Journal of Contemporary Issues in Open Distance and E-Learning
https://journals.dolpak.or.ke/ Vol 1 Issue 1 | Sep 2024

RESEARCH ARTICLE

YOUNG ONLINE LEARNERS: A SYSTEMATIC REVIEW OF PARTICIPATORY DESIGN FRAMEWORK FOR CYBER SAFETY.

Andrew Aunda Omambia

Department of Information Systems and Computing, University of Eastern Africa, Baraton, Eldoret, Kenya.

Received: 19th June 2024 **Accepted:** 13th August 2024 **Published:** 12th September 2024

Abstract

As young people's online presence has expanded, largely driven by eLearning needs, their vulnerability to online risks such as cyberbullying, online predators, and misinformation has increased. Addressing this concern, this study explores a systematic review of participatory design frameworks aimed at enhancing online safety for young learners. Participatory design involves actively engaging stakeholders, especially young users, in the design process to ensure that online environments meet their needs and expectations. Research indicates that when young people are involved in creating safety measures, they are more likely to use and adhere to these measures effectively. The study conducted a systematic review of existing research, including academic journals, conference papers, and industry reports, focusing on the application of participatory design in online safety within educational contexts. It analyzed key themes, methodologies, outcomes, and recommendations from selected studies. The findings suggest that participatory design frameworks significantly improve the safety and usability of online learning platforms. Essential components of successful frameworks include stakeholder involvement, an iterative design process with ongoing feedback, and a thorough understanding of the specific challenges faced by young learners. Despite the benefits, challenges exist, such as the time and resource demands of the participatory design process and ensuring meaningful engagement from all stakeholders. Recommendations from the study include: adopting participatory design frameworks in educational institutions, incorporating practical online safety education into eLearning curricula, regularly updating safety measures based on feedback and emerging risks, and fostering collaboration among educators, parents, and technical experts to support young learners.In conclusion, participatory design frameworks offer a promising strategy for creating safer online environments for young learners, leading to more effective and user-friendly safety measures.

Key Words: Participatory Design, Young learners, Cyber Safety

Introduction:-

The rate at which young people participate in the online world's activities is rapidly increasing. Online practices are informed by the circumstances and personal needs of the young population, especially in the information age where there is heavy reliance on the internet for learning material. In addition, online practices are guided by a set of literacies usually termed as social network literacy, digital learning, digital citizenship, or digital literacy (Andema, 2014). The current networked and online environment need young people embrace modern skills to take part and stay safe in the burgeloning digital media environment (Blakemore et al., 2020). These span a wide array of social, digital, and emotional literacies needed by young learners to learn through a variety of media with confidence These span the range of media, digital, social and emotional literacies required for young people to "learn through multiple media confidently, effectively and safely" (Collin et al., 2011).

The levels of literacy can constrain or empower capacities for making decisions, empowerment, agency, and understanding. While enhancing the availability and quality of technology implies that young people usually hoard a lot of expert skills and knowledge, they do not all have the same degree of digital literacy (Third, 2014). Scholars agree that both teachers and students, and at times parents, need computer or digital literacy skills. The body of literature supports that it is this set of skills that will determine the attitude towards use of digital technology for learning and the safety of the users thereof. Although studies show that there is tremendous improvement in the access to technology and that more and more young people have become technology savvy, there is also mounting evidence on increasing attacks due to the increasing number of online learners. This points to a need to continue developing technology skills.

Online environments have quickly evolved, becoming an integral part of economic, social, cultural, and political life. However, the scope and duration of this study cover only specific aspects of online safety for online learners, and further, in-depth research is necessary. This study is based on the growing need for young people to continue their education online while simultaneously engaging in numerous web-based activities. (Luckin et al., 2009). Various studies have cited the relevance of social media technologies and educational technologies in and out of classroom environments. The level of autonomy that should be warranted to young people using the online environments has been a subject of inquiry studies have cited learners' benefits from social media technologies in and outside the classroom environment. In any case, the growing number of young people online presents a significant safety concern, as it closely aligns with the rise in their vulnerability within the same digital environment (Crook, 2012). Given this context, the study aimed to conduct a systematic review of the participatory design framework to ensure the safety of young learners in online spaces.Various researchers and scholars worldwide have tried to investigate the right age for internet usage and the introduction of internet education for safe use and who is responsible for that (Davies, 2011). Internet use among the young generation is nearly pervasive and is associated with many risks such as unwanted solicitation, cyberbullying, privacy violation.

Internet safety education may prevent these negative consequences (Greenhow & Lewin, 2016) This model's primary question is the strategy to train users to get all the internet users on board for safe internet use training becomes instead a very complex issue to execute.

