frequently used in comparable studies, was used to analyse the collected data (Đukičin Vučković et al., 2019). The most frequent statistical tests used in this study were the one-way analysis of variance (ANOVA), the *t*-test for independent samples, and an initial descriptive statistical analysis. The post hoc Scheffe test, one of the most stringent and widely used tests, was employed to determine the significance of the difference among individual groups. The *t*-test of independent samples was applied to compare the responses of two groups of respondents: male or female; their residence in rural or urban areas; and primary or secondary school students. ANOVA was used to examine the effect of the participants' social characteristics

(country of origin, age) on their responses to items related to taking online geography lessons.

Results

The study included 204 respondents with different sociodemographic characteristics (cf. Table 1). The respondents' gender distribution demonstrates that the vast majority were female (65%). According to the age structure, the majority of the respondents were 15 and 16 years old (59.7%) and the smallest group was 17 to 19 years old (10.4%). The participants were from 47 countries around the world. The highest percentage of respondents was from the United States of America (USA) (15%) and the smallest portion of respondents was from Australia (1%). Most of the respondents lived in an urban area (85.7%) and most of the participants were secondary school students (74.6%).

Table 1 Respondents by gender, age and continent of origin

Gender	
Male	34.5%
Female	65%
Age	
11–12	13.9%
13–14	15.9%
15–16	59.7%
17–19	10.4%
The continent of origin	
Europe	60%
North America	19%
Asia	15%
Africa	3%
South America	2%
Australia	1%

Regarding preparedness for home schooling during emergency situations when schools are closed, most participants answered that they were not prepared (31.8%). These answers were not a big surprise as most students and their parents had not experienced a state of emergency situation before often since it rarely happens. However, during the period when this survey was conducted, most of the participants were forced into home schooling because of the COVID-19 pandemic. Also, when asked whether they would persist with their studies, 30.7% of participants had a neutral response and the others said that they would persist with their studies through home schooling. One of the most important questions was whether they had negative attitudes towards geography during difficult times when schools were closed. The highest number of participants said that they did not (46.8%). Respondents were asked this question in order to discover if they had been overwhelmed by subjects such as mathematics or languages. This could have made them feel frustrated with and negative towards other subjects.

Most of the respondents strongly agreed on taking online lessons during states of emergency

situations with 37.5% and 34.5% of them stating that they agreed. Only 3% of the respondents said that they were not interested in taking online lessons. Most of the respondents said that they were interested in taking online geography lessons (26.4% – strongly agree) and 28.9% agreed. Only 11.9% of the respondents answered that they were not interested in taking online geography lessons. Because most of the participants in this survey were interested in taking online lessons, especially geography lessons, mostly primary school students said that they needed help. Most of the respondents (60.1%) answered that they wanted to incorporate online activities to supplement textbooks and 45.2% answered that they wanted geography lessons to be delivered solely online. One of the key components was to see how many online lessons they needed in emergency situations when schools were closed, and 62% answered that they would take online geography lessons for 1 to 2 hours per week, followed by 2 to 4 hours (32.7%) and finally only 5.8% would take more than 4 hours of online geography lessons.

In this survey, 25.8% of participants were not in favour of paying for online geography lessons and only 11.3% of them were willing to pay. The most challenging aspect of geography for participants in this survey was working on a map at home (40%), remembering key words (19%), extended writing (25%), numeracy (15%), and other aspects (1%). Teachers' help is crucial in an online environment; 35.3% of respondents stated that they were neutral regarding teachers' help, and 12.2% of students said that they strongly agreed on having help from their teachers. Also, 28.9% of students said that they could learn geography without any help and 12.2% of students strongly disagreed that they could do it on their own.

To compare the responses of population groupings, the *t*-test for independent samples was used (male and female respondents; respondents from urban and rural area; primary and secondary school respondents). In this article, only the results that demonstrate statistical significance at the level of $p < 0.05$ are present. There was no statistically significant difference in the answers of male and female respondents. One of the 15 examined statements shows a statistically significant difference between respondents from urban and rural areas in their responses (cf. Table 2).

