ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

ASSESSING CYBER-SECURITY AWARENESS AMONGST K12 STUDENTS & PARENTS

Isha Ukey
Grade X
Utpal Shanghvi Global School
ishauk@outlook.com

Abstract

The COVID pandemic has completely changed on how students use the internet – moving from using "Google" search for research work, to using the internet as the primary medium for online learning and productivity (negligible use of pen and paper). From earlier "fear of internet" parents are more open now & believe that their child's online activities are contributing to their hobbies & special interests, while not affecting their academic performance.

On the cybersecurity side,while device security, access to location & personal data is a concern across both the audiences (parents and students)- students are the least concerned when it comes to privacy online considering they access social mediadaily (Facebook, Instagram, Pinterest).Antivirus & device updates are primary tools used to protect devices from cybercrime. Surprisingly, password protection of digital assets has the least awareness which is a weak spot considering the high usage of internet connected devices.

Keywords:cyber-security, education, K12, COVID-19, Online Learning, Cyber- bullying, internet, social media

INTRODUCTION

Protecting the integrity & confidentiality of data in a connected world of internet is the most challenging job. With COVID-19 students of all age groups in K12 are connected to the internet for 2-8 hours every day- starting with synchronous learning for submitting assignments to online tests. This also opens access for children to the "**broader spectrum**" of the world wide web – including deep & dark web. Most of these activities start with simple things like gaming, project research, social, messaging, shopping, and videos (short & long). Data suggests that to get a good perspective of the problem its best to divide the problem statement in to two areas: **Online Frauds & Child Abuse –** *the fact being that "**Online Frauds**" is a much more understood topic due to financial/data implications related to these activities and focus from regulatory and nodal agencies.*

1. **Online frauds:** With weak security systems (passwords, firewalls, VPNs, Antivirus software) most educational institutions and student hardware is exposed to malware or

ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

cyber-attacks. Visiting malware infected websites, replying to phishing/fraud emails, storing data on insecure cloud locations, sharing confidential information over the phone/messaging, or exposing personal information in social networks are some of the common mistakes which most students make. Most attacks simply start with social networks but could involve financial/bank details and at times school IP, patents and research works.

2. **Child Abuse:** Curiosity and revenge may be primary reasons for students to get involved in cyber-crimes (e.g., cyber bullying). Lot of times students are not aware of the implications of cybercrime. Girls are the most found victims of the cyber-crime.

The broader solution lies in **increasing digital literacy and online safety measures** that expose our children to high risks of online crime and abuse such as cyberbullying, harmful material, grooming and sexual exploitation.

This research aims at looking at the non-financial aspects of cybercrime considering two audiences: **Parents &Students**. The objective is to ensure that there are **no student biases in the study and to bring out a holistic perspective (parent view) to the challenges related to cyber security for K12 students.**

ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

Manifestations of child online threats, abuse, and exploitation in India

Theory

India has **roughly 275M students enrolled in Grade 12 with around 170M having access to the internet** (62%). Nearly **25M children in the age group 13-17 years are on Facebook** (19.5M: Male & 5.5M: Female). That's nearly **10% of our K12 students and if you take internet access as a criterion its nearly 15% of students**. Instagram shows similar trends with 6.7M children in the above age group (5.3M: Male & 1.4M: Female).

Protecting school children while being online is a global concern. With COVID-19 the concerns are now multiplied as most of the grade 12 learning models have moved online (both

synchronous/ asynchronous modes). Kids of all age groups are now turning to devices for learning, playing games and interacting with teachers, friends & classmates. The increase in screen time adds a new layer of worry for parents & educators. Industry data suggests that the **average time spend online for education has increased from 60 mins/day to 95 mins/day in 2020**.

