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Social Media Tools for Educational Sustainability in Conflict-Affected Regions

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Abstract: This conceptual paper demonstrates the potential role of social media in providing students with access to education during emergency situations when schools cannot ensure students' safety or provide safe learning environments. It is based on conceptual analysis that transforms face-to-face education into a cost-free, online educational environment by relying on social-media learning tools during short-term disruptions caused by violence and conflict. This article proposes a framework that outlines how technology can be used to maintain education in schools during conflicts and emergency situations: cloud computing to access administrative resources and social media tools to maintain teaching/learning resources and student–teacher as well as student–student interactions. The proposed strategy could be greatly beneficial to educational leaders and administrators in regions vulnerable to sectarian conflicts where student safety and the delivery of educational services can become major challenges. This paper contributes to the literature by emphasising the advantages of social media tools for educational delivery in conflict-afflicted regions.

Keywords: educational sustainability; sectarian violence; emergency education; social media tools; disaster risk reduction

1. Introduction

Protecting schools from attacks is essential to fulfil a promise in the United Nations' 2030 Agenda for Sustainable Development: ensure access to education for all children [1]. Although many countries have established guidelines for protecting schools during sectarian armed conflicts, violations of school safety have been observed in Africa, the Middle East, and Southeast Asia. School closures and the disruption of educational processes have commonly occurred during periods of armed conflict, particularly in societies characterised by sectarian cultures and tensions. Schools in the sectarian conflict zones of fragile states, such as Iraq, Syria, Afghanistan, the Democratic Republic of the Congo, Libya, Mali, Nigeria, Somalia, and South Sudan, have been targeted, bombarded, attacked, damaged, or otherwise forced to close, depriving millions of children of their fundamental right to education and placing their future at risk [2].

The impacts of such incidents during sectarian violence are detrimental to students' educational development and pose major challenges to individuals, communities, and governments in affected regions, inflicting harmful effects on children, youth, education, and societies. Students also face severe effects on their personal safety, psychological development, and even possible interference with their identity development. They can be at risk of injury or death, forceful displacement from their homes and communities, separation from their parents and families, suffering trauma, recruitment into militant groups, distraction from school and learning activities, poor educational attainment, and drop-out from schools.

Despite increased precautionary and security measures, the vast majority of schools in regions vulnerable to armed conflict or sectarian violence cannot offer protection or ensure that they can remain functional when fighting erupts. Damage to schools, destruction of resources needed for the operation of schools, and persistent insecurity and fear among

students and parents create barriers to school attendance during violent conflicts. The lack of an effective intervention to support education during conflicts is a challenge [3].

The pandemic of COVID-19 has pushed school principals and administrators to search for alternatives to the traditionally based learning system of the physical classroom. While some schools opted to choose proprietary learning management systems, other schools have encouraged their teachers to use free applications and platforms. Nevertheless, several teachers were not equipped with the needed skills to embark on using such platforms, and therefore, social media tools and social networking sites were adopted by several schools' teachers and staff to communicate with students and parents without any previous planning for disaster risk reduction and management.

The growing rate of internet and mobile phone users has been documented across the globe. As of January 2021, there were 4.66 billion active internet users worldwide, with a penetration rate of 59.5 percent of the global population. Of this total, 4.2 billion were active social media users, and 4.15 billion were using their mobiles to access social media tools [4]. In schools around the world, computers, mobile phones, tablets, smart whiteboards, and other technological devices are used as part of the learning process. The recent growth in the use of mobile devices for educational purposes has revolutionised the learning process both in and out of the classroom. The internet, mobile phones, and social media applications contribute to the enhancement of distance learning processes and the creation of online learning communities. The advancement of educational technologies and social media applications has revolutionised access to information, making it faster, easier, and cheaper; at the same time, the traditional passive, teacher-centred educational format has given way to an active, student-centred approach in which teachers provide guidance and act as facilitators rather than disseminators of knowledge [5].

Providing education to children in regions affected by violent conflicts or natural disasters through technology-assisted learning can protect children and enhance their resilience to future adversities. Due to being accessible on any device, the use of social media can enhance learners' ability to engage in educational activities without the constraints of physical location. These devices include mobiles and tablets that are portable, lightweight, and easy to use. For instance, in 2014 the Varkey Foundation launched a distance-learning program in Ghana that used satellite-equipped schools and solar-powered computer technology to provide quality instruction for girls in rural and low-income parts of the country. The success of that program led to the launch of a new distance-learning teacher training program which uses the same technology to train teachers across Ghana [6] and can be replicable in more complicated situations. The success of virtual learning in Africa can provide a baseline to reach a large number of displaced students affected by armed conflicts and disasters.

Therefore, online learning technologies can be used as a tool for delivering education where it is most needed, especially in humanitarian emergencies such as war or natural disasters [7]. With continuity of education delivery during crises, recovery becomes faster. Thus, these technologies have the potential to provide cost-effective, temporary education to the high numbers of children who have lost access to formal education in regions affected by conflict and disaster.

However, the availability of a reliable internet connection is always fundamental to use technology in educational contexts. In case of disasters in general and conflicts, it is more likely that electricity and the internet connection become not reliable to assist in communication and in educational materials delivery. These free-of-charge and accessible applications for teachers, students, and parents provide an opportunity, anytime, anywhere as long as electricity and internet connections are available. Local authorities can help communities with affordable solutions. Some solutions can be taken into consideration such as Project Loon that was launched by Google X company [8,9] which is a network of balloons designed to extend internet connectivity to people in rural and remote areas worldwide. Project Loon was successfully implemented to connect tens of thousands of people in Peru for seven weeks where flooding has destroyed homes and roads [10].

Another project offered by Facebook [11] aims at connecting rural regions around the world to the internet by building a prototype helicopter antenna that can provide internet to areas during disasters.

This article demonstrates that if parent–teacher collaboration is established and maintained, then an online intervention for continued educational delivery could effectively address these barriers and create safe, short-term learning environments for children during temporary periods of conflicts. This research calls for educational administrators to develop and implement proactive measures using cost-free social media tools and applications to mitigate the impacts of conflicts on educational delivery and students' educational attainment in societies affected by sectarian conflicts and tensions. Such a pro-active strategy, once integrated into the school system, can strengthen the resilience of vulnerable societies and provide life-saving skills that can protect people during and after disasters [12].

This conceptual paper investigates the following research question: what is the potential role of social media tools in sustaining education during emergencies when traditional, face-to-face, formal education fails to provide safe learning environments?

The current research adopted the systematic review procedure, which is a thorough and detailed review of existing social media tools and applications that are free open source. The systematic review employed keyword searches such as 'education', 'schools', 'k-12', 'teachers', 'lesson plans', 'homework' as well as 'social networking', 'social media', 'free open source' for tools and applications. The tools that were selected were the most used by teachers in schools for preparing their lessons plans, students' activities, as well as for communication and sharing purposes with their colleagues or students.

2. Facing the Challenge

Sectarian violence presents a major impediment to the delivery of education services and educational sustainability. It is estimated that more than half of the children out of school throughout the world live in fragile, conflict-affected states. Sectarian violence continues to destroy not only school infrastructure but also the hopes and dreams of children and youth in regions affected by sectarian violence, preventing schools from opening and increasing teacher absenteeism. Of the 121 million children out of school globally, approximately 50 per cent live in areas affected by conflict and sectarian violence [13], including 28.5 million primary-school-age children and 2.8 million Syrian children. Attacks on schools and the military use of schools have occurred in 26 countries in the past 10 years and significantly impeded access to safe education [14]. During the Rwandan genocide, more than two-thirds of primary- and secondary school teachers were killed or displaced [15]. Sectarian conflict can severely damage educational infrastructure: in Bosnia and Herzegovina, 50% of schools required reconstruction and rehabilitation; in Mozambique, 58% of primary schools were destroyed or closed as a result of a long civil war, and in Iraq, 85% of school buildings were damaged or destroyed [16]. In 2015, an estimated 2 million Syrian children were left without access to education, and roughly 5000 schools could not be used, as they had either been destroyed or damaged by the war [17]. In addition, sectarian conflicts threaten children's security while travelling to school and attending class. Parents might keep girls home due to fears of violence against female students.