Table 2 The results of the *t*-test for the respondents from urban and rural areas

Item	Educational stage	f	p
What are two of your biggest frustrations related to home schooling when schools are closed?	Urban or rural area	6.158	0.014

Note. $p < 0.05$.

The statistically significant difference in the answers of the respondents from different educational stages was noticeable in five out of 15 tested statements (cf. Table 3).

Table 3 The results of the analysis of the *t*-test, for the respondents with different educational stages

Item	Educational stage	f	p
Would you be interested in taking online lessons?	Primary education	2.329	.045
Would you be interested in taking online geography lessons?		4.321	.015
What grade levels would you enrol in online geography lessons?	Secondary education	5.659	.004
If fully online, how many online geography lessons a week would you want to take during emergency situations when schools are closed?		3.831	.024
Would you be willing to pay for online geography lessons?		4.368	.001

Note. $p < 0.05$.

The ANOVA was used to examine whether there were any statistically significant variations between the responses provided by respondents from various countries (continents) and ages. In this study, only the results that demonstrated statistical significance at the level of $p < 0.05$ are presented. In five of the 15 statements that were evaluated, there was a statistically significant difference between the responses provided by respondents from various continents (cf. Table 4).

Table 4 The results of the ANOVA for the respondents from different countries of origin

Item	Continent of origin	*f*	*p*
Do you have a negative attitude towards certain subjects, especially geography?	Europe Asia	2.406	.038
Would you be interested in taking online lessons?	North America	2.530	.030
Would you be interested in taking online geography lessons?	South America	2.343	.043
What grade levels would you enrol for in online geography lessons?	Africa	3.060	.011
Would you prefer that courses are delivered solely online or that they incorporate online activities to supplement a textbook?	Australia	2.332	.044

Note. p < 0.05.

In five of the 15 statements that were evaluated, there was a statistically significant difference between the responses provided by respondents of different ages (cf. Table 5).

Table 5 The results of the ANOVA for the respondents with different ages

Item	Age	*f*	*p*
Would you be interested in taking online lessons?	11–12 years	4.237	.006
Would you be interested in taking online geography lessons?		11.860	.000
What grade levels would you enrol in online geography lessons?	13–14 years	5.749	.001
If fully online, how many geography lessons a week would you want to take during emergency situations when schools are closed?	15–16 years	5.174	.002
Would you be willing to pay for online geography lessons?		4.807	.003
	17–19 years		

Note. p < 0.05.

Discussion

The *t*-test results demonstrate that respondents of various genders and places of residence have comparable attitudes towards attending online geography lessons. The hypothesis that there is a statistically significant difference between those groups of respondents is not supported by the statistically significant difference found in one of the 15 tested statements. In a lesson that is conducted entirely or almost entirely online, technology may be employed. With this kind of instruction, there is little interaction between the student and other students. Interaction is almost exclusively with the computer. Most likely the student will communicate with the teacher by email (Palloff & Pratt, 2001). All these may be reasons why respondents of different genders and living areas responded more or less the same. In addition, the hypothesis of a statistically significant difference between respondents from primary and secondary schools was partially confirmed (five of 15 tested statements). As expected, there were statistically significant differences in the *t*-test analysis among the respondents from primary and secondary schools. These differences resulted from different geography courses in primary and secondary schools. These differences were also due to the dissimilar perceptions of the importance of geography between primary and secondary school students (Maričić et al., 2020).

The ANOVA shows that there are statistically significant differences between answers given by the respondents from different countries (continents) of origin and age. The statistically significant difference, noticeable in five of 15 tested statements, partially confirms the hypothesis about differences between responses, similar to some previous research (Đukičin Vučković et al., 2019).

