THE LEVEL OF DIGITAL CITIZENSHIP KNOWLEDGE AMONG 16-YEAR-OLD TEENAGERS IN MALAYSIA

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ABSTRACT

The research was conducted to measure the level of digital media literacy among teenagers in Malaysia. The study focuses on digital citizenship as the main core of digital literacy competencies. Each aspect contains eight different elements: digital identity, digital use, digital security, digital safety, digital emotional intelligence, digital communication, digital literacy, and digital rights. The study also ensures that it can evaluate the specifications of teenagers' strengths and weaknesses in the aspect of media literacy. This research used quantitative research, which is a survey method using a questionnaire instrument. The study presented the results of the report that has been conducted on 675 students in Form Four in several states through the Google Form platform. The instrument was created based on the DQ Framework (Digital Intelligence), which is specialised in digital literacy studies. The level of media literacy knowledge was measured through the Child Online Safety Index (COSI), which has been framed in the DQ Framework. Overall, the result shows that digital citizenship among teenagers is at a good level. The ability of teenagers to use digital media in a safe, responsible, and ethical manner is stable. Although the use of the internet exceeds 10 hours a day, the level of media literacy among the students is still under control. This study may help significant individuals conduct a variety of research in the field of digital literacy in more specific ways in Malaysia.

Keywords: media literacy, digital citizenship, digital intelligence, social media, teenagers

INTRODUCTION

The digital era has had far-reaching consequences for society. As the digital world has grown, each generation must become a part of it. This plainly demonstrates that human civilisation has progressed towards modernisation. We were already exposed to traditional media. Smartphones and computers, on the other hand, have captured the public's interest in recent years. Initially, it just satisfied desires, but it gradually evolved to accommodate the requirements of mankind. People gather to receive fast internet and the newest gadgets. It has evolved into the second oxygen of life. This may also be observed in the catastrophe of the COVID-19 epidemic that has swept the globe (Korhonen, 2021). The internet is becoming more popular as more socialising takes place online. Because of variables such as the economy, society, and education, society is growing more tied to internet usage. Because of the movement control order (MCO) that has been imposed across the nation, all physical obligations are met at home (work from home). Scrolling activity in social networks grows in this circumstance because speedier information channels compete with the capacities of traditional media (Lupinacci, 2020). People spend more time holding their phones as a result, since the only way to stay current and get information is via devices and social media networks.

Teenagers and children are no exception, since they routinely use cellphones under the care and supervision of parents or guardians, owing to the fact that they were born at the time when the online world was formed (Manap et al., 2016). They are also known as "digital citizens," since they have a digital citizenship identity. As a result, a teen's engagement in the internet and digital media provides them a better perspective on good and negative things. Indirectly, some things go unreported, and overdependence and excessive addiction may lead to undesirable consequences such as cyber fraud, addictive online gaming, cyberbullying, cyber threats, bogus news, and sexual activity online. The absence of supervision from parents and guardians, as well as a poor level of literacy and digital media, are the variables that expose and trap children in this cybercrime. According to a Malaysian Communication and Multimedia Commission (MCMC) report, 53.1 percent of internet users would be victims of cybercrime by 2020. However, after becoming victims of cybercrime, some victims opt not to take any action (Suruhanjaya Komunikasi Multimedia Malaysia, 2020).

The growing effect of digital usage undoubtedly impacts parts of comprehending diverse types of discourse and accepting current challenges. Nonetheless, the fundamental issue is that the use of digital media against consumers is out of control, particularly in terms of information. There are several sites that may be appreciated; nevertheless, despite the numerous advantages that can be achieved, there are concerns that users, particularly children and teens, will encounter. Dependence on the internet, which may lead to serious addiction, wreaks havoc on time management, equilibrium, and mental and physical health. Furthermore, cybercrime exposure is significant owing to poor personal cyber security management, such as cyberbullying, fraud, and misleading information, all of which may occur in the blink of an eye (Park et al., 2020). Because of "all the information at your fingertips," cybercrime may occur quickly. Despite the fact that Generation Z was born in the digital age, they are not necessarily secure in all elements of digital literacy (Matos et al., 2016). As a result, digital citizenship will be the primary focus of this research to determine whether or not teens are aware of the usage of digital media. After the introduction of digital media, customers have more options thanks to quickly developing media and technology. This also demonstrates that, as a communication connection, the digital media platform has a substantial impact on the formation system of a community's existence, both physically and psychologically (Omar et al., 2015). According to Fogg's (1998) research on computer persuasion, the usage of technology has an effect on users' attitudes and behaviour. As a result, there will be more unanticipated options for the user's actions both online and offline. Changes in attitude and conduct may be seen from the standpoint of knowledge and skills while using digital apps and social media.