Although modern globalisation has removed barriers and created opportunities for intercultural exchange and dialogue, it also has increased the risk of political, economic, and cultural domination [18]. However, despite heightened access to education and increased speed in knowledge transmission, illiteracy rates in developing countries remain high, particularly in the Muslim world. It becomes apparent that the globalisation process has marginally affected the basic level of education in the Muslim countries, while it has reinforced socio-economic disparity and inequality [19–21].

The reported number of attacks on educational facilities, students, and staff has dramatically increased since 2004. The growing number of attacks on educational facilities

that have occurred recently in predominantly Muslim countries has led to the disruption of educational services, the closure of schools, and the deaths of students and staff.

A recent report shows that 9600 attacks that involve the deliberate use of violence in ways that disrupt and deter access to education occurred in 70 predominantly Muslim countries between 2009 and 2013 [22]. These attacks on students, teachers, and facilities were not arbitrary; rather, they appeared to have been deliberately committed to disrupt educational processes and delivery services. A number of school buildings in South and Southeast Asian and Middle Eastern countries have been bombed and burned, and students have been shot and abducted because of their support of or participation in education. All such attacks indicate the existence of strong hatred that drives Islamic extremists to attack educational facilities or a persisting urge to destroy educational symbols. In southern Thailand, the secular educational system is being undermined by Islamic extremist groups by means of the destruction of schools and the assassination of teachers. Attacks on schools and education are not limited to Middle Eastern and South Asian countries. In Nigeria, the Islamist group Boko Haram, whose name means 'Western education is a sin', has launched waves of deadly raids against educational institutions where more than 200 schoolgirls in Nigeria by the group militants were directed against education [23].

Moreover, the disruption of education can have alarming effects on the general functioning of society [7]. Thus, maintaining educational delivery during sectarian violence presents a major challenge to educational administrators, parents, students, and governments and, unless adequately addressed, can lead to the deterioration or even the paralysis of the educational system, processes, and delivery in affected communities. The dramatic rise in sectarian violence and conflicts over recent decades has motivated the incorporation of educational services into relief and development aid initiatives. Due to the critical role of education in emergencies, international and local actors have stressed the importance of providing education services in humanitarian aid packages, along with water, food, shelter, and medical treatment [24]. International organisations have designed a number of education tool kits and other materials to help humanitarian workers, educators, teachers, parents, and community members provide education services during complex emergencies. Table 1 shows few examples of projects developed or currently under development, using digital technology for education in the MENA region specifically aimed at assisting children and youth displaced by conflict [25]. This approach primarily addresses the education of refugees during large-scale disasters and long-term conflicts [26] but does not address short-term and local sectarian violence and terrorist attacks in divided societies. In this context, shifting the traditional, physical approach to educational delivery to online delivery modes using cost-free social media tools during school closures can serve as an intervention to address this challenge, enhancing the safety of students and staff and ensuring the delivery of educational materials.

Table 1. Examples of projects using digital technology for education in the MENA region.

Initiative	URL	Type of Services
Iqra, Creative Associates International, and Et4d	http://www.et4d.com/	Smartphone app for early graders to read in Arabic, practicing with activities, and reading stories.
ITWORX	http://itworx.education	An online platform that addresses the needs of K-12 education worldwide, has launched a holistic e-learning solution for underserved Syrian refugee children in Lebanon.
Every Child Learning Pearson and Save the Children	http://www.savethechildren.org.uk/about-us/who-we-work-with/corporate-partnerships/ourpartners/pearson	Mobile application that enables continuity of learning by overcoming barriers such as limited classroom space and high student–teacher ratios.
OER Commons Arabic Institute for the Study of Knowledge Management in Education (ISKME)	http://www.crdp.org/ar https://arabic.oercommons.org/EN/	A microsite of open educational resources that can be aligned to various sets of educational standards.

Table 1. *Cont.*

Initiative	URL	Type of Services
Intel Skoool Egypt	http://www.skoool.com.eg/Default.aspx?tabid=87	A set of Arabic-language learning objects and simulations for STEM-related curricula at primary, preparatory, and secondary levels.
Little Thinking Minds	https://www.littlethinkingminds.com/index.php?q=ar	Educational e-content for Arab children under 7.
Maktaba Children's Library	http://www.maktabaqatar.org/	An interactive virtual library aimed at young Arabic readers worldwide and designed to promote Arabic literacy.
BLOSSOMS Massachusetts Institute of Technology	https://blossoms.mit.edu/videos?field_topic_value_many_to_one=All&term_node_tid_depth=62&term_node_tid_depth_1=All	Over 100 math and science video lessons in high school classrooms from Brooklyn to Beirut to Bangalore.
Nafham	http://www.nafham.com/	Free online K-12 educational video platform organised by grade and subject covering the curricula of several countries in the MENA region.
Aliim	http://aliim.org/	Smartphone Schools Program (Lebanon and Jordan) that empowers Syrian refugee girls aged 12–16 living in the Levant or migrating to other regions of the world with relevant educational opportunities.

3. Theoretical Background

Rogers [27] speculated that each social system has a structure with defined norms of interrelated units that give stability to individual behaviour. The communication within a system assists or hinders the diffusion of innovations. Rogers [27] distinguished among three types of innovation decisions: (1) the optional innovation decisions when adoption of an innovation is independent of the decisions of other members of the system, (2) collective innovation decisions when adoption of an innovation is based on a consensus among the members of a system, and (3) authority innovation decisions when adoption of an innovation is to follow individuals in a system who possess power, status, or technical expertise.

In a school context, the adoption of social media tools can be a collective decision, based on a consensus among the administrators, students, teachers, and parents.

In the development of diffusion of innovation theory, Rogers [27] concluded that five attributes helped decrease the uncertainty associated with innovation and were significant predictors of the adoption rate where these attributes explained 49–87% of the variance in the adoption rate of innovations:

(1) Relative advantage, defined as the degree to which an innovation is perceived as better than the idea or practice;
(2) Compatibility, defined as the degree to which an innovation is perceived as being consistent with the existing values, and needs of potential adopters;
(3) Complexity, defined as the degree to which an innovation is perceived as difficult to understand, implement, and use;
(4) Trialability, defined as the degree to which an innovation may be experimented with on a limited scale basis;
(5) Observability, defined as the degree to which the results of an innovation are visible by the external environment.

Moreover, in his diffusion of innovation theory, Rogers [27] defined categories of adopters of innovations, including innovators, early adopters, early majority, late majority, and laggards. However, in the case of social media tools, this classification does not matter as, regardless of the time of adoption and the rate of usage, no one is an innovator or a laggard, a leader or a follower. The use of such tools has become a habit of students' daily lives, embedded in their social systems and interactions with their classmates and friends. For the digital generation, social media tools can be effective and efficient tools and possess the potential to provide a feeling that one has a social presence in one's community allowing the synchronous and asynchronous sharing of texts, images, audio, and videos to

stay connected to their community of peers and classmates on both the level of one-on-one relationships and on the group level. The feeling of belonging to a community facilitated by social media tools can be an essential motivator for the adoption of this innovation.

