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## Need of cyber security education in modern times

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### Abstract

Though with the emergence of Internet that certainly has positively impacted people's lives, as so many of us use social media on internet as a platform for self-expression, to incite discussions, or to become known, but there are negative issues too that have arisen related to its use. Cases like cyber-bully, online fraud, racial abuse, pornography and gambling have increased tremendously due to the lack of awareness among Internet users that many end up being victims to these acts. Sometimes people want to be the primary source of information, of sharing a topic, that they overlook the fact stating authentication to the shared information. Today usage of the internet is not just limited to adults, but in this era of technology and multimedia, knowledge of cybersecurity is also important for children. Still, the level of awareness among Internet users is quite low or moderate. Therefore, if proper measures are taken to cultivate knowledge and awareness among Internet users from their early age, i.e., young children, this issue of cyber safety can be understood in a better way. Since now with covid 19 online education has become the new trend, young children specially need to be educated to operate in a safe manner in cyberspace and to protect themselves in the process. The aim of this paper is to sightsee why cyber safety education is so critical for modern learners and how they can understand the risks associated with being active in cyberspace, to have knowledge and understanding about the strategies that stakeholders can use to promote cyber security education in schools. In this paper, few strategies are discussed as how cyber security education can be implemented in schools.

**Keywords:** Cybersecurity, cyber safety, cyber education, cyber awareness.

### Introduction

Due to Covid-19 pandemic, governments have imposed total lockdown leading to temporarily closures of schools, universities and colleges in an effort to stop the spread of Covid-19. This has affected not only students, teachers, and families but also the educational systems worldwide. With all these, public education has come up with multiple challenges, as now the online education and schooling is becoming the new normal.

Now, despite the advancement in online digital classrooms, it has not been practically possible for everyone to take or attend online classes.

- Students/Teachers living in remote areas do not have proper access to internet networks.
- All Students/teachers are not well-trained in handling digital functioning of applications and classrooms.
- Online classroom does not create the study environment for students. It is very solitary, didactic and dull thing to ask students to sit and quietly watch videos, read documents online, or click through presentations.
- It's difficult to determine whether the student is attending class or just pretending to because in online classes audio and video of students is turned off to eliminate noises, while the teacher only speaks.
- Improper feedback, no personal teacher-student bond can be established.
- Unavailability of access to black/whiteboards thus inefficient learning.
- Irregularly scheduled classes with only handful of students attending it.
- It also affects their eyesight, physical and mental health of students with continuous exposure to screens of laptops or cell phones.

Further for students it may be one or two assignments from different subject teachers but for teachers, it is the burden of correcting thousands of assignments from different level of students in soft copy, which is a big difficulty for teachers who are unaware with the smooth handling of technology.

However, since the *main aim of education system is to overcome the learning crisis*, this pandemic situation was seen as an opportunity for transformation and advancement of our

existing education structure. Past education crises have shown that it is possible to build back better.

The challenge today focused on minimizing the negative impact of Covid-19 on education and schooling and used this experience to construct a better path of faster improvement in learning.

Thus, to continue with the smoothness of imparting education by educational institutions, it was a *necessity to switch to online mode of education in times of pandemic* where physical distancing was of utmost important. This is being done through video conferencing on zoom or google calls, maintaining google classroom with students' attendance, assignments and other records, holding discussions, teaching through usage of technology via presentations, videos and jam boards etc.

This today has become the new updated norm in the field of learning and Teaching, where Education is even commercialised in online mode of Education as well, while its aim remains the same of Spreading and imparting knowledge and learning.

*Nevertheless*, with the promotion of distant learning programmes the protection and safety of children is a great *challenge* to safeguard students from online predators, such as paedophiles. With online learning in home environment we have to be mindful about the design of online learning programme so that no bad individuals get to children outside of their home. Moreover, to safeguard predators from being preyed upon by leaking of necessary information that we tend to give to almost every site or app in order to access its resources.