This raises several questions about the efficiency and effectiveness of this model. Parents are obligated to provide the young learners with the required security both in traditional social space and online (Druin, 2002). Young learners who are inseparable with the digital media activities and whose lives are in many ways exposed to severe dangers that are associated with cyberbullying are in reality crying for help from society and especially those entrusted with the responsibility of ensuring that today's generation will live beyond tomorrow

There is a need to develop preventive measures to ensure that the young learners in conducting their educational activities online are safe and protected from cyberbullying and any online harassment to achieve that. An interdisciplinary context is necessary (Davies, 2011). The following factors should while researching this field: the legal and formal context; educational context, emotional context; moral context; security context, and prevention and protection.

Currently, digital media tool has become an inseparable element for the young generation especially during the wake of Coronavirus pandemic when most children are staying at home without much activities attached to them (Zych et al., 2019). And as a result of this, the most frequently engage in the illegal usage of the Internet, which may expose them to many dangers coming from cyberspace (Gaffney et al., 2019).

To this end the problem addressed in this paper is that there is a need for designing for young learners' safety online when at a crucial time like this when not much can be done to regulate the frequency of internet use by this group. In the light of the problem cited above this study was guided by the following research questions:

1. How do you ensure young learners are safe while learning online?
2. What are the available technologies that can be leveraged to ensure safety of learners while learning online?

Objectives:-

General Objective.

To explore and implement technologies that enhance the safety and security of young learners online.

Specific Objectives.

i. Investigate the effectiveness of existing online safety solutions with the young learners online.
ii. Analyze potential online risks, such as cyberbullying, inappropriate content, and privacy breaches.
iii. Evaluate and refine mitigation strategies through the systematic review of literature.

Materials And Methods:-

This paper presents the results from a systematic literature review of the report focusing on designing young learners' safety online. In this paper, the term young learners will only refer university students engaging in online learning activities. The systematic concentrated on academic publications done between 2013 to 2020 on several online databases like ACM Digital

Library which contains interdisciplinary HCI publications, Web of Science, Scopus, Google Scholar, DARE and popular kinds friends' databases like gale were searched for relevant studies. We obtained journals, magazines, newsletters, and conference proceedings articles from these databases. A total of 110 studies were obtained from the search conducted, following rigorous screen 30 studies that specifically met our primary objective were obtained and included in our literature systematic review.

We also did compare the result from various methodological designs and models used in similar studies, which showed that many studies touching on design for young learners' safety mainly used participatory design framework. Hence we adopted this type of design in our research since it focused on design for young learners' safety (Selwyn, 2010). The results obtained revealed a significant gap in designing for young learners' safety online and suggest that such designs can offer safety online for the young learners who are searching in their quest for educational materials. Many literary works have not tackled the designing for children safety online live alone young learners who are or maybe the main target in the online harassment, only a few papers mention them (Crook, 2012). Similarly, often highly referenced works on privacy do not focus on them or mention them. Several literature works concentrate on aspects of young people's culture, focus on mobile phones and Facebook's privacy issues. While there is considerable work on domestic routines in homes and domestic privacy concerns, children or relatively young learners have been left out.

Results:-

A. Increase in Web 2.0 in Classroom Environment

The upsurge of social media in the recent past is worrying in various groups of young people, especially young learners who spend much of their time online searching for educational materials or taking time out to play games online (Hinduja & Patchin, 2014). Interacting with peers demonstrates the learner's growth and development and improves self-esteem. But while engaging in these healthy habits, cyberbullying victims are readily available on social media sites, ready to get their prey (Marciniec & Marczuk, 2015). This calls for those who are engaging and experiencing cyberbullying. In most cases, it is seen as the domain experts of cyberbullying or cyber-attacks to participate in the quest to provide a solution to the problems they are facing (Davies, 2011). In that regard, many authors cite participatory design as suitable for designing technologies better suited for the affected groups to which they are intended. These technologies have already taken care of the experts' domain's needs.

There haven’t been many participatory design techniques for children's application leave alone young learners who most of the time spend long hours online Hrastinski & Aghaee, (2012). According to Druin et al., collaborative inquiry, which means interpreting the participatory design method for young learners, can yield a good result since it takes care of the problems such a group of young people experiences day in day out (Druin, 2002). The design also takes care of mixing ideas from such targeted groups and can be used to encourage collaboration during the design process (Lee & Lee, 2015). With the increased use of social media applications by young learners, incorporating such a design process is of paramount importance. Their work has included several ongoing research work involving young people in their design processes (Appel 2020). This is done to enhance better quality research outputs that consider the experts' views since they are counted members of the expert domain (Blakemore et al., 2020). A recent study conducted on

Snapchat focuses on the merits of collaborating with young learners in developing safety applications online. Ultimately, they will be the group to use such applications and hence need to have their inputs as the applications are developed. In view of preventing unhealthy habits, online another study revealed that it is of more significant benefit to involve and bring onboard teens who are the domain expert.