4. Using Social Media Tools in Educational Delivery

Internet usage and the capabilities of new technology applications have transformed education and helped improve learning processes and student engagement [5,28]. Today, technology and social media have become important to social and educational development. Social-media learning tools are online applications that allow learners to create, share, discuss, and modify content [29–31]. These tools include social networking, video-sharing and image-sharing sites, as well as wikis, podcasts, blogs, and micro-blogs, used in teaching and learning activities [32]. Other social-media learning tools include mobile applications and educational technologies, such as learning management systems, that can enhance interactive experiences [33].

Social media is an increasingly popular technology among both educators and students, driving the adoption of social-media learning tools for educational delivery and teaching by rising numbers of instructors in both traditional and virtual classroom settings over recent years. Research has shown that social media can increase learning and engage students otherwise uninterested in the classroom [34,35]. Today's youths find technology to be highly engaging, and social media applications offer highly interactive features that help create online communities of youths with similar interests, encouraging adoption by teachers in traditional and virtual classrooms. Although some researchers believe that the generation born after 1980 grew up with access to computers and the internet and therefore is tech savvy [36–39], other researchers argue that many K–12 students are neither savvy nor mindful social media users, particularly when it comes to academic uses of these tools [40,41]. Therefore, learning to use social media can be part of what is learned in any class in which it is used [42]. In fact, several states and organisations are considering adding cross-content technology elements to their standards because young people often need guidance regarding issues such as cybersafety, cyberethics, attention shifting, and digital media credibility [43,44]. Students need to cultivate social media literacies concerning how, when, and where to focus their attention, how to effectively participate and collaborate in online spaces, how to critically consume digital content [45], as well as how to evaluate the credibility and reliability of content across various digital media [46].

Today's educators use social media to reduce the distance between schools and the outside world by finding innovative ways to engage and extend student learning [47]. Middle- and high school teachers, in particular, are integrating technology into their classrooms [48]. The ubiquity of the internet has an increasing, direct influence on education. With the latest innovations of Web 2.0 technology, applications provide new tools and opportunities for further student–teacher collaboration. Educational technology tools can transform the classroom from a structured teaching and learning environment to a dynamic, multi-dimensional environment. Over the past decade, digital communication between students and teachers has become popular through the use of various tools, such as email, short message services (SMS), Facebook groups, Twitter, and instant messaging (IM). Each of these tools has different characteristics which may influence learning [49].

In recent years, the high market penetration has driven the growing use of IM as a communication tool. Previous research on the integration of IM into education shows that it makes important contributions to the learning process, encouraging collaborative learning, active class participation, and informal learning and communication. For example, a recent study demonstrated that IM provides high school students the advantage of being able to ask questions during the learning process after school hours [50]. Another study found that students who communicated during and after lessons using an internal SMS provided by their university tended to ask more questions and participate via SMS [51]. Other researchers reported that the use of IM as a communication tool for faculty and students promoted student learning [52], active learning [53]; informal communica-

tion between students [52,53], in-person interaction between students and faculty related to course content [53], a sense of belonging and community [54–56], the breakdown of teacher–student social barriers [54], and students' attentiveness and seriousness towards assignments [55]. However, some instructors perceive these tools as non-academic [54], while other researchers have suggested that IM has a negative effect on academic writing [55].

Over the past decade, social media has demonstrated the capability to influence learning processes and provide assistance during crises and disasters [57], but its potential to enable access to education during emergencies has not been stressed. This article suggests that from elementary school to college, social media can help students, parents, and teachers share information in new ways and build a new sense of community among them. This conceptual paper illustrates how the use of social media can achieve educational objectives by disseminating new ideas and knowledge in a way that makes students the centre of the learning process. Children and youth across the world are being introduced to social media and using tablets and mobile devices to play educational games and learn how to read and write inside and outside the classroom. Consequently, social media has deeply influenced educational delivery and processes and drastically changed the traditional dissemination and delivery of education.

Appropriately applied, social media tools can contribute to positive learning experiences and improve learning outcomes, particularly during the challenging times of armed conflicts. In conflict-affected regions, where teaching and learning processes face the risk of disruption, and student and teacher absenteeism are common problems, technology can assist in providing means for delivering education. Additionally, social media tools may have considerable potential to deliver education and provide learning opportunities which might otherwise be impossible. Moreover, social media tools have been repeatedly shown to increase student motivation and foster student-centred approaches. This suggests that social media tools possess considerable potential for use during conflict periods when traditional, formal school settings might not operate on a regular basis.

5. Proposed Framework

This proposed framework offers an alternative to traditional, face-to-face teaching in the case of short-term school closures during conflicts. Traditional schools provide a learning environment where the teacher plays the primary role in education delivery and classroom interactions. In sectarian violence and conflicts, however, students and staff are denied access to schools, which interrupts traditional educational service delivery and creates unsafe educational environments. Such disruptions can last for many weeks and pose a crucial challenge to educators and administrators, especially when damage to schools requires a long time to repair or relocating schools to safer areas. To address these challenges, transforming traditional schools in affected locations into online educational environments using social media applications offers a valuable intervention and solution. The proposed framework, as illustrated in Figure 1 below, discusses how schools can take advantage of the available technologies to maintain education during conflicts and emergency situations: cloud computing to maintain access to administrative resources, and social media tools to maintain teaching/learning resources as well as student–teacher interactions.
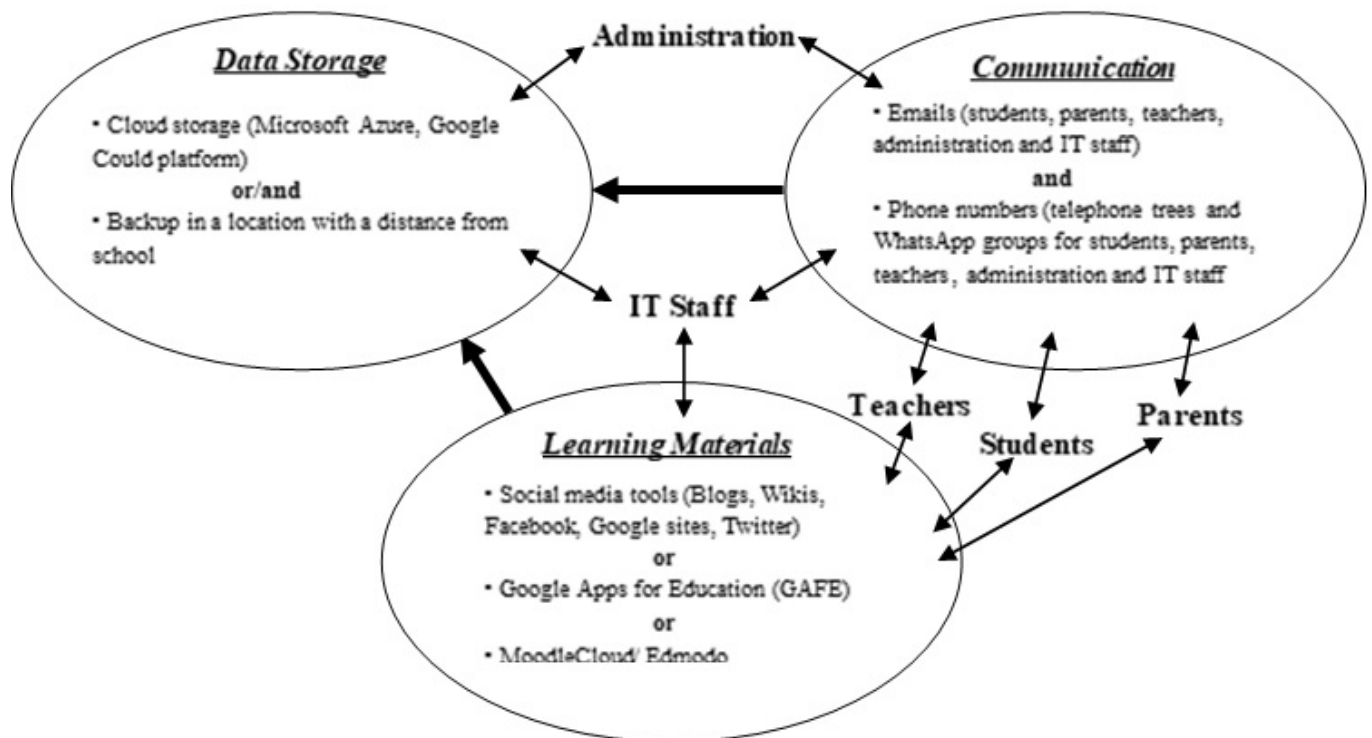
Figure 1. Framework to sustain education delivery during emergencies.