Although Internet has vast potential and benefits for everybody, the excessive use of the Internet maybe harmful as it may lead to cyber risks like cyber addiction, gaming or exposure of personal information. Cybercrime against children and adolescents is certainly a concern for parents, as they sometimes do not realise their child is a victim of cybercrime. Thus, to increase the level of awareness among Internet users it is necessary to cultivate knowledge and consciousness among users from their early age. Educating young ones to operate internet in a safe manner to protect themselves, this is where cyber security Education comes to rescue.

### **What is cybersecurity?**

Cybersecurity also known as Information technology Security (IT security) is the protection from disclosure of information, theft of or damage to the computer systems and internet networks. It is the safeguarding of hardware, software and electronic data from the disruption or misdirection of the services they provide.

Since the reliance on computers, internet and wireless network standards such as Bluetooth and Wi-Fi is increasing cybersecurity becomes even more significant. With the growth of "Smart devices" such as smartphones, smart televisions and various other devices that constitute the use of internet networks, cybersecurity becomes one of the major challenges owing to its complexity, both in terms of politics and technology, in the up-to-date world.

### **Why is cyber security important in promoting online education?**

Since Cyber security protects the data and integrity of computing assets belonging to or connecting to an organization's network, its purpose is to defend those assets

against all threat actors throughout the entire life cycle of a cyberattack such as students' and teachers' databases, organisations' workings, funding's and other necessary information. Cases like cyber-bully; online fraud, racial abuse, pornography and gambling had increased tremendously due to the lack of awareness and self-mechanism among Internet users to protect themselves from being victims to these acts. Still past research has revealed that the level of awareness among Internet users is low or moderate. Thus, one of the vital measures to be taken is to cultivate knowledge and awareness among Internet users from their early age, i.e. young children. Young children specifically, need to be educated to operate in a safe manner in cyberspace and to protect themselves in the process, since predators use fake identities on the internet while seeking victims.

Children today, despite their young age, are efficient and skilled in using their parents' smartphones. They are not only tech savvy, but proficient in using technology. In fact, there are also parents who give gadgets to their children as rewards for excellence in exams, birthday presents, and so on. This makes young children vulnerable to abuse through technology, while they are independently exploring the internet without boundaries or monitoring. When enjoying the benefits of the internet, it is important for everyone, whether parents or children, to be aware of potential risks such as cyberbullying, as well as to take safety precautions, as children now have internet access at an earlier age. Educators need to disseminate cybersecurity messages in order to promote responsible online behaviour. The content children watch as they grow older differs with their age as older children watch more music videos, vloggers, YouTube personalities, and funny videos. The role of schools is important in teaching critical digital literacy to students, as well as in guiding and informing parents regarding children's internet use at home.

The objective of cybersecurity education is to educate the users of technology on the potential risks they face when using internet communication tools, such as social media, chat, online gaming, email and instant messaging and focus on the steps that need to be done particularly by schools in order to help cultivate cyber security awareness in detail.

### **Strategic implication of promoting cyber security education in schools**

Since Internet emergence allowed humans to enjoy two realms: real life and the virtual world, where search engines such as Google and Yahoo, video sharing sites such as YouTube, all information is available and accessible easily. Nevertheless, the developing world of cyberspace also seems to have negative effects on internet users, such as through cybercrime. Therefore early controlling of such issues becomes really necessary so that they do not have a major impact. In this context, cybersecurity implementation among internet users is very important. Cybersecurity education is necessary because cybercrime cases can occur anywhere regardless of individuals, organisations and places.