B. Constructivist View of Learning

Positive criticism has however emerged in support of student directed learning. In literature, the student directed learning is supported where knowledge is purposely created and constructed by the student. The constructivist view of learning is seen to make learning more social, active, and reflective (Driscoll, 2002). According to some researchers, the online environment is seen to comprise the necessary tools to make it effective (Baxter et al., 2011; Jucevičienė & Valinevičienė, 2010; Kennelly, 2009; Jonassen, 1999). Web 2.0, scholars argue, offers an intuitive and flexible learning style as it not a simple one-way teacher centered communication but rather one that permits the students to participate easily and provide their contribution to learning material, say for instance through blogs. The online environment provides the learner with the opportunity to construct their own learning that ought to fit into their meta cognition.

A major challenge in integrating technology into learning is assessing whether it can offer real-world contexts that engage learners in complex problem-solving. Studies have shown that Web 2.0 technologies like blogs, wikis, and podcasts enable learners to actively participate in their learning process by connecting prior knowledge with current tasks (Richardson, 2006; Driscoll, 2002). This active involvement fosters idea development, leading to more meaningful learning experiences.

The study concludes by examining whether using a project-based teaching approach in the workshops will lead to higher implementation rates among participants. It also explores whether incorporating the university promotion process into the workshops would provide additional motivation for participants to apply what they have learned.

Any educational practice that focuses on the playful, expressive, reflective, or exploratory elements of knowledge building can benefit greatly from Web 2.0 tools and services. Additionally, educators can assume that most learners are already familiar with these tools. When applied to learning, Web 2.0 influences four key aspects of the learner's experience: two social dimensions (collaboration and publication) and two cognitive (literacy and inquiry). These tools enhance core learning elements that can be challenging to cultivate. Although there are practical challenges with Web 2.0 learning, they represent a significant shift in how learners engage with the web.

Very little research is currently engaged in designing young learners online, yet this is a significant concern with many governments globally (Martínez et al., 2019). Out of this study, excellent recommendations came out like "reflexive interface" prototypes as a strategic means to prevent cyberbullying. This study's reflective interface was highly recommended and encouraged to improve positive digital behavior. The reflex consists of the following interactions: "notifications, action delays, displaying hidden consequences, system-suggested flagging, and interactive education." As much as it sounds good, this kind of recommendation does not involve young learners in the design as the domain expert (Kırcaburun et al., 2019). This raises a critical question of the relevant use of the recommendation to the group that never participated in the proposal. Even

the developers highly recommend that any technological solutions be user-centered (English & King, 2015).

User-centric design and online bullying conventionally, users have been placed in an unreceptive in matters of design and development of the technologies. The major drawback to this issue is that users are only reacting to what designers have created. They never offered their strategies or solutions (Harrison, 2018). The user-centric design tries to introduce users to the design process in the earlier stages to influence tool design easily. Several methodologies bring users of technology into designing and developing the applications. In this way, users are involved in all development stages, including co-designers, testers, and subjects (Smyrnova-Trybulska & Iwona Mokwa-Tarnowska, 2019). Researchers who have included young learners in their design process have provided valuable insight into the design process. However, again in cyberbullying, there are not many innovations that have been done through the participatory design method.

Designing Cyberbullying Mitigation Tools has been an uphill task, especially from the technological perspective. For instance, Dinakar's work on cyberbullying focused on how the involvement of society and parental responsibility to address the vice and introduced "reflexive interface" prototypes as a means to prevent cyberbullying across a limited range of subjects, including appearance, intelligence, racial and ethnic slurs, social acceptance, and rejection. This work consists of the following interactions: "notifications, action delays, displaying hidden consequences, system-suggested flagging, and interactive education. The reflective interfaces to mitigate cyberbullying did not involve youth in the design or evaluation processes".