The "**BIG QUESTION**" is *how safe the students are online and if they able to make the right decisions, when it comes to being safe online?*There is also the question of "**Digital Competence**", which is the set of skills, knowledge and attitudes needed when using ICT and digital devices to perform responsibilities, such as problem solving, information management, collaboration with respect to effectiveness, efficiency and ethics. Internet is a great place of learning but, with limited digital competence peopleare at risk of getting exposed to new challenges like online fraud (while doing financial/non-financial transactions), cyber bullying (especially for teens), racism (gender, skin, ethnicity. physical disabilities), pornography, violence & cyber terrorism.

Offline forms of crime find new avenues online & at times get magnified due to the reach of internet. Being able to stay anonymous online and impersonate others, emboldens people to perform offensive & criminal acts, as it lowers the efficacy/ seriousness laws existing in the offline world. While India has initiatives around "**Digital India**" & "**Skill India**", these models exclude the impact, technology has on school children.

The challenge in India is primarily related to **unavailability of data (primary/secondary) on the extent, patterns & trends of child online abuse and exploitation in India- since no single agency has carried out a comprehensive survey on these issues.** National Crime Report Bureau (NCRB) data focused more on 'commercial frauds' or 'online radicalization' -with less data on online child abuse.

This study focuses on "**Impact of Technology, specially from a cyber-security perspective**" and ensuring that these conversations happen early. This requires taking a holistic view of all stakeholders: **Students & Parents**. The overall study is about **BEING HONEST, ACKNOWLEDGING PROBLEM AREAS, BUILDING TRUST**& the importance of **BEING CAREFUL ONLINE**. Through primary & secondary research it has been tried to bring together the role of students, parents, educators and other regulatory/policy institutions to make this transition safe for children.

Experimental

This survey was designed keeping 2 audiences in mind: **Students & Parents**. The aim is to use Google Forms/Microsoft Forms online so that a broader audience can be reached.

Sample Selection: Students

- Audience: (currently attending/had attended regular classes online)
- Students: K9-K12 (CBSE, ICSE, International Boards (IB, IGCSE, Other State Boards)
- Parents: K9-K12 (CBSE, ICSE, International Boards (IB, IGCSE, Other State Boards)
- Sections: Online Frauds (non-financial) & Child Abuse
- Medium of instruction: English (also for accessing internet)
- Geography: Pan-India

Questionnaire Design:

ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

1. The survey questions are a combination of **multiple-choice questions (MCQ), open ended questions, and some matrix & demographic questions.**
2. **Multiple choice questions (MCQ):** the answer options are fixed;it's expected respondents have an easier survey-taking experience.To get structured survey responses that produce clean data for analysis. Wherever there's a challenge with a need for "exceptions" an "**Others**" option was added to the MCQ to enable accuracy of data.
3. **Rating Scale:** gives an option to the respondent to select the answer that most accurately represents their response, while providing context to numerical rating scales (if desired)
4. **Matrix Questions:** While it is easier to combine questions with similar responses,Matrix questions have been avoided as there are challenges with displaying them on mobile devices.Specific pillars in "Child Abuse" & "Online Frauds" have been combinedas questions in a matrix.
5. **Demographic Questions:**While the sample design does not need to cover a lot of demographics- gender based demographics might be relevant to the study to identity biases by gender.

RESULT

1. **Internet Time:**32% of the students spend >6 hours/day&21% spent 4-6 hours/day on the internet. ***This is an impact of COVID19, as all school/off school learning is happening online, which has increased the "screen time" of students.***
2. **Device Usage:** 43% of the students spend >4 hours/day on desktop/laptop devices, clearly linked to the ***synchronous/asynchronous learning models being adopted by schools and other institutions.***
3. **Online Privacy:** Students are the ***least concerned when it comes to privacy online*** with only 10% of the respondents saying that it matters to them. One of the reasons could be that >60% of respondents have social media accounts (Facebook, Twitter, Instagram, Pinterest).
4. **Parents –The "Trust Factor":**Parents for this age group are very ***trusting with digital devices and their children.***75% of parents believe that their child's online activities are contributing to his/her hobbies &special interests, while 55-60% of respondents think that media their academic performance is not getting impacted by using digital medium.
5. **Apps Consumption**: The ***pandemic has also increased usage of online meeting*** (Google Meet, Zoom, Microsoft Teams) time with 42% of the respondents spending 4-6 hours every day in online meetings.
6. **Social Media Risks:**20% of the respondents are not aware of the risks of sharing photos on social media- ***might be an indication of the regular consumption of medium like WhatsApp & Instagram.***
7. **Device Safety & security:**Operating system updates & Antivirus are some of the common tools used from a safety and security perspective while using the internet with >80% of respondents agreeing to the same. ***Surprisingly, password protection of digital assets has the least awareness with <35% of respondents replying in the affirmative.***

ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

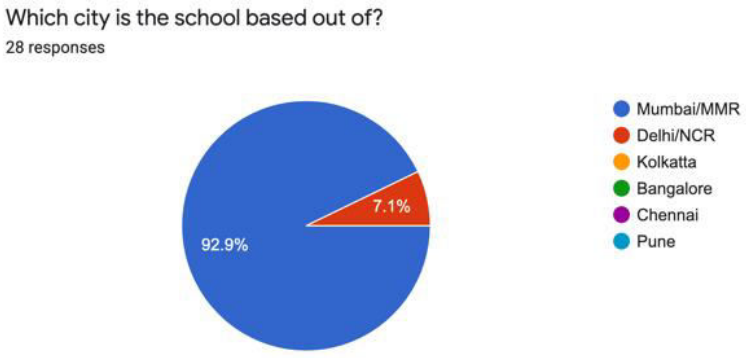
MISA
MEMBERS OF INTERNATIONAL SCHOOLS' ASSOCIATION

DISCUSSION

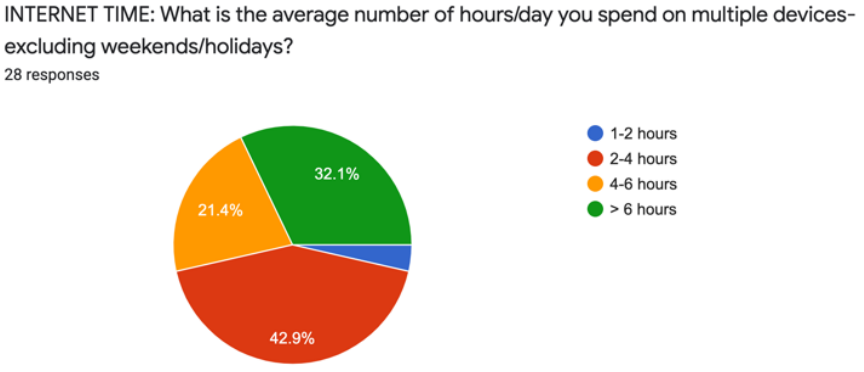
As the questionnaire was administered over the internet (without any interventions) it was critical the respondents, got the feel, that they could say "**No**" to answering certain questions or give responses that were outside the choices being presented.

Additional considerations taken:

1) **Consent Form:** to weed out privacy concerns of respondents, a mandatory consent form was added. This ensured that if any of the respondents has some concerns, they could exit the survey without impacting the survey results.
2) **Grade selection (9-12):** For both the audiences (parents and students), the grade selection provides for a screening- assuming which they are not in the 9-12 grade, they will automatically exit the survey, without impacting the results.



Demographics: While, there werepan-India insights with respondents from Mumbai, Delhi/NC, Kolkata, Bangalore, Chennai, Pune & Ambala, the data still has an urban bias. Also, across audiences >50% of students are studying international curriculum (IB, IGCSE, etc.), while about 18-36% in national curriculum (CBSE, ICSE, etc.) & the balance in state boards (SSC, etc.)