In terms of knowledge, a person who is unable to acquire information may readily accept things that seem terrible. Today's broad adoption of information has made access to information receiving and delivery harder to restrict (Abu Bakar & Ashaari, 2018). This impact may make it difficult for users to assess and evaluate whether information is accurate or false, particularly when it is disseminated over social media platforms. This may occur as a result of very active social media users who have the ability to submit the same and distinct statuses at the same time. Each individual's information may have been edited or added. COVID-19 is one example of false news and spreading rumours on numerous websites and social media platforms; 266 incidents have been reported in 2020 (Azhar & Mahamod, 2018). Since March 2020, a large amount of information concerning COVID-19 has been posted, leading several speculations to circulate within the community. Many users have received incorrect information due to a lack of comprehension of the context of the material. It follows that the parties concerned must refute and explain the phone news to users. Because of the poor level of information and skills acquired by users, the Malaysian Communications and Multimedia Commission must take steps to remedy the community's lack of understanding. Whereas each user must be able to grasp the context of the information received in order to differentiate between legitimate and misleading information and make more correct decisions when sharing information.

LITERATURE REVIEW

Since 2015, scholars have performed several studies on digital citizenship (Richardson et al., 2021). Ribble (2008) was the first to emphasise the significance of digital citizenship, focusing on nine components such as attitude and accountability while using technology (Ahmad et al., 2021). Potter (2004)'s media literacy theory was also a well-known discussion on media literacy concerns, describing the necessity for every media viewer to be more technologically literate before forming perceptions and ideas (uminas & Jastramskis, 2020). Jones and Mitchell (2016) prepared discerning customers to be responsible online (Richardson et al., 2021). Because the major observation is to develop users who are literate, secure, and sound in the digital environment, digital citizenship is still in the limelight in this study. Today, this topic of study is still under progress since cybercrime incidents among users continue to rise despite many efforts and preventative campaigns implemented by multiple parties (Pitchan & Omar, 2019). Initiatives from these organisations exist; yet, youths' responsibility for self-awareness remains low.

According to the Malaysian Communications and Multimedia Commission, 62.5 percent of internet users are unfamiliar with the notion of digital identity. Furthermore, during the COVID-19 epidemic, all employment and learning systems relied on online platforms, accounting for 70.5 percent of internet use from home. This has given a new colour, indicating that time spent on digital media is increasing, with 70.5 percent using the internet at home, while message communication has the highest online activity with 98.1 percent, and social media activities have 93.3 percent usage in 2020 (Malaysian Communication and Multimedia Commission, 2020). Facebook, Twitter, and Instagram had the greatest usage of social media due to their more effective features in looking for the most recent information and communication connections internationally (Hassan et al., 2019).