C. Existing Cyberbullying Mitigation Tools

Studies on the prevalence of cyberbullying around the world are generally high. For instance, studies show that more than 30% of young people in more than 30 countries have reported cyberbullying. In developed countries, the numbers are also significantly high (Heiman & Olenik shemesh, 2013). For instance, in Canada, the prevalence ranges from 14% to 50%; different studies provide differing findings (Beran et al., 2015a). Hamm et al. (2015) report that one quarter of students conducting online learning have experienced cyberbullying. Another study has provided compelling evidence showing that more than 30% of students in high school have experienced some form of cyber bullying (University of New Hampshir, 2021). It is generally accepted that the rate of cyber bullying is high and the reason for the different rates is because of the fact that there exist different definitions (Dhawan, 2020)

Victims of cyberbullying report anxiety, depression, suicidality, and other risky behaviors compared to their peers who do not have any of these experiences. For example, research on a sample of students from urban schools shows that young people who have been bullied online had higher levels of anxiety, depressive feelings/behavior, and externalism (Nixon, 2014a). Moreover, face-to-face instances of bullying are highly linked to cyberbullying. Recognizing these tendencies and outcomes is critical to the development of measures of prevention and intervention (Alhajji et al., 2019). These include the provision of tip sheets and intervention material to young learners in the online learning spaces (Darling-Hammond et al., 2020). Regrettably, there is a dearth of information as far as this kind of information is available.

D. Current Efforts

There is considerable effort in averting cyberbullying although the implementation of the measures is relatively recent compared to the century-long research on face-to-face bullying (Bauman & Bellmore, 2015; Espelage & Hong, 2017; Marzano & Lubkina, 2014). Innovations in technology have changed the interactions of people with one another, and these innovations offer young people the honor to communicate with other young people without the supervision of adults, leading to the development of risk for bullying with the different modes of communication that are available (Beran et al., 2015b; Espelage & Hong, 2017b; Marzano & Lubkina, 2014). As argued by van der Zwaan et al. (2014), a decade ago, the level of technological advancements had not reached the level where cyberbullying would be an issue. Unfortunately, young people are keeping abreast with the changes in the technological world and spaces and are more readily susceptible to hurt than adults.

E. Problem Behavior Theory

Problematic behaviors in many young learners or generally young people such as engaging in criminology, substance abuse in many instances originate from inborn characteristics of the individual, rather than instant trait or behavior (Harrison, 2018). Most problems emanating from excessive social media studies should be geared towards the interrelated factors of personality, perceived environment, and behavioral systems.

Research should focus on the interrelated factors of personality, perceived environment, and behavioral systems to understand such problematic behaviors, especially those emanating from excessive social media use. The problem behavior theory (PBT) can be applied to cyberspace interaction (Kowalski & Limber, 2013). Many studies have instinctively referred to PBT as the best theory to advance studies when it comes to the accounts of pathological internet use. Over the past two decades, different researchers have adopted various study approaches. Even though it also has challenges, especially regarding gender using cyberspace, previous research has reported an association between the constructs noted above and cyberbullying.

Furthermore, spending excessive time on platforms where problematic social interactions may occur is also likely to increase the probability of CBP; several studies have suggested that social media platforms as the environment where cyberbullying occurrences are likely to happen. Previous studies have also shown that when problematic cyberspace behaviors are considered, the subject of gender is an important control variable (Selwyn, 2010). Female and male young learners have different usage objectives to achieve online.

Researchers have also developed a more robust model for elucidating the interaction of young people in online environments. While other contexts will argue against technological determinism, a more comprehensive model embraces the adoption of the internet within a wider context of changing the lives of young people in the risk society and late modernity. Firstly, the model provides an overview of into the notion of the digital native young person, the risk of media and moral panics, and the responsibility that should comprise multi-stakeholder alliances to ensure the safety of young people while they are in online experiences.

In the model, it has been n noted that it is indeed impossible to tackle all the areas where young online learners may face risk, and therefore four main risks have been considered as the focal areas. These have been selected with consideration of public interest and policy development in mind as there is already academic theory as well as evidence on which to develop on: encountering

pornography, sending and receiving sexual messages or sexting, bullying, and going to offline meetings with people met online. The model also considers the negative user-generated online content as well as misuse of personal data, although these have not been extensively studied in relation to young people.

However, as already noted, the risks may not necessarily be as problematic if considered from the angle of the benefits that are generated by the online presence. As such, the model considers the risk from the perspective of the young people. Further, the model considers the online experiences of young people as far as young people may fail to cope with the experiences. To the extend that they fail to cope the outcome may turn to be harmful, but to the extent that they manage to cope, this is an indication of resilience.

Discussions

In one study attempting to understand the risk aspect of young people being online, researchers describe how youth and children who are loved and are safe are resilient, and can withstand challenges in life including responding to setbacks as well as unanticipated events in a constructive manner. Such a holistic approach assists in helping to assess the issues relating to the risk and safety of young people and children in the navigation of technology in this digital age. Intergenerational, proactive approaches can assist in supporting the young people to be able to manage the risks and navigate online with fair levels of safety. This is contrary to approaches that place their focus on potentially negative reactions. With social media and online engagement becoming common across all age groups and young people, there is a window of opportunity to get richer understanding of their risk and safety perceptions order to inform effective frameworks.