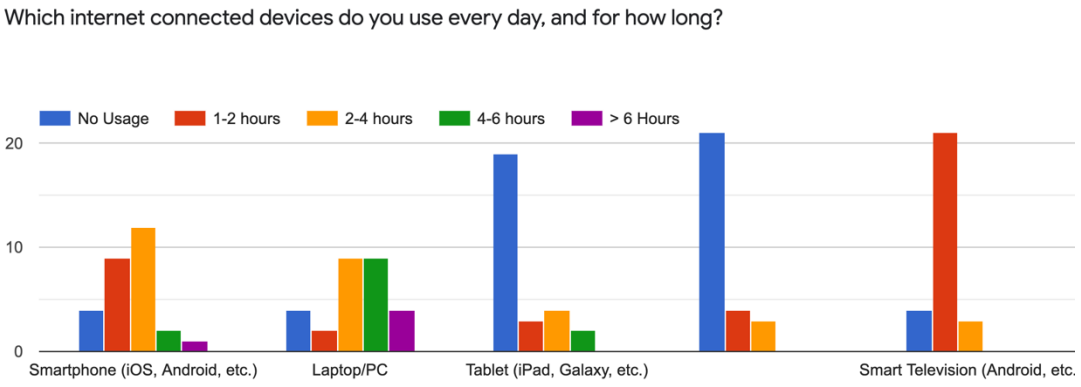
ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

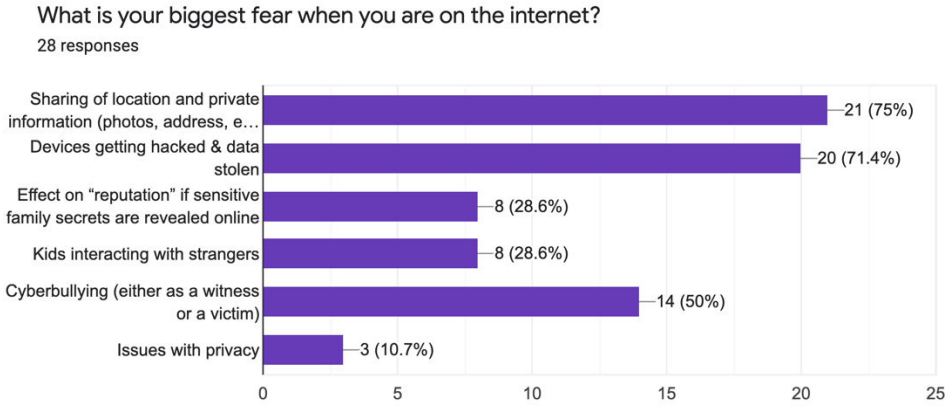
An International Multidisciplinary Research e-Journal

MISA Global Partnership
MEMBERS OF INTERNATIONAL SCHOOLS' ASSOCIATION

Internet Time:>50% of the audience spend >4 hours per/day on the internet, while3% of the audience said that they spend <1hour/day on the internet.



Analysis: While our audience consumes content across Normal/Smart TV & smartphones, overall usage is<2 hours for TV &<4 hours for smartphones. Due to the pandemic most of the education has moved online and 43% of the students spend >4 hours on desktop/laptop devices.