5.1. Cloud Computing to Maintain Access to Administrative Resources

Access to administrative resources should be maintained to all users including information technology (IT) staff, teachers, and administrators. Cloud computing enables ubiquitous access to shared computing resources, such as networks, servers, and applications, and requires minimal management efforts. Cloud computing provides the opportunity for schools to be updated with the latest developments in digital technologies and to upgrade their software and IT hardware at prices they can afford. Other than improving efficiency, cost, and convenience for the administration, cloud computing is a solution for schools that resides in conflict-prone regions to have their data and resources in a safe location and accessible at any time [58]. Cloud computing services are able to provide students, teachers, administrators, and staff with several applications such as email accounts, operating systems, productivity applications, and malware detectors [59]. For costs purposes, Kentucky's Pike County district in the USA is using cloud computing for its schools with a population of 10,200 students, avoiding the additional infrastructure and staff costs of administering the servers [60]. In the UK, several educational institutions such as Leeds Metropolitan University and the University of Glamorgan have adopted Google Apps for cloud computing purposes [61]. The importance of cloud computing is to reduce IT costs but also to use the latest technologies for the advancement of education in under-developed countries. For example, due to their inadequate IT infrastructures and their inability to upgrade their hardware and software, Google company provided cloud services (e.g., Gmail, Google Calendar, Google Talk, and Google Docs and Spreadsheets) to students in several African educational institutions such as the National University of Rwanda, the Kigali Institute for Science and Technology, and the University of Nairobi [62]. Additionally, the Microsoft company provided Ethiopian school teachers with 250,000 laptops running on Microsoft's Azure cloud platform, enabling teachers to download curriculum, keep track of academic records, and securely transfer student data throughout the education system [63]. Therefore, cloud computing is a preventive step for schools to maintain access to their administrative resources in times of conflicts and emergencies.

5.2. Social Media Tools to Maintain Access to Teaching and Learning Resources

Teaching and learning resources should remain accessible to teachers and students for educational purposes and to the IT staff who will provide any needed support and maintenance. The following examples include some of the most popular, cost-free, user-friendly social media and online learning tools and applications that can be used as alternatives to face-to-face teaching to deliver learning materials to students during school closures.

One solution for schools is to adopt a cloud-hosting learning management system for teaching and learning resources such as MoodleCloud that requires no installation or hosting charges. IT staff can enrol users, manage multiple courses, and add content without the need to install, maintain, and upgrade the software and servers themselves [64].

Edmodo is a free online tool that allows teachers and students to share files and resources. It also provides a real-time communication tool and unlimited storage so that teachers can create groups, assign homework, and schedule quizzes [65]. In a previous study conducted in Malaysia, Edmodo was shown as a user-friendly social learning platform that enables students to enjoy online classes while encouraging engagement and responsible learning [66]. Another study conducted in Thailand revealed that Edmodo promotes students' collaboration while sharing resources in various formats [67]. Additionally, in Saudi Arabia, Al-kathiri [68] showed that EFL students have high perceptions towards Edmodo while having the potential as a tool to generate positive attitudes towards English language learning.

Google Drive is another free solution for educational institutions which requires no downloads or purchases of software or hardware. This service provides online word-processing documents, spreadsheets, slides, surveys, drawings, and databases. Teachers and students can share content and collaborate synchronously and asynchronously. Additionally, teachers can create their own Google sites to share files and content with their students. These sites can serve as a solution for teachers to use as repositories for learning materials as each webpage can be assigned to a specific chapter or topic, and files can be attached or inserted from Google Drive. When Google Drive was used as a collaborative online authoring environment for students in a South African physiotherapy department to create their own content, it was shown that this platform helped into the transformation of student learning practices by changing power relationships in the classroom and facilitating the development of critical attitudes towards knowledge and authority [69].

Google Apps for Education (GAFE) is a cost-free offer for educational institutions of the suite of Google applications (Gmail, Calendar, Drive, Docs, and Sites) that can be used to deliver education during emergencies. In particular, Google Classroom and Google Play Book allow students to access books from any device, including computers and mobiles [70]. Once registered for GAFE, a school will be assigned a domain and accounts for all teachers and students to collaborate and save their work on the cloud. As such, GAFE has provided the Anaheim City School District in California, which includes 24 schools with 18,000 students, 1000 teachers, and 1300 staff, a comprehensive and collaborative suite for creating, sharing, and editing documents, calendars, and social networking communities to assist with the implementation of the Common Core State Standards and in the research-based lesson design [71].

Additionally, Wikis can be used by teachers as repositories for learning materials or as means for students to collaborate on projects both synchronously and asynchronously. All types of files, including images and videos, can be attached to wikis. The main advantage of a wiki is the ease with which pages can be created and updated; in addition, collaborators can receive notification of every new modification made to a shared wiki. It was shown that wikis are good tools for collaboration and facilitate building a collection of resources among pre-service teachers [72]. Other studies revealed that a major advantage of using wikis in a classroom is to build a community of knowledge through group collaboration and knowledge acquisition while developing learners' community through cognitive and social engagement [73] such as a community of inquiry [74] or scaffolding [75] that can be accessed to solve problems.

Another tool that is helpful for teachers and students during the process of teaching and learning is Diigo. Diigo is a social bookmarking tool that allows teachers to bookmark and tag their web pages and save them to their Diigo accounts in the cloud. It also enables them to highlight and attach a sticky note on any part of a webpage so they can retrieve them easily and share them. Students and teachers can use it to support their research with credible resources and collaborate to create an annotated bibliography of resources. Researchers believe that Diigo provides meaningful learning resources through a social dimension to both learning and online research processes [76].

5.3. Social Media Tools to Maintain Student–Teacher and Student–Student Interactions

During emergencies, the following examples of social media tools become a convenient solution to maintain student–teacher interactions. These applications can still be accessed from any computer or mobile device and allow users to communicate and collaborate with others.

Facebook can be used to maintain interaction between students and teachers. Teachers can invite their students to share materials, communicate through messages and replies, and receive notifications of any updates [77]. Additionally, teachers can design groups categorised by class, topic, or project and block any outsiders who attempt to intrude [78].

Twitter is an online social networking tool that students and teachers could use to converse during emergencies by sending short, 140-character tweets. This online platform facilitates peer-to-peer discussion, sharing ideas beyond the classroom, and has positive impacts on students' formal learning and informal learning [79].

Blogs serve as an excellent communication tool for teachers and students. Teachers can post new learning materials, and students can stay up to date with the most recent posts. Through blogs, students can also have conversations, posting comments on specific posts, replying to others' comments, and encouraging readers to respond to each other [80]. A recent study showed that using blogs for writing and sharing weekly reflective journals in a graduate course have contributed to students' learning and emotional closeness with peers. The use of blogs expanded the learning experience beyond limited class time to create a sense of learning community and peer connectedness [81].