In media literacy assessment and survey research, numerous conceptual frameworks are utilised. However, not all of these frameworks include the major characteristics or components of importance. For example, in order to develop an instrument to assess the degree of media literacy abilities, Bahadir Eristi and Cahit Erdem (2017) concentrated on just four factors, namely the capacity to access, analyse, evaluate, and communicate. The results demonstrate that evaluating the degree of media literacy abilities has great validity and reliability. Meanwhile, Reyna, Hanham, and Meier (2018) provide another paradigm that focuses on three aspects: conceptual, visual-audio, and function. This framework is stated to be a framework that monitors 46 sets of technical skills and critical and social behaviour by using cutting-edge technology that contributes to high-level digital space learning. Both of these frameworks place a premium on measurement, which defines consumers' degree of media literacy. Meanwhile, numerous frameworks are considered prior to the construction of the Digital Intelligence Framework (DQ) by the DQ institution before the outcome of the 24 Digital Intelligence Framework (DQ). For example, the organisation Common Sense Media (2015) develops a framework for the level of digital citizenship based on the K-12 curriculum system, specialising in 12 aspects for primary school children, namely, media and well-being, security, digital footprint and identity, relationships and communication, cyberbullying and hate speech, and news and media literacy. Meanwhile, DigCitCommit (2016) serves as a reference in the development of the Digital Intelligence Framework (DQ), which focuses on five elements, namely, inclusive, informed, engaged, balanced, and alert, in order to become the most recent digital citizenship. Aside from that, the European Commission Joint Research Centre (2017) created 47 frameworks that concentrate on four levels of digital competence: foundation, intermediate, advanced, and highly specialised. The cognitive capacity of the user is prioritised in this framework, which begins with the activities of remembering, comprehending, applying, assessing, and constructing. Despite the fact that several kinds of frameworks have been mentioned, this framework (DQ) retains the current components from the prior research framework. This is due to the fact that the Digital Intelligence Framework (DQ) has only been strengthened and now encompasses all of the features necessary for evaluating the degree of media literacy in a single framework, particularly for digital citizenship. Meanwhile, every piece is scrutinised to ensure that the requirements of all users, particularly children and teens, are met.

The Digital Intelligence Framework (DQ) may be applied to secondary school pupils based on the findings of research conducted at the primary school level. This approach addresses digital skills, digital literacy, and digital preparedness across all industries and demographics. Alderman Peter Estlin (2019) has previously discussed this.

> "The DQ idea offers a global standard from which to establish a more thorough understanding of the demand for digital skills. This enabled us to expand on current projects and lay out the next steps. DQ, as a framework, serves as a foundation for measurement and comparison in the same manner that IQ has until now (Park, 2019, p. 12)."

The declaration explains that the Digital Intelligence Framework (DQ) is internationally applicable and focuses on digital world research. Studies on media literacy may be examined in further depth using this methodology. Each element has previously been investigated and developed from 25 different kinds of frameworks from prior studies in order to cover all features and factors connected to media literacy in one framework. Meanwhile, to ensure that this study achieves its research objectives, the design of this questionnaire instrument is tailored to the respondents' level of education and takes into account the cultural and demographic

context in Malaysia, as defined by the digital competence framework. This methodology has been used in numerous countries, including Singapore, Thailand, and Mexico, to demonstrate the findings of the findings about the degree of media literacy among children, however this research has never been undertaken among teens. Meanwhile, more detailed study on high school pupils utilising the Digital Intelligence Framework (DQ), particularly in Malaysia, has not been conducted. To make media use safe and secure, research testing the level of media literacy is required first to see the tendency or potential of these teenagers to become digital citizens (digital natives) with sufficient literacy when online, not just being digitally connected. As a result, the Digital Intelligence Framework (DQ) was used to determine the degree of digital media literacy of high school pupils in terms of knowledge, abilities, and values.

As a result, the significance of digital citizenship will encourage teens to enhance their online safety and responsibility (Hassan et al., 2019). Masterman (1993) agrees, stating that a group of teens must be socialised in order for them to grasp and think critically about implicit meaning and messages. Aside from that, people must be taught how to utilise the media as a tool for social change in order to improve media culture (Ivanovi, 2014; Tully et al., 2020). Based on the DQ Framework, eight criteria were detected in defining the degree of digital citizenship among teens in this research, notably;

a. Digital Citizen Identity
The ability to build and manage a healthy identity as a digital citizen with integrity.

b. Balanced Use of Technology
The ability to manage one's life both online and offline is balanced by using self-control to manage screen time, tasks, and involvement someone with digital media and gadgets.

c. Behavioural Cyber-Risk Management
The ability to identify, mitigate, and manage cyber risks (e.g., cyberbullying, harassment, and stalking) that relate to personal online behaviors.

d. Personal Cyber Security Management
The ability to detect cyber threats (e.g., hacking, scams, and malware) against personal data and devices, and to use suitable security strategies and protection tools.

e. Digital Empathy
The ability to be aware of, sensitive to, and supportive of one's own and other's feelings, needs, and concerns online.

f. Digital Footprint Management
The ability to understand the nature of digital footprints and their real-life consequences, to manage them responsibly, and to actively build a positive digital reputation.

g. Media and Information Literacy
The ability to find, organize, analyze, and evaluate media and information with critical reasoning.

h. Privacy Management
The ability to handle with discretion all personal information shared online to protect one's and others' privacy.