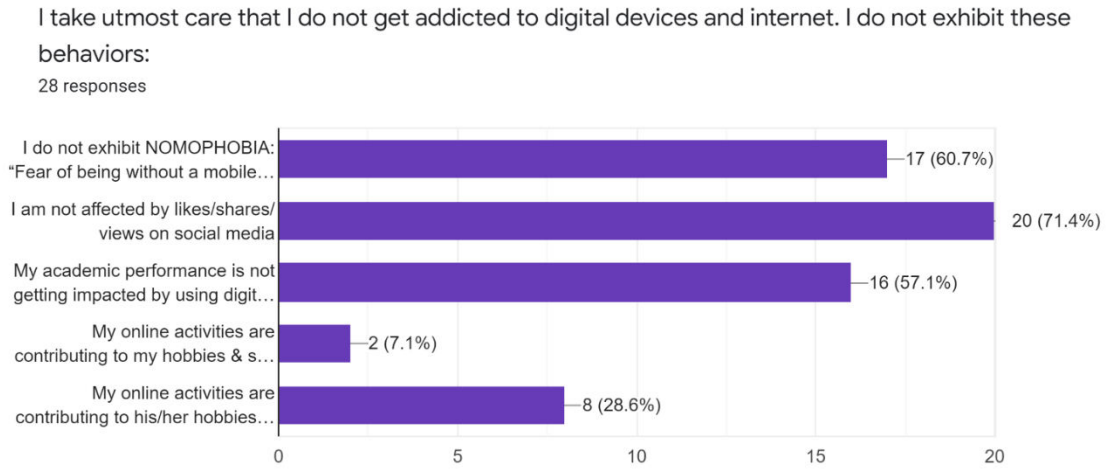
Analysis: While device security & access to location/personal data (>70% of respondents) is a concern across both the audiences while connecting to the web- students are the least concerned when it comes to privacy online with only 10% of the respondents saying that it matters to them. One of the reasons could be that >60% of respondents have social media accounts (Facebook, Twitter, Instagram, Pinterest). Cyber-bulling also ranks high amongst both the audienceswith 60-70% agreeing that it is anarea of concern.
Interestingly, parents are also concerned about issues like pornography, phishing, cyber-stalking, or children surfing unnecessary websites.

ISSN 2350-109X
www.indianscholar.co.in

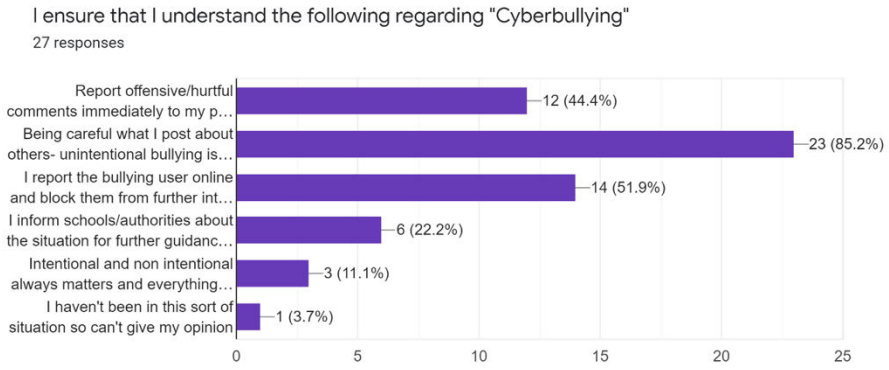
Indian Scholar

An International Multidisciplinary Research e-Journal

MISA
MEMBERS OF INTERNATIONAL SCHOOLS' ASSOCIATION



Analysis: Parents for this age group are trusting with digital devices and their children. Most students and parents believe that they can live in a world without a mobile device (60-70%), but there are strong gaps on how parents and students perceive the impact of social media on their lives- >50% of parents believe that social media feedback and comments have an impact on the child, while >70% students believe that there is no impact of social media. 75% of parents believe that their child's online activities are contributing to his/her hobbies &special interests, while 55-60% of respondents think that media their academic performance is not getting impacted by using digital medium.



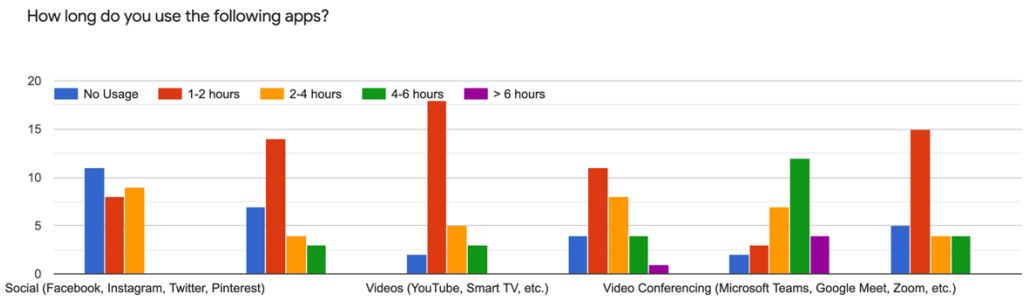
Analysis: Most parents and nearly 85% of the students understand that it is important to be careful what theypost about others. More than 50% of audience believe that they report offensive/hurtful social media comments immediately to parents or teachers while also blocking offenders from further interaction.