VoiceThread is one of the social media tools that can be used to share images, videos, and documents. Voice Thread allows users to have an online conversation about each other's posts through audio, video, or text comments. With the variety of media tools available, this tool allows establishing a sense of social presence among participants while giving students flexibility in how to interact online. As such, when VoiceThread was examined as the primary medium for content delivery and student interaction in an online graduate course, it was revealed that students find the tool beneficial for learning course content and connecting to peers and instructors. When compared with the face-to-face section, online students who were using VoiceThread had classroom community scores comparable to students in the face-to-face section and higher than students who were not using the VoiceThread tool [82].

Instagram is also an online social network for sharing photos and videos where users can link photos related to the same topic by adding hashtags. It allows users to apply various digital filters to their images, and add locations through geographical tags. Additionally, users can connect their Instagram account to their other social media profiles so they can retrieve photos in the other profiles. A study conducted in the United Arab Emirates for students attending intensive English lessons showed that using Instagram provided students with an enjoyable learning experience while allowing them to generate ideas for their writing activities with contextually relevant content [83]. The use of Instagram encouraged students to go outside of their social comfort zone and created a sense of community.

6. Implementing the Framework

This research proposes a solution to continue education delivery during temporary school closures through a cost-free, virtual learning environment. During sectarian violence or armed conflict, emotional and social issues can interfere with educational processes that require a safe learning environment to be accomplished. Thus, students' psycho-social well-being must be considered along with their cognitive development. Indeed, exposure to violence and trauma has been shown to have negative impacts on learning and information processing. It was also found that the most helpful way for children to recover was through building and maintaining supportive relationships [84].

To mitigate these adverse impacts, online educational environments that use social media applications seem to offer a promising intervention that can empower students and create positive learning environments and experiences. Furthermore, this approach can encourage students to communicate with friends and teachers and help students release some stress caused by conflicts. Using social media tools, students can learn at their own pace and access new educational content when they are ready. Thus, social media interventions during sectarian violence or armed conflicts can provide children and youth with access to education, stabilise deteriorating educational systems, and provide learning opportunities at almost no additional costs.

6.1. Pre-Emergency Period

School personnel in conflict-affected regions should be aware of the dangers that might affect the educational body (administrators, staff, and students) during any conflict event. All these parties have vital roles in preparing schools to survive conflicts without disrupting the educational process while maintaining instant communication and access to data and learning materials. Therefore, specific steps should be implemented in preparedness measures and tested in drills and before conflict occurs.

The role of the administrators starts by designing an action plan that includes all the steps needed to implement the strategy with a detailed timeline. A budget should be allocated for the cloud computing technology to maintain access to administrative resources, and the administration should be involved in supervising all the steps of the implementation and testing of the strategy.

The IT staff members have a tremendous role. In order to ensure reliable communication in case of emergencies, emails and phone numbers of students, parents, teachers, and IT staff should be collected to create groups of contacts for each class of students and teachers according to grade level or specialisation. Another task performed by the IT staff is to secure cloud storage for data servers as decided by the administration. Additionally, the IT staff are responsible for holding workshops for teachers related to the available online tools to create courses on the cloud, answering teachers' inquiries related to technical issues, and responding to teachers' inquiries related to digital instructional design. Moreover, the IT staff should conduct workshops for parents on the framework to be implemented in case of temporary school closures.

Meanwhile, teachers need to create an online version of their courses using the social media tool they feel is most adequate for their courses or otherwise be aware of their responsibilities if school administrators decide to use a unified application for all courses, such as MoodleCloud, GAFE, and Edmodo. Additionally, teachers are responsible for uploading regularly learning materials onto the chosen online platform at least weekly while the traditional educational process is taking place. Teachers should inform students that an online version of the courses where the learning materials covered in the classroom can be found is available and hold a session to show students how the selected online tool works so they are ready to use it in case of school closures.

At the beginning of each academic year, school administrators should announce the availability of this alternative teaching/learning framework to parents and students. As a testing period, the school can be closed and the process tested in a three-day drill. This phase is highly important to make sure that the teachers, students, parents, and IT staff

have adequate knowledge of the framework and how it functions in case of real-situation emergencies. Such testing will also provide administrators, IT staff, and teachers feedback about any gaps in the procedure that can be improved. At this level of the pre-emergency period, the first two attributes of Rogers' diffusion of innovation [27]—'relative advantage' and 'compatibility'—are reflected where administrators and teachers are convinced that this initiative has its advantages and is aligned with the vision of the school to implement. Additionally, the IT staff will ensure with the administration that all tools and compatible with the existing requirements, values, and needs.

6.2. Action during Emergencies and School Closures

When the security situation in conflict-affected regions prevents students from attending school, administrators can use the alternative solution outlined in this framework to maintain the teaching and learning process without disruption.

As a first step, administrators contact students, parents, teachers, and staff via phone, WhatsApp, or email to inform them of the emergency situation and to start the use of the online teaching/learning tools during this period. During conflicts and disasters, phone communications are essential for students, teachers, and staff to keep in touch. Software programmes can automate a call tree, using landline phones, email, pagers, cell phones, and short message services (SMS).

Teachers need to contact students via email or WhatsApp to remind them of the procedures to use the online tools. Teachers will update their online tools as needed and create discussion forums for questions, answers, and class interaction. WhatsApp could serve as a free-cost solution for students and teachers to communicate during conflicts and disasters, as teachers can create a WhatsApp group for each class and notify them of any updates or news. WhatsApp mobile technology provides students with the convenience they require for their everyday life through its simplicity, cost-effectiveness, and immediacy, as well as a sense of belonging [56].

As the teaching and learning process is conducted online until the school reopens, teachers, administrators, and staff need to communicate regularly, sharing inquiries and providing support. On the other hand, parents are urged to regularly check the online tools for updates, to follow up with their children's learning tasks, and to follow up with teachers to ensure that their children are on the right track. Parental involvement has been documented to influence student academic performance, including raising students' grade point average and improving their mathematics achievement and writing and reading skills [85]. Parental involvement is also effective at forging positive attitudes towards education and behavioural outcomes and, consequently, reducing drop-out rates [86]. Due to the lack of the teacher's physical presence in online learning modes, the role of parents could be more important in online learning environments than traditional education to keep learners focused on the assigned tasks. Thus, parents' interaction and support in online teaching environments are essential to students' achievement, encouragement, and accountability. In addition to the effect on student academic performance, parents' role has also been recognised as the most important source of social support for children during disasters, offering a sense of physical safety while providing emotional support, comfort, and nurturance [87]. A digital platform can be an important solution for parents to stay informed of their children's academic performance, download school reports and materials, and receive links, notifications, and automated alerts sent by the school. Such digital platforms might be expensive and not affordable for the majority of schools in conflict-affected regions. In this case, social media tools such as Facebook provide a cost-free alternative solution for schools to communicate with parents.

There is greater acceptance of online learning as a feasible educational alternative [88] where research has indicated that teachers can improve students learning outcomes in an online educational setting by nurturing a safe and caring learning environment that motivates students to engage in learning activities and by closely monitoring their online behaviour [89]. However, transforming the traditional educational processes into electronic

or online environments during emergencies is a challenging task that requires teachers to establish the needed interaction with their students. Teachers must maintain the characteristics that make them successful in online teaching. The success of this temporary shift to electronic education during short-term violence or conflict in divided societies requires that involved teachers be dedicated to performing their roles. Guiding students through online learning materials, responding to their questions, and maintaining live interactions among students during times of conflict are relatively new approaches that require teachers to be well prepared and have the skills and experience to accomplish these tasks. Teachers have also been identified as key players in helping students express their emotions and cope during disasters [90].

During an emergency, the third and fourth attributes of Rogers' diffusion of Innovation [27] are reflected. The 'complexity' attribute is shown through the implementation of the strategy and the use of a variety of tools. The 'trialability' feature is experimented with through the issues and challenges encountered by students, teachers, and administrators.