METHODOLOGY

The present study employs a quantitative survey methodology that utilises question instruments and a random sampling technique to assess the extent of individuals' digital citizenship knowledge. The study employed a random sampling methodology, with particular emphasis on various regions of Malaysia, including the northern, southern, central, eastern coastal, and eastern Malaysian (Borneo) regions. The study population comprises 675 individuals who are students attending secondary schools at the age of 16, and belong to the millennial cohort. The process of data collection was executed through the utilisation of the Google Form platform, whereby a hyperlink was provided to the participants for the purpose of completing the survey.

The present investigation employed a questionnaire as a survey instrument to gather data from participants. The selection of this questionnaire instrument was based on the need to accommodate the diverse data collection activities of the respondents across multiple locations, as well as the limited time available for respondents to provide their answers. According to Hussin et al. (2015), this particular tool is deemed advantageous and efficacious in face-to-face data collection scenarios. Prior research in the domain of media literacy has utilised quantitative techniques such as questionnaire surveys, as evidenced by studies conducted by Moto et al. (2018), Ghatak and Singh (2019), Samsuddin et al. (2021), Che Ibrahim et al. (2021), Hazar et al. (2021), and Mahadir et al. (2021). The COVID-19 pandemic has presented a challenge to conducting in-person data collection. As a result, online data collection was implemented using the Google Form platform. The questionnaire instrument underwent multiple processes to ensure high reliability and validity. The assessment of validity will be conducted through the utilisation of the SPSS model, wherein each question item will be evaluated based on a Cronbach's alpha value ranging from .70 to .90. Borg and Gall (1979) have suggested that a range of values between 0.60 and 0.95 is considered stable and adequate for obtaining survey items (Hussin et al., 2015).

This study scrutinises the development of the survey instrument for each element, which is then accompanied by a Digital Intelligence Framework (DQ) that is pertinent to the research topic, thereby facilitating comprehension for the participants. Meanwhile, the formulation of interrogative elements is also guaranteed in accordance with the cultural and demographic milieu of Malaysia. The questioning format is characterised by a closed structure, while the categorization scheme is systematically

arranged and furnished with nominal and ordinal response options. According to Nayak and Narayan (2019), the utilisation of an online platform for questionnaire instruments serves the objective of enhancing data preparation and collection within a limited timeframe.

The utilized survey tool employed a structured format consisting of closed-ended questions that were developed in accordance with the DQ Framework. The questionnaire necessitates the respondent's completion of three distinct parts, namely A, B, and C. The study is divided into three parts, namely Part A which pertains to the respondents, Part B which focuses on internet usage, and Part C which delves into the level of knowledge and media literacy pertaining to digital citizenship. The DQ Framework's identification of eight digital citizenship elements represents a recent development in the realm of digital media literacy. The present framework was implemented among a cohort of primary school students in Malaysia, specifically targeting children between the ages of 8 and 12 years. Consequently, the present study employed the DQ Framework and the Child Online Safety Index (COSI) scoring system to assess the degree of digital citizenship (as indicated by Table 1) in the research.

Table 1: Scoring system from Child Online Safety Index (COSI)

Excellent	80-100
Good	60-79.9
Average	30-59.9
Low	0-29.9

Table 2: Questionnaire Instrument

Section	Details	Statement
A	Demographics	Gender
B	Use of Internet	Duration of Internet usage in one day Duration of Internet usage in a period
C	Digital Citizenship	Knowledge

FINDINGS

This study involved 675 second-level student respondents from several schools in multiple states in Malaysia. The results of data collection were carried out through the Google Form platform using descriptive methods.

Table 3: Internet usage and access information

		(%)
Duration of use of Internet a day	Less than 3 hours	7.0
	3 to 5 hours	27.5
	6 to 8 hours	15.1
	9 to 10 hours	19.5
	More than 10 hours	30.9
Internet usage in a period time of use	Less than 1 hour	5.8
	1 to 2 hours	30.8
	2 to 3 hours	28.4
	3 to 4 hours	13.0
	More than 4 hours	22.0

Table 3 shows the results of the income, use, and internet access of teenagers. In terms of duration of internet usage in a day, teenagers recorded less than 3 hours (7.0%), 3 to 5 hours (27.5%), 6 to 8 hours (15.1%), 9 to 10 hours (19.5%), and more than 10 hours (30.9%).