A. Discourse on Internet Risk and The Protection Framework

As more and more young people go online, governments and other organizations and agencies have mobilized resources in response to the rising demands of a digitally mediated environment. Policy and practice have put a lot of focus on safeguarding young people and children from the potential risks that are related to social media and online presence (Burch et al 2019). Whilst young people and children are viewed to be engaging at the forefront of the rising digital media practices – rapidly consuming the upcoming technologies and developing new ways of connecting and engaging with the online world – they are also commonly regarded as being highly vulnerable to risks online.

The use of social media and online media for learning has only exacerbated these fears young people's and children's vulnerabilities online (Drane et al., 2020; Levine et al., 2020). This is not only since young people and children are indeed potentially susceptible to more risks in their online and social media engagements, but also because their practices online and in social media platforms are usually perceived to be developing past the locus of the supervision of adults.

B. Interactions, Risks, Opportunities, and Wellbeing

Evidence is mounting on the risks and harms as well as the opportunities for wellbeing of young people online. According to Livingstone (2013), there can never be a simple translation and understanding of the online risks – or opportunities – that translate into predictable, and every result can either be positive or negative for the children. As such, the more time children spend online, the more they are likely to reap the gains of digital involvement (Livingstone, 2013).

However, similarly, the more time they are online, the more the risks that they are exposed to. Online presence presents a vast range of novel risks and harms, but these need calculated responses from practitioners and policy makers. For instance, according to Holloway, the risks that young children face online when they are between 5 and 12 years old include covert and overt bullying; access to adult and violent content; meeting online users as offline contacts; improper usage of personal data; and normalization of material that contains copyright infringement or the creation of risky and harmful content themselves. Other sources note that the most quickly growing risk in the online environment include peer harassment and cyberbullying (Barr, 2016).

Importantly, risks in the online environment are not straight forward or evenly distributed among young people and children. Some young people and children, because of the socio-structural determinants, are more susceptible to harm as opposed to others as a consequence of their level of exposure to online risks. That is, those who are more susceptible offline are likely to be more susceptible online (Barr, 2010; Blanchard et al, 2008), and the efforts for protection need to place more focus on specifically supporting these vulnerable young people to participate online safely (O'Neill & Livingstone, 2014).

C. Balancing Coverage, Debate, and the Online Engagement of Young People

There is a great need to work with online media and communications experts to ensure there is a balance between the coverage in the media and the engagement of young people online. Mainstream media experts usually inflate the prevalence or even overstate the potential for significant harm arising from the engagement of young people's online practices and experiences. Social media is usually constructed as a space that poses both risk and danger, and young people are commonly portrayed as vulnerable and at times careless as far as their engagement in the online environment is concerned. The sensationalists' accounts are barely well balanced by stories of how the young people who have gone through these risks have been able to manage them effectively. There is a need for major changes in policy and legislation to focus more on the actual position rather than on media reporting to get to the root cause of harm.

The focus on extreme cases that place mainstream media coverage of young people's social media practices potentially fuels the fear of parents as well as other members of the community. Indeed, the reporting in mainstream media offers a critical backdrop against the public attitudes towards and debates regarding online safety. The reports by parents in the mainstream media is an important source of information regarding online safety. Most organizational anecdotal reports show that mainstream media normally reproduces fear and that his representation is a main challenge for the implementation of effective online safety interventions. As such, there is a need to ensure that there is a balance between the evidence-based mainstream and the actual practices to make sure that the opportunities and risks are well communicated and that the mainstream media does not communicate fear rather than positive message. This rebalancing process can start at the familial and communicative practices where positive influences with the young people can influence their literacies.

Conclusions

It is essential to protect young learners online and ensure that their safety is guaranteed. Even the best and most widely used software should be secured and be made safe for young learners since they are the most vulnerable and targeted online. While this study explored the literature on young

learners' safety online, a lot of work still lies ahead to investigate the existing young learner solutions already in the market and how best they achieve the intended purpose effectively and efficiently. What work ought to be done to present this vice. Many studies have proposed several potential mitigation, solutions and the technologies required to implement these solutions. The framework presented in this paper provides a straightforward way to begin to consider how researchers should start looking at reaching out to the domain experts who, in this case, young learners are spanning from upper primary school students to university students. This will be given designed with the so-called domain experts within the participatory design process to generate cyberbullying solutions from teens' perspectives. Finally, this review study clearly shows that participatory design using young learners who have a vital stake in cyberbullying prevention and mitigation provides the needed solutions to present that vice that is killing our current young generation's moral fabric. Several key insights emerged from the study:

i. Risk does not necessarily lead to harm among young people. However, often, this is the case and young people are exposed to both risks as well as harm. For most of them, any exposure leads to harm while for others exposure leads to the development of competencies, skills, resilience, and a way of managing risks.
ii. Cybersafety education as well as campaigns that aim to increase the awareness of young people do not necessarily lead to changes in behavior and support their safety in the online environments. Young people understand that engaging in online environments comes with various responsibilities. Considering the scenarios and ensuring that all considerations are taken to account assures them of safety.
iii. Policy and practices that respond to online safety of young people ought to consider ways in which they can maximize the benefits. There ought to be ways to effectively manage the change of behavior including the development of educational programs, policies, and products that foster experiential learning where children can be able to develop technical skills as well as literacies that will support their safe engagement with social media. Strategies to promote online engagement must prepare young people for higher risk as they transition through years.

Approaches to the safety of young people in online environments ought to prioritize resilience and wellbeing in a manner that is effective and bolstered by rigorous evaluation and research. Young people and children who are vulnerable offline are to be considered with caution as they are most likely also vulnerable online. Strategies for social media safety are more effective when intergenerational dialogue is promoted to improve the capacity of the parents to enhance the engagement of young people while protecting them from harm.

Recommendations: -

i. Create opportunities for young people to develop competencies and resilience. This can be achieved through workshops, online courses, and peer mentoring programs focusing on critical thinking, problem-solving, and emotional intelligence.
ii. Instead of just increasing awareness, cybersafety education should include practical scenarios and interactive sessions. This helps young people understand the responsibilities and consequences of their actions online.

iii. Implement programs that not only inform but also influence behavior. This can involve gamification, role-playing, and real-life stories to make the lessons more relatable and impactful to issues of cyber security.
iv. Institutions of learning that conduct that conducts online studies should include online safety and digital citizenship as part of their regular curriculum. This ensures that all students receive consistent and thorough education on these topics.
v. Encourage parents to engage in open conversations with their children about their online activities. Provide parents with resources and training to enhance their understanding of online risks and safety measures.
vi. There is a need to have continuous evaluation and the effectiveness of cybersafety programs and policies through rigorous and user centric research.
vii. Authorities should provide ongoing support and resources for young people as they grow. This can include helplines, counseling services, and online support communities on issues of cyber security.

References:-

1. Alhajji, M., Bass, S., & Dai, T. (2019). Cyberbullying, Mental Health, and Violence in Adolescents and Associations with Sex and Race: Data from the 2015 Youth Risk Behavior Survey. *Global Pediatric Health*, *6*. https://doi.org/10.1177/2333794X19868887
2. Andema, S. (2014). *Promoting digital literacy in African education: ICT innovations in a Ugandan primary teachers' college* [University of British Columbia]. https://doi.org/10.14288/1.0167565
3. Appel, G., Grewal, L., Hadi, R., & Stephen, A. T. (2020). The future of social media in marketing. *Journal of the Academy of Marketing Science*, *48*(1), 79–95. https://doi.org/10.1007/s11747-019-00695-1
4. Bauman, S., & Bellmore, A. (2015). New Directions in Cyberbullying Research. *Journal of School Violence*, *14*, 1–10. https://doi.org/10.1080/15388220.2014.968281
5. Beran, T., Mishna, F., McInroy, L., & Shariff, S. (2015a). Children's Experiences of Cyberbullying: A Canadian National Study. *Children & Schools*, *37*, cdv024. https://doi.org/10.1093/cs/cdv024
6. Beran, T., Mishna, F., McInroy, L., & Shariff, S. (2015b). Children's Experiences of Cyberbullying: A Canadian National Study. *Children & Schools*, *37*, cdv024. https://doi.org/10.1093/cs/cdv024
7. Blakemore, L. M., Meek, S. E., & Marks, L. K. (2020). Equipping Learners to Evaluate Online Health Care Resources: Longitudinal Study of Learning Design Strategies in a Health Care Massive Open Online Course. *Journal of Medical Internet Research*, *22*(2), e15177.
8. Burch, S., Gupta, A., Inoue, C. Y. A., Kalfagianni, A., Persson, Å., Gerlak, A. K., Ishii, A., Patterson, J., Pickering, J., Scobie, M., Van der Heijden, J., Vervoort, J., Adler, C., Bloomfield, M., Djalante, R., Dryzek, J., Galaz, V., Gordon, C., Harmon, R., … Zondervan, R. (2019). New directions in earth system governance research. *Earth System Governance*, *1*, 100006. https://doi.org/10.1016/j.esg.2019.100006
9. Crook, C. (2012). The 'digital native's context: Tensions associated with importing Web 2.0 practices into the school setting. *Oxford Review of Education*, *38*(1), 63–80.

10. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791
11. Davies, C. (2011). Digitally strategic: How young people respond to parental views about using technology for learning in the home. *Journal of Computer Assisted Learning*, *27*(4), 324–335.
12. Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*. https://doi.org/10.1177/0047239520934018
13. Dinning, B. L. G. L.-B. (n.d.). *Nova Scotia Introduces New Cyberbullying Legislation | Lexology*. Retrieved March 3, 2021, from https://www.lexology.com/library/detail.aspx?g=9a5ae498-e27d-4100-88ca-a4002b1eb54b
14. Dourish, P., & Bell, G. (2011). *Divining a digital future: Mess and mythology in ubiquitous computing*. MIT Press.
15. Drane, C. F., Vernon, L., & O'Shea, S. (2020). Vulnerable learners in the age of COVID-19: A scoping review. *The Australian Educational Researcher*. https://doi.org/10.1007/s13384-020-00409-5
16. Druin, A. (2002). The role of children in the design of new technology. *Behavior and Information Technology*, *21*(1), 1–25.
17. English, L. D., & King, D. T. (2015). STEM learning through engineering design: Fourth-grade students' investigations in aerospace. *International Journal of STEM Education*, *2*(1), 14.
18. Espelage, D. L., & Hong, J. S. (2017a). Cyberbullying Prevention and Intervention Efforts: Current Knowledge and Future Directions. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, *62*(6), 374–380. https://doi.org/10.1177/0706743716684793
19. Espelage, D. L., & Hong, J. S. (2017b). Cyberbullying Prevention and Intervention Efforts: Current Knowledge and Future Directions. *The Canadian Journal of Psychiatry*, *62*(6), 374–380. https://doi.org/10.1177/0706743716684793
20. Espelage, D. L., & Hong, J. S. (2017c). Cyberbullying Prevention and Intervention Efforts: Current Knowledge and Future Directions. *The Canadian Journal of Psychiatry*, *62*(6), 374–380. https://doi.org/10.1177/0706743716684793
21. Gaffney, H., Farrington, D. P., Espelage, D. L., & Ttofi, M. M. (2019). Are cyberbullying intervention and prevention programs effective? A systematic and meta-analytical review. *Aggression and Violent Behavior*, *45*, 134–153.
22. Greenhow, C., & Lewin, C. (2016). Social media and education: Reconceptualizing the boundaries of formal and informal learning. *Learning, Media and Technology*, *41*(1), 6–30.
23. Hamm, M., Newton, A., Chisholm, A., Shulhan, J., Milne, A., Sundar, P., Ennis, H., Scott, S., & Hartling, L. (2015). Prevalence and Effect of Cyberbullying on Children and Young People: A Scoping Review of Social Media Studies. *JAMA Pediatrics*, *169*. https://doi.org/10.1001/jamapediatrics.2015.0944
24. Harrison, N. (2018). Using the lens of 'possible selves' to explore access to higher education: A new conceptual model for practice, policy, and research. *Social Sciences*, *7*(10), 209.
25. Heiman, T., & olenik shemesh, D. (2013). Cyberbullying Experience and Gender Differences Among Adolescents in Different Educational Settings. *Journal of Learning Disabilities*, *48*. https://doi.org/10.1177/0022219413492855
26. Hills, C. A. (2017). *Developing a law and policy framework to regulate cyber bullying in South African schools*. 279.