6.3. Post-Emergency Period

This suggested solution is intended for the short-term, temporary delivery of learning materials, so after schools reopen, teachers need to perform tests to evaluate students' comprehension of the learning materials provided online. The results of this evaluation will guide teachers in the next steps to cover the remaining topics in the curriculum and revise the face-to-face traditional teaching approach if there are some gaps that need to be addressed.

In the post-emergency period, the last attribute of Rogers' diffusion of Innovation [27] is detected. The 'observability' aspect will help the administrators to delineate solutions from the lessons learned by taking into consideration internal observations of the school body, as well as external observations from parents and the community.

7. Limitations

The proposed strategy relies mainly on social media tools because of the cost limitations to online learning. In fact, possessing a server at schools that is highly capable including an unlimited number of users is often not affordable in such vulnerable communities.

However, other issues can arise from relying on social media tools, such as the internet speed, which can be frustrating for users to download information. Other concerns include the safety of students for which parents and educators are urged to monitor kids' use of social media tools to ensure that their behaviour is appropriate, keeping them from browsing unsuitable material, whether intentional or accidental. Specific school guidelines as 'Acceptable Use Policies' can be circulated for spreading the spirit of responsible digital citizens in the school community to respect, educate, and protect [91]. These policies can include rules of conduct while using online tools such as cyberbullying, plagiarism, and privacy settings.

Future research should stress the importance of social norms to understand and specify who (friends, colleagues, employers, parents, etc.) may have more impact on the digital generation and how they may differ from a culture to another.

Finally, the use of social media by schools to sustain education constitutes itself a big innovation in the schools' practices, so this can be an evaluation of its diffusion potential. It assesses to what extent the five characteristics proposed by Rogers' diffusion of innovation theory may lead to high levels of adoption and diffusion. In particular, it assesses to what extent it is better than other approaches and strategies used in schools (relative advantage); to what extent it is compatible with education policies, with the needs, and with the mentalities and the school's values (compatibility); to what extent it can be initially applied in a small scale and limited time of emergency (trialability); to what extent it is easy to use and its application does not require extensive effort from teachers and students (complexity); finally, to what extent it is well received by the external environment as parents and the school community (observability).

8. Conclusions

In divided societies with poor social cohesion, prejudiced views of other cultures and economic and political marginalisation can trigger sectarian tensions, violence, and conflicts that disrupt educational activities through threats to children and staff members' safety and damage to schools. These interruptions of educational services can severely impact the educational and social development of children and youth. Thus, a backup system for educational delivery services during temporary periods of violence should be part of schools' emergency plans. This article proposed the implementation of an online educational delivery framework as a solution to the disruption of face-to-face traditional teaching during short-term, temporary school closures amid armed conflicts. It discussed the potential role of social media applications in maintaining educational delivery during emergencies. Research conducted in recent years has demonstrated promising uses of social media for pedagogical purposes. Therefore, educational leaders and administrators in conflict-affected regions are urged to undertake courageous initiatives to implement social-media learning tools to prevent disruptions of education during school closures. Moreover, schools should emphasise parental involvement and its influences on student success and achievement in online educational delivery services during temporary school closures.

While this approach is needed at all levels of education, it is highly recommended that its implementation at the high school level be prioritised. High school students need to cover the entire curriculum as soon as possible to be prepared to transition to college and take the needed tests for college admissions. High school students are generally very up to date on the latest technological tools, so a smooth implementation of such a solution is expected.

Integrating critical thinking, tolerance, open-mindedness, and conflict resolution education into the curriculum could help reduce sectarian attitudes and extreme beliefs in vulnerable communities. Only by promoting a culture of violence prevention and integrating conflict resolution education into education can people transform their fears into hopes for a cohesive society. Political conflicts and acts of violence are ideologically driven, so peace can be promoted in a similar fashion. Reducing sectarian violence and supporting peace in vulnerable communities requires a courageous strategy that integrates conflict resolution education and diversity in student bodies.

References

1. UN. Transforming Our World: The 2030 Agenda for Sustainable Development. Available online: https://sustainabledevelopment.un.org/post2015/transformingourworld (accessed on 3 August 2021).
2. Zerrougui, L. Protection of Schools Essential to Increase Access to Education in Africa. Available online: https://childrenandarmedconflict.un.org/press-release/protection-of-schools-essential-to-increase-access-to-education-in-africa/ (accessed on 27 July 2021).
3. Rohwerder, B. Delivering Education during Conflict. 2015. Available online: https://assets.publishing.service.gov.uk/media/57a08966ed915d622c0001d3/HDQ1209.pdf. (accessed on 20 July 2021).
4. Statista. Global Digital Population. 2021. Available online: https://www.statista.com/statistics/617136/digital-population-worldwide/ (accessed on 10 August 2021).
5. Baytiyeh, H. The flipped classroom model: When technology enhances professional skills. *Int. J. Inf. Learn. Technol.* **2017**, *34*, 51–62. [CrossRef]
6. Varkey-Foundation. British Minister Praises MGCubed Distance Learning Project in Ghana. Available online: https://www.varkeyfoundation.org/blog/british-minister-praises-mgcubed-distance-learning-project-ghana (accessed on 27 July 2021).
7. Baytiyeh, H. Online learning during post-earthquake school closures. *Disaster Prev. Manag.* **2018**, *27*, 215–227. [CrossRef]
8. GoogleX. Loon Project. 2017. Available online: https://x.company/loon/#top (accessed on 15 July 2021).