ISSN 2350-109X
www.indianscholar.co.in

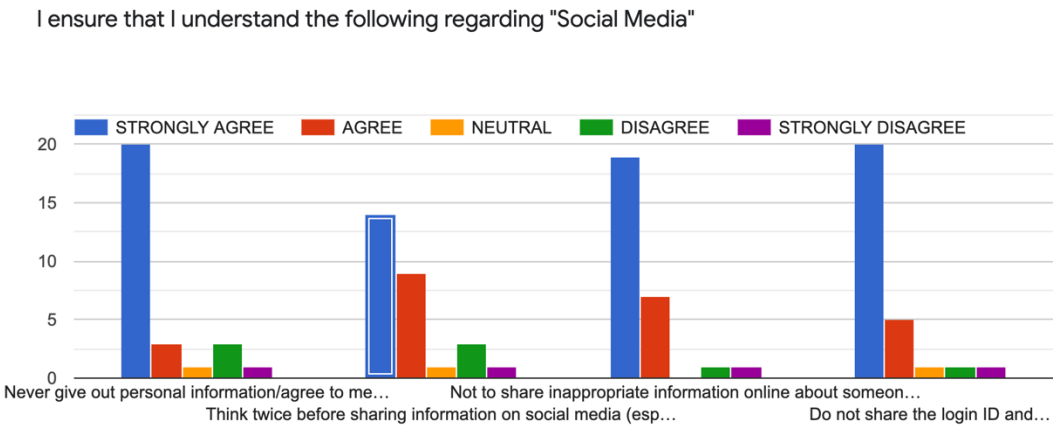
Indian Scholar

An International Multidisciplinary Research e-Journal

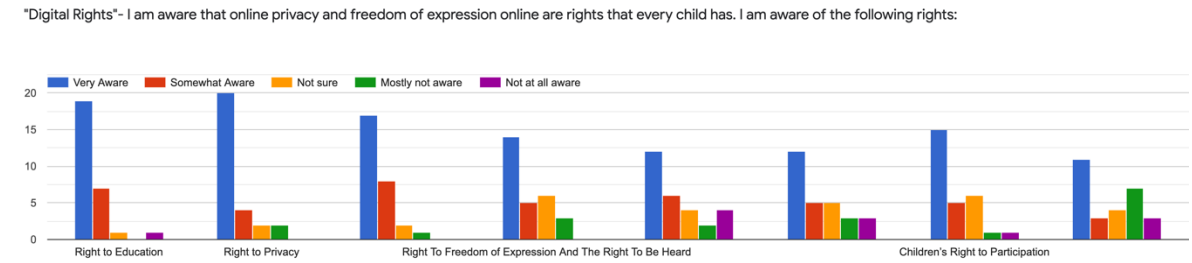
MISA
MEMBERS OF INTERNATIONAL SCHOOLS' ASSOCIATION



Analysis: Video consumption (WhatsApp, Tik-Tok, YouTube, TV) is the highest across students and used daily for 1-2 hours by 50-60% of the audience. WhatsApp sees the highest consumption for messaging with >50% or respondents using it for at least 1-2 hours a day. The pandemic has also increased online meeting (Google Meet, Zoom, Microsoft Teams) time with 42% of the respondents spending 4-6 hours every day in online meetings. 40% respondents do not use social media (Instagram, Facebook, Pinterest) on a daily basis.



Analysis:>70% of respondents are aware of the risks of social media and avoid sharing personal information, inappropriate information online about someone they know or don't know and sharing credentials with someone. 20% of the respondents are not aware of the risks of sharing photos on social media.