Several factors influence why students enrol in online courses. They might be part-time online students who supplement their in-person classes with those offered online, such as over the summer or in times of emergency. They could also be full-time online students who take all their classes online (Michigan Virtual University, 2017). As Bowen (2012) states, online learning is getting better and new high-quality online courses and degrees are inevitable. Because geography is not defined by a single topic, unlike most other disciplines, some individuals find it difficult to comprehend the whole expanse of the subject. As opposed to this, geography covers various subjects, including people, culture, politics, settlements, flora, landforms, and much more.

While having online geography lessons, resources that help students are geography-related sites, quizzes, articles, research articles, documentary videos, interactive maps, blind maps, Google Drive applications, diagrams, and Google Earth (Ivkov-Džigurski et al., 2009). When schools were closed, parents and students faced many problems, and one of them was motivation. Being one of the most significant influences on learning (Bandura, 1986), motivation is essential to e-learning, particularly regarding success and

learning quality. The measurement of motivation occurs during a typical interaction between a teacher and students in the classroom, who subsequently act in accordance with their findings (Cocea, 2006).

In home schooling parents will spend almost all their time with their children. At the moment, home schooling limits the students' opportunities to practise sport and join a team like they would usually do in physical schools. Home schooling is also a good way to foster a closer family relationship because families can share much more in this way. In this survey, when asked about the challenges that they faced, some of the respondents said that they needed to work on motivation, consistency, developing routine, keeping up with deadlines, resisting distractions such as movies, television series, and family activities. Statistically significant differences in responses can always be seen in relation to the same questions. Other differences can clearly be seen in some countries' level of preparedness for home schooling, technical-technological preparedness, and educational level, which are crucial for successful lessons in this type of teaching.

Unfortunately, students also experienced frustration. Some of them said that certain courses involved a lot of homework. More than half of the participants agreed that the biggest frustration was time management, absence of social interaction, and the lack of guidance.

Conclusion

One of the reasons for writing this article was the COVID-19 pandemic, which caused schools to close their doors to students. As seen, the way in which countries coped with school closure varied and depended on school and technology preparedness. Also, an aim with this article was to determine whether students (whether enrolled in primary or secondary education) needed online geography lessons. It was proven that they needed it in emergency situations, but with limited hours during the week. Every school closure in an emergency situation will definitely change the students and the future of learning. The best accessible public policy tool to increase skills is education. Students may find schools enjoyable and schools may help students develop their social skills and social awareness. The main benefit of attending school is that it improves a child's aptitude. A relatively short school attendance improves skills, and even more, a relatively short absence from school will have consequences for skills development.

The article reveals only one part of the picture about online geography lessons, which was the main objective of the research. The results clearly highlight different problems related to the implementation of online geography teaching. The research identified some problems with the implementation thereof, such as insufficient preparedness of societies, students, and parents. Future research could focus on students' degrees of achievement during states of emergency. These results could be compared with students' achievements during regular school classes to discover the differences and investigate which way of teaching delivers better student achievement.

Authors' Contributions
SS, SDV, AID, LIB, JMJ and AL wrote the manuscript and provided data for the tables. SS, SDV, and AL distributed and collected information concerning the survey and conducted all statistical analyses. SS, LIB, AID, and JMJ did the writing – reviewing, editing, and visualisation. All authors read and agreed to the final version of the manuscript.

Notes

References
Bandura A 1986. *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bates AW 2005. *Technology, e-learning and distance education* (2nd ed). London, England: Routledge.

Benigno V & Trentin G 2000. The evaluation of online courses. *Journal of Computer Assisted Learning*, 16(3):259–270. https://doi.org/10.1046/j.1365-2729.2000.00137.x

Bowen JA 2012. *Teaching naked: How moving technology out of your college classroom will improve student learning*. San Francisco, CA: John Wiley & Sons.

Centers for Disease Control and Prevention 2007. *Interim pre-pandemic planning guidance: Community strategy for pandemic influenza mitigation in the United States—Early, targeted, layered use of nonpharmaceutical interventions*. Available at https://www.cdc.gov/flu/pandemic-resources/pdf/community_mitigation-sm.pdf. Accessed 22 February 2021.