It's necessary to engage students in such learning and understanding process that develops their aptitude to reflect on online mode of operative applications and critically gauge their own workings in online mode of education. Cybersecurity Education system should be such that development of critical thinking, interactive and other

logical skills enhance understanding within the field of teaching. safety and security when it comes to online learning and

**Table 1:** Summary of studies Reviewed

Methodology	Location	Research focus	Area	Application of cyber security education
Qualitative (5)	USA (8)	Students (16)	Cyber security (12)	Mobile apps (1)
Quantitative (9)	UK (2)			Safety (1)
Quasi-experiment (4)	Malaysia (6)	Educators (3)	Conception/perception (2)	Curriculum (1)
Concept paper (5)	South Africa (2)	Parents (3)	Behavior (1)	Legislation (2)
Action research (1)	Afghanistan (1)	Employees (3)	Cybercrime (2)	Infrastructure (2)
			Cyber ethics (2)	Programme, Seminar workshop (4)
			Awareness (4)	
Case study (1)	Middle East (2)		Reasoning (1)	

- Video cartoons are identified as resources for teachers to use when discussing cybersecurity principles with primary school learners, for example, using the Unpin and I pin stories to raise awareness of cybersecurity.
- The primary school subjects of Information and Communication Technology need to be improvised to include cybersecurity topics. In addition, the safety aspects of cybersecurity can be taught through other subjects as well. For example, under the subject of language writing composition students can be given essays on the subject of cybersecurity.
- In addition, cybersecurity can be a topic of discussion in the classroom or for speech competitions, and cybersecurity awareness weeks can be held.
- Teacher education programmes must also prepare their pre-service teachers to model and teach cybersecurity topics and safe computing practices so that future generations will know how to behave ethically, as well as to keep themselves safe and secure online.

Despite their young demographic and access to technology, the pre-service teachers were surveyed who do not possess adequate cybersecurity knowledge, or the ability to teach their future students to keep themselves and their data safe from harm. This is in conflict with the concept of digital natives, as natives would know what clues in the environment indicate that they are safe and protected.

- Providing knowledge to upgrade teachers’ and students’ understanding of cyber issues is one step that could be taken by relevant parties to protect such groups from evolving cybersecurity threats.
- Imparting education is vital to protect internet users from potential cybercrimes and budding cyber threats.
- Online education security awareness programmes could be one of the strategies that can promote cybersecurity education in school. For example, a cybersecurity education programme called Gen Cyber is a summer camp for American grade school students and teachers that are supported by NSA/NSF. These kinds of awareness programmes should be implemented in every school because such initiatives promote cybersecurity awareness and preparedness among the school community.
- School administrations can also establish cybersecurity organisation like student clubs or councils in school for good exposure to the whole school community.

Teacher’s guidance can get students to learn more about cybersecurity. Like, students learning how to navigate the learning management system. In addition, self-understanding of students about cybersecurity through Active Learning is the most effective way of promoting understanding.

**Conclusion and Reflection**

Cybersecurity awareness education is important to protect internet users including students and teachers from potential cybercrimes as well as evolving cyber threats. Education or training is essential in protecting cyber users from cybersecurity threats as with it evolving cybersecurity threats can be addressed and all protection factors that play an essential role in curbing them can be enforced. Awareness of the prospective risks one may face when using internet communication mediums or applications, such as the social media, chatting or online gaming is extremely necessary.

Conversely, there are multiple challenges to cybersecurity education, including the level of teachers’ knowledge, and the lack of expertise, funding and resources. It is very important for all relevant parties, including teachers, parents, peers and the government, to work together to find the best solution to protecting children from cybercrime and cyberbullying through school-based cybersecurity education.

The *media, such as television and radio*, must also play a significant role in educating children through *cybersecurity campaigns* for these are more *interactive and interesting* for children to understand.

Above all, cybersecurity education is beneficial for changing the mind-set of individuals. Every person who lacks cybersecurity awareness is a result of not being informed of the importance and effects of cybersecurity itself. Thus, is scared of internet and barred from attaining its benefits to the maximum. Therefore, with the inclusion of Cybersecurity in Online education by Educational institutes and with its awareness online platform for imparting distant education can grow tremendously with safety and security.

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