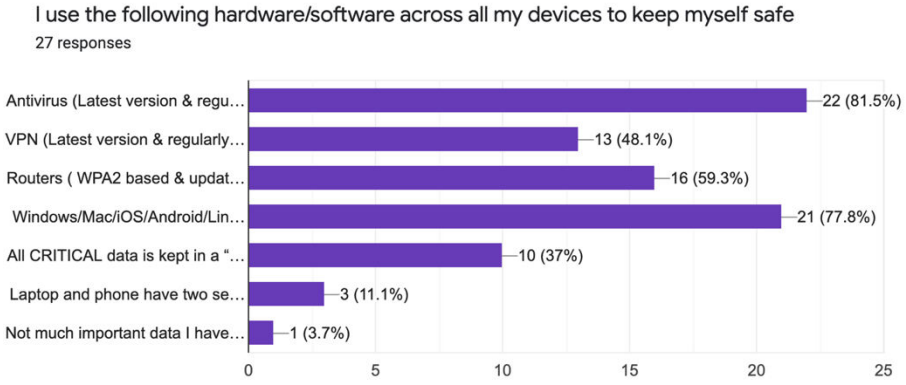
ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

MISA Global Partnership
MEMBERS OF INTERNATIONAL SCHOOLS' ASSOCIATION

Analysis: While >80% respondents understand Right to Privacy & right to be safeguarded from abuse, violence & exploitation - <40% of respondents are aware of IP rights and right to be forgotten on the internet.



Analysis: Operating system updates & Antivirus are some of the common tools used from a safety and security perspective while using the internet with >80% of respondents agreeing to the same. Only 50% of the respondents have a good understanding of VPN's and router security features. Password protection of digital assets has the least awareness with <35% of respondents replying in the affirmative.

CONCLUSION

Clearly more than 1 year of the pandemic has impacted the way student learning is happening. Kids of all age groups are now turning to devices for learning, playing games and interacting with teachers, friends & classmates.

Results clearly show that regular that >60% of students use social media apps daily and protecting school children while being online is a global concern.This study clearly answers the question in terms of "**Digital Competence**" of our urban students. While the data can be deducedfrom K4-8 easily, considering that they are also using synchronous and asynchronous methods of learning today, there can be a few **limitations of this study:**

1. The "**Urban**" nature of the respondents- which might not generate similar responses when planned in rural areas.
2. While more and more students in K9-12 have access to personal devices in urban areas, for K4-8 students the devices and are generally shared with the parents- so the ***usage pattern is clearly dictated by a shared device.***

To conclude, this study while not done at a national level, can serve as a baseline for conducting a broader research on the extent, patterns & trends of child online abuse and exploitation in India, as it brings in a perspective of both the child and the parent. It is recommended to add one more pillar – "**Educators"** so that we have an "**holistic approach**" in building"**digital competencies**"of children.

ISSN 2350-109X
www.indianscholar.co.in

Indian Scholar

An International Multidisciplinary Research e-Journal

Acknowledgements

1. Miss. Saumya Srivastava (ICT Instructor), Utpal Sanghvi Global School, Juhu, Mumbai
2. Miss. Sunita Kumari, Data Security Council of India (DSCI) | A NASSCOM® Initiative

REFERENCES

1. StayCyberSafe campaign: https://www.dsci.in/content/stay-cyber-safe
2. National Cyber Security Awareness Month: https://www.dsci.in/content/NCSAM/2020
3. Child Online Protection in India: 2016 (UNICEF): https://www.icmec.org/child-online-protection-in-india/
4. Cyber safety handbook for students of secondary & senior secondary schools : 2020 (CBSE in collaboration with Cyber Peace Foundation)
5. Parent Questionnaire- https://forms.gle/5TPyVexUEbXVAtdQA
6. Student Questionnaire- https://forms.gle/G9YqGY9kuuK2TSe47

Plagiarism Check Results.