Coates H 2007. A model of online and general campus-based student engagement. *Assessment & Evaluation in Higher Education*, 32(2):121–141. https://doi.org/10.1080/02602930600801878

Cocea M 2006. Assessment of motivation in online learning environments. In V Wade, H Ashman & B

Smyth (eds). *Adaptive hypermedia and adaptive Web-based systems: 4th international conference, AH 2006, Dublin, Ireland, June 21-23, 2006, proceedings* (Vol. 4018). Berlin, Germany: Springer. https://doi.org/10.1007/11768012_61

Commission on Geographical Education of the International Geographical Union 2016. *2016 international charter on geographical education.* Available at http://www.cnfg.fr/wp-content/uploads/2017/12/Charter_2016-IGU-CGE_May_9.pdf. Accessed 8 May 2019.

Daniela L 2019. Smart pedagogy for technology-enhanced learning. In L Daniela (ed). *Didactics of smart pedagogy: Smart pedagogy for technology enhanced learning*. Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-030-01551-0_1

Delfino M & Persico D 2007. Online or face-to-face? Experimenting with different techniques in teacher training. *Journal of Computer Assisted Learning*, 23(5):351–365. https://doi.org/10.1111/j.1365-2729.2007.00220.x

Đukičin Vučković S, Ivkov-Džigurski A, Ivanović Bibić L, Milanković Jovanov J & Stojšić I 2019. Teachers' views of inclusive education in Serbian schools. *South African Journal of Education*, 39(Suppl. 2):Art. #1722, 10 pages. https://doi.org/10.15700/saje.v39ns2a1722

Guo B & Li H 2020. Guidance strategies for online teaching during the COVID-19 epidemic: A case study of the teaching practice of Xinhui Shangya School in Guangdong, China. *Science Insights Education Frontiers*, 5(2):547–551. https://doi.org/10.15354/sief.20.rp020

Haq FS & Mundia L 2012. Comparison of Brunei preservice student teachers' attitudes to inclusive education and specific disabilities: Implications for teacher education. *The Journal of Educational Research*, 105(5):366–374. https://doi.org/10.1080/00220671.2011.627399

Hill JL & Davis AC 1999. *Meeting the needs of students with special physical and health care needs*. Upper Saddle River, NJ: Merrill.

Hodge JG, Jr, Bhattacharya D & Gray J 2008. *Legal preparedness for school closures in response to pandemic influenza and other emergencies*. Baltimore, MD: The Center for Law & the Public's Health at Georgetown & Johns Hopkins Universities. Available at https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/70/pandemic/schoolclosures.pdf. Accessed 31 December 2023.

Huang HH & Diamond KE 2009. Early childhood teachers' ideas about including children with disabilities in programmes designed for typically developing children. *International Journal of Disability, Development and Education*, 56(2):169–182. https://doi.org/10.1080/10349120902868632

Ivkov-Džigurski A, Ivanović L & Pašić M 2009. МОГУЋНОСТИ ПРИМЕНЕ РАЧУНАРА У МОДЕРНОЈ НАСТАВИ ГЕОГРАФИЈЕ [Possibilities of computer application in modern geography teaching process]. *Glasnik Srpskog Geografskog Drustva*, 89(1):139–151. https://doi.org/10.2298/GSGD0901139I

Jain C & Getis A 2003. The effectiveness of Internet-based instruction: An experiment in physical geography. *Journal of Geography in Higher Education*, 27(2):153–167. https://doi.org/10.1080/03098260305679

Kong Q 2020. Practical exploration of home study guidance for students during the COVID-19 pandemic: A case study of Hangzhou Liuxia Elementary School in Zhejiang Province, China. *Science Insights Education Frontiers*, 5(2):557–561. https://doi.org/10.15354/sief.20.rp026

Li X & Wang Z 2012. Research on the application of online teaching platform in college course teaching. *Distance Education in China*, 2:67–70.