Internet usage in a period of time recorded a slight difference compared to Internet use in a day, which recorded 1 to 2 hours stated the highest (30.8%), while less than 1 hour had the least (5.8%), followed by 2 to 3 hours (28.4%), 3 to 4 hours (13.0%), and more than 4 hours (22.0%).

Table 4: Child Online Safety Index (COSI)

Level	Excellent	Good	Average	Low	Mean	SD
Knowledge	15.1	60.4	24.5	0	2.90	.6229

Table 4 displays the score index derived from the Child Online Safety Index (COSI) utilising the DQ Framework acquisition value (minimum = 2.90, standard deviation = .6229). The findings derived from the data collection were anticipated, indicating that the majority of adolescents possess a commendable level (60.4%) of digital citizenship knowledge. A notable proportion of participants demonstrated an exceptional level (15.1%) of knowledge, while a significant proportion exhibited an average level (24.5%). Notably, none of the participants demonstrated a low level of digital citizenship knowledge.

According to the findings, the level of knowledge indicates that the majority of adolescents are in a secure condition in the current digital age. Despite the presence of a few teenagers who exhibit average levels of internet safety, the findings indicate that a significant proportion of adolescents are utilising the internet in a secure manner. Despite the fact that many teenagers exhibit average levels of internet knowledge, the absence of any individuals demonstrating low levels of proficiency serves as confirmation of a satisfactory level of safety in this domain. Additional information can be verified by referring to Table 5.

Table 5: Digital Citizenship Knowledge

	True (%)	False (%)
Excessive screen time can result in physical health problems like restlessness and anger	80.5	19.5
If you receive an email requesting personal information to redeem a gift from a bank, this should be done immediately	96.3	3.7
A firewall can be installed to prevent malware attacks on my computer	76.2	23.8
Body shaming online is not a crime	88.6	11.4
Photos that I upload to Google Drive can be used by Google without asking my permission first.	84.8	15.2
Encryption means data or information that is open for access	62.9	37.1

As shown in Table 5, some topics received a high proportion of truth, indicating a satisfactory degree of understanding. A total of 96.3% of youngsters are aware that exchanging personal information is completely prohibited, particularly if done via an illegitimate account that requests the account number. Meanwhile, the majority of them are aware that excessive screen time might harm physical health, with 80.5% agreeing. Previous research has also noted it. The following application of a firewall that can be placed on a computer to prevent malware assaults and safeguard it online receives 76.2%. However, teens are still unfamiliar with the word encryption, as shown by the fact that only 62.9% of them had right responses.

According to the research results, youngsters are concerned about their safety and health. At this level, they have rudimentary understanding of digital devices. However, not all difficulties render people immune to the dangers of the internet. Table 6 demonstrates this.

Table 6: Digital Citizenship Knowledge

	True (%)	False (%)
Once photographs are shared publicly on the internet, anyone can use them	41.6	58.4
If you send a text message, you can control what happens to the message after you send it.	57.5	42.5
Turning off the GPS function of your smartphone prevents any tracking of your phone's location	15.5	84.5
Digital Footprint is stalking someone using an anonymous account	37.3	62.7
Blogs and wikis are creditable sources of information	54.3	45.7
If the information is posted on a public platform, then anyone has the right to spread or share it	33.4	66.6

As stated in Table 6, various difficulties were reported with a minimal grasp of online hazards, such as turning off the GPS in cellphones to avoid any monitoring of their whereabouts, which only 15.5% of them replied true. 84% of youngsters gave incorrect answers. They had no idea that GPS apps continued to work via social media use activities (Karanja et al., 2018). Meanwhile, the youngsters were unfamiliar with the digital footprint, as seen by just 37.3% responding true against 62.7% answering false. Other concerns, such as the freedom to disseminate material placed on public platforms and the sharing of public pictures on the internet, were equally troubling since they demonstrated a tiny distinction between true and false. Another big cause of worry is that youngsters continue to see blogs and wikis as credible sources of information.