9. Muoio, D. Here's How Google Makes Its Giant, inteRNET-BEAming Balloons. Available online: http://www.businessinsider.com/how-google-makes-project-loon-balloons-2016-8/#the-goal-of-project-loon-is-to-use-a-network-of-solar-powered-balloons-to-beam-broadband-to-areas-without-internet-access-1 (accessed on 15 July 2021).
10. Larson, S. Google's Project Loon Helps Bring the Internet to Flooded Peru. Available online: http://money.cnn.com/2017/05/17/technology/project-loon-peru-flooding/index.html (accessed on 10 August 2021).
11. Larson, S. Facebook Wants to Beam the Internet Down from Helicopters. Available online: http://money.cnn.com/2017/04/19/technology/facebook-internet-drones-helicopters-disasters/?iid=EL (accessed on 10 August 2021).
12. Baytiyeh, H. Can disaster risk education reduce the impacts of recurring disasters on developing societies? *Educ. Urban Soc.* **2018**, *50*, 230–245. [CrossRef]
13. UNESCO. Children still battling to go to school. In *Education for All Global Monitoring Report Policy Paper 10. 2013*; UNESCO: Paris, France, 2013.
14. GCPEA. Lessons in War 2015: Military Use of Schools and Universities during Armed Conflict. Available online: https://www.scholarsatrisk.org/wp-content/uploads/2016/05/Lessons_in_War_2015.pdf (accessed on 15 July 2021).
15. UNESCO. The Hidden Crisis—Armed Conflict and Education: The Quantitative Impact of Conflict on Education. Think-Piece Prepared for the Education for All Global Monitoring Report 2011. Available online: http://unesdoc.unesco.org/images/0019/001907/190743e.pdf (accessed on 7 August 2021).
16. UNESCO. Education under Attack, Global Study on Targeted Political and Military Violence Against Education Staff, Students, Teachers, Union and Government Officials and Institutions. Available online: http://unesdoc.unesco.org/images/0018/001868/186809e.pdf (accessed on 7 August 2021).
17. WENR. Education System Profiles: Education in Syria. Available online: http://wenr.wes.org/2016/04/education-in-syria (accessed on 10 August 2021).
18. Power, C.N. Global trends in education. *Int. Educ. J.* **2000**, *1*, 152–163.
19. Amy, B.M.T.; James, W.T. Language policy and the construction of national culture identity. In *Language Policy, Culture and Identity in ASIAN Contexts*; Lawrence Erlbaum Associates, Inc.: Mahwah, NJ, USA, 2006.
20. Ukpere, W.I.; Slabbert, A.D. A relationship between current globalisation, unemployment, inequality and poverty. *Int. J. Soc. Econ.* **2009**, *36*, 37–46. [CrossRef]
21. Geo-JaJa, M.A.; Majhanovich, S. *Effects of Globalization on Education Systems and Development, Debates and Issues; (The World council of Comparative Education Societies)*; Sense Publishers: Rotterdam, The Netherlands, 2016.
22. Coughlan, S. How Many Attacks on Schools around the World? *2014.* Available online: http://www.bbc.com/news/education-30512451 (accessed on 7 August 2021).
23. Smith, D. Nigerian 'Taliban' Offensive Leaves 150 Dead. 2009. Available online: https://www.theguardian.com/world/2009/jul/27/boko-haram-nigeria-attacks (accessed on 25 August 2021).
24. Save_the_Children. Education in Crisis in the Asia-Pacific Region. 2014. Available online: http://www.protectingeducation.org/sites/default/files/documents/save_the_children_australia_-_no_child_left_behind.pdf (accessed on 10 August 2021).
25. World-Bank. *ICT and the Education of Refugees: A Stocktaking of Innovative Approaches in the MENA Region, Lessons of Experience and Guiding Principles*; World-Bank: Washington, DC, USA, 2016.
26. INEE. *INEE Minimum Standards for Education: Preparedness, Response, Recovery*; UNICEF: New York, NY, USA, 2010.
27. Rogers, E. *Diffusion of Innovations*; Free Press: New York, NY, USA, 2003.
28. Baytiyeh, H.; Naja, M.K. Do multimedia features promote understanding and retention. *Int. J. Instr. Media* **2010**, *37*, 43–54.
29. Kaplan, A.M.; Haenlein, M. Users of the world, unite! *The challenges and opportunities of Social Media. Bus. Horiz.* **2010**, *53*, 59–68.
30. Kietzmann, J.H.; Hermkens, K.; McCarthy, I.P.; Silvestre, B.S. Social media? *Get serious! Understanding the functional building blocks of social media. Bus. Horiz.* **2011**, *54*, 241–251.
31. Sobaih, A.E.E.; Hasanein, A.M.; Elnasr, A.E.A. Responses to COVID-19 in higher education: Social media usage for sustaining formal academic communication in developing countries. *Sustainability* **2020**, *12*, 6520. [CrossRef]
32. Conley, Q.; Sabo, K.E. The social media instructional design model: A new tool for designing instruction using social media. *Int. J. Soc. Media Interact. Learn. Environ.* **2015**, *3*, 290–304. [CrossRef]
33. Kukulska-Hulme, A. Learning Cultures on the Move: Where are we heading? *Educ. Technol. Soc.* **2010**, *13*, 4–14.
34. Connolly, M. Benefits and Drawbacks of Social Media in Education. 2011. Available online: http://www.wcer.wisc.edu/news/coverStories/2011/benefits_and_drawbacks.php (accessed on 25 July 2021).
35. Darling-Hammond, L.; Zielezinski, M.B.; Goldman, S. Using Technology to Support At-Risk Students' Learning. 2014. Available online: https://edpolicy.stanford.edu/sites/default/files/scope-pub-using-technology-report.pdf (accessed on 25 July 2021).
36. Oblinger, D.; Oblinger, J. Is it age or IT: First steps toward understanding the net generation. In *Educating the Net Generation*; EDUCAUSE: Boulder, CO, USA, 2005; Volume 2, pp. 20–30.
37. Palfrey, J.; Gasser, U. *Born Digital: Understanding the First Generation of Digital Natives*; New York Basic Books: New York, NY, USA, 2008.
38. Prensky, M. Digital natives, digital immigrants. *Horizon* **2001**, *9*, 1–6.
39. Tapscott, D. *Growing Up Digital: The Rise of the Net Generation*; McGraw-Hill: New York, NY, USA, 1998.
40. Rosemary, L.; Wilma, C.; Rebecca, G.; Kit, L.; Adrian, M.; Martin, O. Do Web 2.0 tools really open the door to learning? Practices, perceptions and profiles of 11–16-year-old students. *Learn. Media Technol.* **2009**, *34*, 87–104.

41. Nowell, S.D. Using disruptive technologies to make digital connections: Stories of media use and digital literacy in secondary classrooms. *Educ. Media Int.* **2014**, *51*, 109–123. [CrossRef]
42. DeNisco, A. New Jersey Schools to Teach in Social Media. 2014. Available online: http://www.districtadministration.com/article/new-jersey-schools-teach-social-media (accessed on 10 August 2021).
43. Cranmer, S.; Selwyn, N.; Potter, J. Exploring primary pupils' experiences and understandings of 'e-safety'. *Educ. Inf. Technol.* **2009**, *14*, 127–142. [CrossRef]
44. Pusey, P.; Sadera, W.A. Cyberethics, cybersafety, and cybersecurity: Preservice teacher knowledge, preparedness, and the need for teacher education to make a difference. *J. Digit. Learn. Teach. Educ.* **2011**, *28*, 82–88. [CrossRef]
45. Rheingold, H. Attention, and other 21st-century social media literacies. *EDUCAUSE Rev.* **2010**, *45*, 14–24.
46. Lan, C.-F. Democratic education in the new media era: Toward a framework of democratic media literacy. *Ohio Soc. Stud. Rev.* **2013**, *50*, 51–62.
47. Varlas, L. Can social media and school policies be friends. *Assoc. Superv. Curric. Dev.* **2011**, *17*, 1–7.
48. Wang, S.-K.; Hsu, H.-Y.; Campbell, T.; Coster, D.; Longhurst, M. An investigation of middle school science teachers and students use of technology inside and outside of classrooms: Considering whether digital natives are more technology savvy than their teachers. *Educ. Technol. Res. Dev.* **2014**, *62*, 637–662. [CrossRef]
49. Calvo, R.; Arbiol, A.; Iglesias, A. Are all chats suitable for learning purposes? *A study of the required characteristics. Procedia Comput. Sci.* **2014**, *27*, 251–260. [CrossRef]
50. Stefan, H.; Anneli, E.; Fredrik, A.; Tanvir, K.; Carol-Ann, S. Informal math coaching by instant messaging: Two case studies of how university students coach K-12 students. *Interact. Learn. Environ.* **2014**, *22*, 84–96.
51. Scornavacca, E.; Huff, S.; Marshall, S. Mobile phones in the classroom: If you can't beat them, join them. *Commun. ACM* **2009**, *52*, 142–146. [CrossRef]
52. Smit, I. WhatsApp with BlackBerry; Can Messengers (BBM) be MXit? In Proceedings of the 14th Annual Conference on World Wide Web Applications, Cape Town, South Africa, 7–9 November 2012.
53. Cifuentes, O.E.; Lents, N.H. Increasing student-teacher interactions at an urban commuter cam-pus through instant messaging and online office hours. *Electron. J. Sci. Educ.* **2011**, *14*, 1–11.
54. Doering, A.; Lewis, C.; Veletsianos, G.; Nichols-Besel, K. Preservice teachers' perceptions of instant messaging in two educational contexts. *J. Comput. Teach. Educ.* **2008**, *25*, 5–12.
55. Sweeny, S.M. Writing for the instant messaging and text messaging generation: Using new litera-cies to support writing instruction. *J. Adolesc. Adult Lit.* **2010**, *54*, 121–130. [CrossRef]
56. Baytiyeh, H. Students' Use of Mobile Technologies: Motivational Factors. *Int. J. Inf. Commun. Technol. Educ.* **2018**, *14*, 73–85. [CrossRef]
57. Baytiyeh, H. The uses of mobile technologies in the aftermath of terrorist attacks among low socioeconomic populations. *Int. J. Disaster Risk Reduct.* **2018**, *28*, 739–747. [CrossRef]
58. Lim, N.; Grönlund, Å.; Andersson, A. Cloud computing: The beliefs and perceptions of Swedish school principals. *Comput. Educ.* **2015**, *84*, 90–100. [CrossRef]
59. Chou, D.C. Cloud computing: A value creation model. *Comput. Stand. Interfaces* **2015**, *38*, 72–77. [CrossRef]
60. Lambert, N. *Desktops-As-A-Service Elongates The PC Refresh Cycle: A Pike County Schools Case Study*; Forrester Research, Inc.: Cambridge, MA, USA, 2009.
61. Hicks, B. UK Universities put Their Faith in the Google Cloud. 2009. Available online: http://www.agent4change.net/index.php?option=com_content&view=article&id=280:uk-universities-put-their-faith-in-the-google-cloud&catid=73:open-source&Itemid=209 (accessed on 1 August 2009).
62. Wanjiku, R. East African Universities Take Advantage of Google Cloud. 2009. Available online: http://www.infoworld.com/print/79297. (accessed on 10 August 2009).
63. Chan, S.P. Microsoft Cloud Computing Gets Down to Earth. East Africa Forum. 2009. Available online: http://www.eastafricaforum.net/2009/07/16/microsoft-cloud-computing-gets-down-to-earth (accessed on 20 August 2021).
64. Buhu, A.; Buhu, L. The development of interactive content with Moodle cloud for textile engineering learning. In Proceedings of the International Scientific Conference eLearning and Software for Education, Washington, DC, USA, 21–22 April 2016.
65. Holland, C.; Muilenburg, L. Supporting student collaboration: Edmodo in the classroom. In Proceedings of the Society for Information Technology & Teacher Education International Conference, Nashville, TN, USA, 7–11 March 2011.
66. Balasubramanian, K.; Jaykumar, V.; Fukey, L.N. A study on Student preference towards the use of Edmodo as a learning platform to create responsible learning environment. *Procedia-Soc. Behav. Sci.* **2014**, *144*, 416–422. [CrossRef]
67. Thongmak, M. Social Network System in Classroom: Antecedents of Edmodo Adoption. *J. e-Learn. High. Educ.* **2013**, *2013*, 1–15. [CrossRef]
68. Al-Kathiri, F. Beyond the classroom walls: Edmodo in Saudi secondary school EFL instruction, attitudes and challenges. *Engl. Lang. Teach.* **2014**, *8*, 189–196. [CrossRef]
69. Rowe, M.; Bozalek, V.; Frantz, J. Using Google Drive to facilitate a blended approach to authentic learning. *Br. J. Educ. Technol.* **2013**, *44*, 594–606. [CrossRef]
70. Brown, M.E.; Hocutt, D.L. Learning to use, useful for learning: A usability study of Google apps for education. *J. Usabil. Stud.* **2015**, *10*, 160–181.