Livas C, Katsanakis I & Vayia E 2019. Perceived impact of BYOD initiatives on post-secondary students' learning, behaviour and wellbeing: The perspective of educators in Greece. *Education and Information Technologies*, 24(1):489–508. https://doi.org/10.1007/s10639-018-9791-6

Maričić O, Ivkov Džigurski A, Stojšić I, Cvjetićanin S & Ivanović Bibić L 2020. Multimedia teaching effectiveness in natural science teaching. *Geographica Panonnica*, 24(2):147–156. https://doi.org/10.5937/gp24-23357

Martinez J 2020. *Take this pandemic moment to improve education*. Available at https://edsource.org/2020/take-this-pandemic-moment-to-improve-education/633500. Accessed 15 June 2021.

Michigan Virtual University 2017. *Parent guide to online learning.* Available at https://michiganvirtual.org/resources/guides/parent-guide/. Accessed 25 June 2019.

Milanković Jovanov J, Ivkov-Džigurski A, Stanisavljević J, Ivanović Bibić L, Petrović MD & Đukičin Vučković S 2022. Is the integrative teaching approach beneficial for learning? *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 10(2):173–183. https://doi.org/10.23947/2334-8496-2022-10-2-173-183

Moore JL, Dickson-Deane C & Galyen K 2011. E-Learning, online learning, and distance learning environments: Are they the same? *The Internet and Higher Education*, 14(2):129–135. https://doi.org/10.1016/j.iheduc.2010.10.001

Palloff RM & Pratt K 2001. *Lessons from the cyberspace classroom: The realities of online teaching*. San Francisco, CA: Jossey-Bass.

Pigozzi MJ 1999. *Education in emergencies and for reconstruction: A developmental approach*. New York, NY: United Nations Children's Fund. Available at https://bettercarenetwork.org/sites/default/files/attachments/Education%20in%20Emergencies%20and%20for%20Reconstruction.pdf. Accessed 9 April 2019.

Pokhrel S & Chhetri R 2021. A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher Education for the Future*, 8(1):133–141. https://doi.org/10.1177/2347631120983481

Stojšić I, Ivkov-Džigurski A & Maričić O 2019. The readiness of geography teachers to use mobile devices in the context of immersive technologies integration into the teaching process. *Geographica Pannonica*, 23(2):122–133. https://doi.org/10.5937/gp23-20762

Stojšić I, Ivkov-Džigurski A, Maričić O, Ivanović Bibić L & Đukičin Vučković S 2016. Possible application of virtual reality in geography teaching. *Journal of Subject Didactics*, 1(2):83–96. https://doi.org/10.5281/zenodo.438169

Surry DW & Land SM 2000. Strategies for motivating higher education faculty to use technology. *Innovations in Education and Training International*, 37(2):145–153. https://doi.org/10.1080/13558000050034501

The International Federation of Red Cross and Red Crescent Societies 2015. *Types of disasters: Definition of hazard*. Available at https://www.ifrc.org/en/what-wedo/disaster-management/about-disasters/definition-ofhazard/. Accessed 18 May 2020.

United Nations Educational, Scientific and Cultural Organization 2010. *Guidebook for planning education in emergencies and reconstruction*. Paris, France: International Institute for Educational Planning. Available at https://unesdoc.unesco.org/ark:/48223/pf00001902 23. Accessed 27 August 2020.

Xie Z & Yang J 2020. Autonomous learning of elementary students at home during the COVID-19 epidemic: A case study of the second elementary school in Daxie, Ningbo, Zhejiang Province, China. *Best Evidence of Chinese Education*, 4(2):535–541. https://doi.org/10.15354/bece.20.rp009

Yang S & Wang F 2017. Looking the impact of information technology to education from "keeping on studying while schools are closed". *Journal of Kaifeng Institute of Education*, 4:233–234.

Zhou L, Li F, Wu S & Zhou M 2020. 'School's out, but class' on', The largest online education in the world today: Taking China's practical exploration during the COVID-19 epidemic prevention and control as an example [Special issue]. *Best Evidence of Chinese Education*, 4(2):501–519. https://doi.org/10.15354/bece.20.ar023