DISCUSSION

Overall, the survey of digital citizenship among Malaysian youth is conducted at a regulated level. This is shown by the discoveries found on several components. Each piece illustrates the capabilities in everyday usage. The findings of the investigation reveal that the degree of digital citizenship may be enhanced further. According to the data, youths in Malaysia use the internet for an average of 10 hours every day. Teenagers spend a lot of time on their devices. As the findings reveal, although teens have more information, they may still be duped when they are unaware of the circumstances. However, due of their demography, it is normal for teens to be unaware of the features and usage of media gadgets. Not all teens have equal access to resources such as internet, money, and education, which might exacerbate the digital gap (Mohamed et al., 2012; Abd Rashid et al., 2016).

Teenagers in Malaysia have a regulated and safe degree of digital citizenship, with a balance of media usage and awareness of media literacy information. Teenagers are aware of the consequences of excessive screen time. It cannot, however, prevent them from spending more than 10 hours every day. In our digital age, everyone relies on digital gadgets for communication and business. Digital has become an integral aspect of the educational process. However, it is reassuring that youngsters understand that disclosing personal information to an unknown entity is a risky move. They feel that personal data is a sensitive issue that must not be disregarded. Some of them do not believe that sharing images or personal information to the internet is bad. This is due to the fact that social media provides a place for sharing whatever you enjoy and any thoughts you have. They believe that their personal information cannot be exploited by anybody. Each application's security and information systems are stringent. They enacted legislation to safeguard users' data. They do not aware, however, that as long as there is a share button and screenshots, anybody may circulate them even if the owner does not provide permission (Martin et al., 2020).

Aside from that, most teens still use Wikipedia and blogs as information retrieval sources while doing homework. Teenagers' information-studying abilities remain limited, particularly in the areas of media and literacy. They need instruction in order to investigate other more intellectual and trustworthy venues, such as the BigThink and BrightStrom websites. This is due to the fact that the Wikipedia website is a platform that anybody may update. To avoid the spread of incorrect information, multiple

stakeholders must increase their disclosure of reliable websites. Sebenarnya.com's website should be promoted more to users. This tool can validate information published on numerous social media networks.

Digital citizenship prioritises digital security since it is critical to focus not just among minors but also on all internet users. Cybercriminal cases are still common, and the number of instances from all types of threats is rising on a daily basis. Aside from that, this is to protect kids' mental health while using digital media due to a variety of elements that tempt users to perform wrong actions. The essential foundation for ensuring that kids are not vulnerable to cybercrime, of which they are becoming more aware, is consciousness. The findings suggest that Malaysian youths are already heavily reliant on digital media and the Internet. They were digitally linked, but their capacity to express themselves as secure, efficient, and knowledgeable digital citizens remained modest. Rapid technical improvements, as well as brains and talents, are required to balance the competence of youngsters and create a welcoming, secure digital cultural environment.

CONCLUSION

The significance of digital citizenship has been integrated into the domain of media literacy. The prevalence of its excessive usage in contemporary times renders this issue a matter of significant importance. The unrestrained access to information is a contributing factor to the perpetual utilisation of online platforms. The widespread impact of the COVID-19 pandemic has resulted in a surge in the utilisation of digital media. Addressing the issue of teenage involvement in cybercrime requires a multifaceted approach that involves heightened awareness and vigilant observation from all relevant parties. The findings of this investigation have additionally furnished a more comprehensive depiction of digital media literacy, encompassing eight distinct components. There exist multiple facets to contemplate, including the realm of cyber security within the digital domain. The contemporary advancements in media and technology are highly dynamic and hold significant relevance in diverse domains of the digital realm. The prioritisation of all elements, particularly among adolescents, is a prevalent phenomenon. The cultivation of a proficient and secure digital citizen necessitates effective collaboration among diverse stakeholders, who ought to exhibit greater attentiveness and concerted efforts towards enhancing the digital ecosystem (DQ Institute, 2018). The pervasive influence of digital media on human existence is a phenomenon that warrants recognition, as it has assumed a dominant role in nearly all aspects of life, often without conscious awareness.

AUTHOR CONTRIBUTUIONS

NKM, KAB, RA, SNAAT, SB and FAM conceived and designed the framework, data analysis and wrote the manuscript. NA and MRA revised and approved the final version.

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