71. Robertson, C. Using a cloud-based computing environment to support teacher training on common core implementation. *TechTrends* **2013**, *57*, 57–60. [CrossRef]

72. O'Bannon, B.; Baytiyeh, H.; Beard, J. Using wikis to create collections of curriculum-based resources: Perceptions of pre-service teachers. In Proceedings of the Society for Information Technology & Teacher Education International Conference, San Diego, CA, USA, 29 March 2010; Association for the Advancement of Computing in Education (AACE): Waynesville, NC, USA, 2010.

73. Du, H.S.; Chu, S.K.W.; Chan, R.C.H.; He, W. Collaborative writing with wikis: An empirical investigation. *Online Inf. Rev.* **2016**, *40*, 380–399. [CrossRef]

74. Macià, M.; García, I. Informal online communities and networks as a source of teacher professional development: A review. *Teach. Teach. Educ.* **2016**, *55*, 291–307. [CrossRef]

75. Lin, C.Y.; Reigeluth, C.M. Scaffolding wiki-supported collaborative learning for small-group projects and whole-class collaborative knowledge building. *J. Comput. Assist. Learn.* **2016**, *32*, 529–547. [CrossRef]

76. Blake, M.R.; Morse, C. Keeping your options open: A review of open source and free technologies for instructional use in higher education. *Ref. Serv. Rev.* **2016**, *4*, 375–389. [CrossRef]

77. Kent, M. Changing the conversation: Facebook as a venue for online class discussion in higher education. *J. Online Learn. Teach.* **2013**, *9*, 546–565.

78. Fewkes, A.M.; McCabe, M. Facebook: Learning tool or distraction? *J. Digit. Learn. Teach. Educ.* **2012**, *28*, 92–98. [CrossRef]

79. Aramo-Immonen, H.; Jussila, J.; Huhtamäki, J. Exploring co-learning behavior of conference participants with visual network analysis of Twitter data. *Comput. Hum. Behav.* **2015**, *51*, 1154–1162. [CrossRef]

80. Chawinga, W.D. Taking social media to a university classroom: Teaching and learning using Twitter and blogs. *Int. J. Educ. Technol. High. Educ.* **2017**, *14*, 3–10. [CrossRef]

81. Lee, J.; Bonk, C.J. Social network analysis of peer relationships and online interactions in a blended class using blogs. *Internet High. Educ.* **2016**, *28*, 35–44. [CrossRef]

82. Kidd, J. Evaluating VoiceThread for online content delivery and student interaction: Effects on classroom community. In Proceedings of the Society for Information Technology & Teacher Education International Conference, New Orleans, LA, USA, 25–29 March 2013; Association for the Advancement of Computing in Education (AACE): Waynesville, NC, USA, 2013.

83. Al-Ali, S. Embracing the selfie craze: Exploring the possible use of Instagram as a language mLearning tool. *Issues Trends Educ. Technol.* **2014**, *2*, 1–10. [CrossRef]

84. Strauss, V. The Serious and Long-Lasting Impact of Disaster on Schoolchildren. 2017. Available online: https://www.washingtonpost.com/news/answer-sheet/wp/2017/09/11/the-serious-and-long-lasting-impact-of-disaster-on-schoolchildren/?utm_term=.04782c2b9c31 (accessed on 21 July 2021).

85. Wilder, S. Effects of parental involvement on academic achievement: A meta-synthesis. *Educ. Rev.* **2014**, *66*, 377–397. [CrossRef]

86. Wang, M.T.; Sheikh-Khalil, S. Does parental involvement matter for student achievement and mental health in high school? *Child Dev.* **2014**, *85*, 610–625. [CrossRef]

87. Pfefferbaum, B.; Noffsinger, M.A.; Wind, L.H.; Allen, J.R. Children's coping in the context of disasters and terrorism. *J. Loss Trauma* **2014**, *19*, 78–97. [CrossRef]

88. Hawkins, A.; Barbour, M.K.; Graham, C.R. Everybody is their own island: Teacher disconnection in a virtual school. *Int. Rev. Res. Open Distrib. Learn.* **2012**, *13*, 124–144. [CrossRef]

89. Borup, J.; Graham, C.R.; Drysdale, J.S. The nature of teacher engagement at an online high school. *Br. J. Educ. Technol.* **2014**, *45*, 793–806. [CrossRef]

90. Johnson, V.A.; Ronan, K.R. Classroom responses of New Zealand school teachers following the 2011 Christchurch earthquake. *Nat. Hazards* **2014**, *72*, 1075–1092. [CrossRef]

91. Ribble, M. *Digital Citizenship in Schools: Nine Elements All Students Should Know*; International Society for Technology in Education: Washington, DC, USA, 2015.