27. Hinduja, S., & Patchin, J. W. (2014). *Bullying beyond the schoolyard: Preventing and responding to cyberbullying*. Corwin Press.
28. Hrastinski, S., & Aghaee, N. M. (2012). How are campus students using social media to support their studies? An explorative interview study. *Education and Information Technologies*, *17*(4), 451–464.
29. ITU. (2017). *Question 3/2: Securing information and communication networks: Best practices for developing a culture of cybersecurity*. 174.
30. Kırcaburun, K., Kokkinos, C. M., Demetrovics, Z., Király, O., Griffiths, M. D., & Çolak, T. S. (2019). Problematic online behaviors among adolescents and emerging adults: Associations between cyberbullying perpetration, problematic social media use, and psychosocial factors. *International Journal of Mental Health and Addiction*, *17*(4), 891–908.
31. Kowalski, R. M., & Limber, S. P. (2013). Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *Journal of Adolescent Health*, *53*(1), S13–S20.
32. Lee, Y. J., & Lee, D. (2015). Factors influencing learning satisfaction of migrant workers in Korea with e-learning-based occupational safety and health education. *Safety and Health at Work*, *6*(3), 211–217.
33. Levine, D. T., Morton, J., & O'Reilly, M. (2020). Child safety, protection, and safeguarding in the time of COVID-19 in Great Britain: Proposing a conceptual framework. *Child Abuse & Neglect*, *110*, 104668. https://doi.org/10.1016/j.chiabu.2020.104668
34. Marciniec, B., & Marczuk, D. K. (2015). Bezpieczeństwo dzieci i m\lodzieży w przestrzeni wirtualnej. *Rozprawy Spo\leczne*, *9*(2), 34–38.
35. Martínez, I., Murgui, S., García, O. F., & García, F. (2019). Parenting in the digital era: Protective and risk parenting styles for traditional bullying and cyberbullying victimization. *C omputers in Human Behavior*, *90*, 84–92.
36. Marzano, G., & Lubkina, V. (2014). Preventing cyberbullying. *PI-PWP Threats of Cyberspace - New Qualification of a Social Worker*.
37. Mishna, F., Saini, M., & Solomon, S. (2009). Ongoing and online: Children and youth's perceptions of cyberbullying. *Children and Youth Services Review*, *31*(12), 1222–1228.
38. Nixon, C. L. (2014a). Current perspectives: The impact of cyberbullying on adolescent health. *Adolescent Health, Medicine and Therapeutics*, *5*, 143–158. https://doi.org/10.2147/AHMT.S36456
39. Nixon, C. L. (2014b). Current perspectives: The impact of cyberbullying on adolescent health. *Adolescent Health, Medicine and Therapeutics*, *5*, 143–158. https://doi.org/10.2147/AHMT.S36456
40. Rehtaeh Parsons case: No jail over photo of "assault." (2014, November 14). *BBC News*. https://www.bbc.com/news/world-us-canada-30058254
41. Rivara, F., Menestrel, S. L., Prevention, C. on the B. and P. E. of P. V. L. for B., Board on Children, Y., Justice, C. on L. and, Education, D. of B. and S. S. and, Division, H. and M., & National Academies of Sciences, E. (2016). Consequences of Bullying Behavior. In *Preventing Bullying Through Science, Policy, and Practice*. National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK390414/
42. Selwyn, N. (2010). *Schools and schooling in the digital age: A critical analysis*. Routledge.
43. Smit, D. (2015). Cyberbullying in South African and American schools: A legal comparative study. *South African Journal of Education*, *35*(2), 1–11. https://doi.org/10.15700/saje.v35n2a1076

44. Smyrnova-Trybulska, E., & and Iwona Mokwa-Tarnowska, N. M. (2019). *Virtual Educational Space for Young Learners: Advantages and Challenges. Comparative Research*.
45. UNICEF. (2020). *Challenges of parental responsibility in the digital age: A global perspective—Evidence for Action*. https://blogs.unicef.org/evidence-for-action/challenges-of-parental-responsibility-in-the-digital-age-a-global-perspective/
46. University of New Hampshir. (2021). *Enough Is Enough: Cyberbullying*. Enough. https://enough.org/stats_cyberbullying
47. Vaillancourt, T., Faris, R., & Mishna, F. (2017). Cyberbullying in Children and Youth: Implications for Health and Clinical Practice. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, *62*(6), 368–373. https://doi.org/10.1177/0706743716684791
48. van der Zwaan, J., Dignum, V., Jonker, C., & Van der Hof, S. (2014). *On Technology Against Cyberbullying Contents* (pp. 211–228). https://doi.org/10.1007/978-94-6265-005-3_12
49. Vromen, A., Xenos, M., & Loader, B. (2014). Young people, social media and connective action: From organisational maintenance to everyday political talk. *Journal of Youth Studies*, *18*, 80–100. https://doi.org/10.1080/13676261.2014.933198
50. Wang, S.-K., Hsu, H.-Y., Campbell, T., Coster, D. C., & Longhurst, M. (2014). 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. *Educational Technology Research and Development*, *62*(6), 637–662.
51. Zych, I., Baldry, A. C., Farrington, D. P., & Llorent, V. J. (2019). Are children involved in cyberbullying low on empathy? A systematic review and meta-analysis of research on heart versus various cyberbullying roles. *Aggression and Violent Behavior*, *45*, 83–97.
52. Zych, I., Farrington, D. P., & Ttofi, M. M. (2019). Protective factors against bullying and cyberbullying: A systematic review of meta-analyses. *Aggression and Violent Behavior*, *45*, 4–19.