



READING THE 21ST CENTURY WORLD: SELF-ASSESSMENT OF DIGITAL MEDIA LITERACY AMONG SECONDARY SCHOOL STUDENTS IN MALAYSIA



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ABSTRACT

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Students today participate in digital media cultures in numerous ways and it is important to consider their level of confidence in understanding their digital skills. The focus on digital media literacy is important to ensure that students have sufficient knowledge and skills to participate in society and in the economy as productive citizens. This study aimed to examine the digital media skills of Malaysian students in selected schools in Malaysia. The study presents the findings of a self-assessment tool, consisting of 10 core domains that was constructed to respond appropriately to the needs of students in secondary schools in Malaysia. The self-reporting by the students indicated that in general, they were quite self-assured about their capacities and many of them have rated their digital media skills at fairly high confidence levels. The findings suggest that many of students considered that they were competent in the areas of mobile, social and problem solving skills when working within digital platforms. However, the respondents deemed that the most challenging domain was creative as they felt less competent when it came to doing creative tasks using digital tools. By way of conclusion, this paper urges education authorities and schools to develop digital media literacy programmes that enhance students' capacities in confronting challenges as well as exercising rights as active and responsible digital citizens.

Contribution/ Originality: This study contributes to the existing literature on developing constructs to build an appropriate measurement instrument to assess digital media literacy. This is important to educational efforts in framing digital media literacy assessment for schools to provide empirical bases for enhancing digital participation among students.

1. INTRODUCTION

Students today participate in digital media cultures in numerous ways, specifically in out-of-school settings. They scroll on texts, blog with wording and images, tweet or get on Wi-Fi to socialize, to do their homework, to express themselves, and to connect to the world. As users, they create the content, and some of this content goes viral and is viewable by huge audiences (Baran, 2015). Interestingly, they maneuver their everyday social experiences with information, online games, applications and social media in uncertain, canny and problematic ways. Past research on media and students in Malaysia has revealed that there is growing access to digital

technologies but opportunities are underused, while risky experiences remain as critical concerns. Students further encounter gaps between in-school and out of school experiences and they are often confused with decisions on what to share, not to share and who to share with (Guo, 2014; Jones, 2010; Prasad, Balraj, Pandian, & Bin Nordin, 2016; Shanthi et al., 2015; Shanthi. et al., 2017). More crucially, the global and local world brings dramatic politics, current events, entertainment and celebrity news, scientific research as well as social and cultural rhetoric from different groups contesting to impinge upon students' beliefs, ideas, values and decision-making capacities in vigorous and invisible ways. In this light, the focus on schools and digital media literacy is an important one to ensure that students are equipped with literacy skills to interrogate messages, to find their own voices and to create content in responsible ways. Reading the 21st century world today demands attention on digital media literacy -- the ability to access the media and the Internet, to understand and to critically evaluate different aspects of information and media contents and to create communications in a variety of contexts (Hobbs & Jensen, 2009; Livingstone, 2014). Digital media literacy is also deemed as a regulatory measure that encompasses an integral part of active citizenship in today's information society which means that users need the integrity and ethical centre to be good citizens in their use of digital media (Hobbs., 2011). Policy and pedagogical interventions demand the need of evidence based knowledge, thus this project was conducted to give attention to students in secondary schools so that challenges confronted by students in digital cultures could be identified. The underlying interest here is to support goals in empowering students with capacities that enable them to engage effectively – the ability to access, analyse and create communications so that informed choices are made in today's increasingly digitised society.

2. PROBLEM STATEMENT

Malaysia aims to employ 5G technology by the end of this year in order to enable users to participate in various social and economic activities. The focus on digital media literacy, now, becomes a crucial concern when users, including students are immersed in cyber cultures without holistic understandings of knowledge, skills, values and responsibilities in school settings. The digital life-worlds among students is unclear in Malaysia as we have yet to develop appropriate programmes that delve into cognitive, technical and ethical dimensions of digital media literacy in a comprehensive way. There is a distinct gap in this area as we are unable to provide a reliable and a fair picture of students' operational, critical, safety and creative capabilities when navigating media environments. Much has been discussed about the gaps in school settings where online practices among students are not investigated as analyses of critical and creative learning and communication (Guo, 2014; Jones, 2010; Prasad et al., 2016; Shanthi et al., 2015; Shanthi. et al., 2017). Worse still, the digital generation in schools today is assumed to be a group of young people who are super-users of digital content and highly competent in their use of digital technologies (Shanthi. et al., 2019). Work on digital media literacy with a focus on students' digital skills is essential as this will make a positive contribution to knowledge on students' confidence levels and their understanding of their reading of the 21st century world.

3. OBJECTIVES

The present study is interested to examine students' digital media literacy in Malaysian secondary schools. A more holistic view to digital media literacy was given focus to develop a self-assessment tool that is able to identify the students' levels of confidence with digital media skills when participating in digital cultures.

4. LITERATURE REVIEW

Digital media technologies permeate the realms of personal lives, school, workplace, leisure, communication and social interaction, health and wellbeing as well as participation in societies (Cope & Kalantzis, 2015). The integration of digital and media technologies in everyday life worlds of students is a priority across many parts of the world today as Governments devote significant resources on media and digital infrastructure, devices, learning

materials and trainings (Livingstone, 2014). The development of assessment tools has attracted the attention of media scholars and policy-makers in many countries like United States of America, United Kingdom, Europe, Canada, Australian, India, China and Sri Lanka (Erstad, 2015). Many existing instruments do not capture the full spectrum of skills as propounded by digital media literacy scholars and cannot be transferred unproblematically to local contexts (Bulger, 2012; Hobbs., 2010; Livingstone. & Wang, 2013). As a first step to constructing a digital skills self-assessment framework, a review of literature, definitions and indicators relating to digital media literacy was carried out. Among the key works that were instructive in the study include the following: Jenkins (2006); Hobbs. (2010), Ala-Mutka (2011) EU's DIGCOMP framework further developed by Ferrari (2013); UNESCO (2013); Van Deursen, Van Dijk, and Helsper (2014); United Nations (2014) and Hoehsmann and DeWaard (2015). That review showed that there are many contentions on the concept of digital media literacy which delve on questions of skills, attitudes and social and political factors in each country context that impinge on different types of literacy. Ofcom (2010) argues for a digital media literacy framework in UK that encompasses young people's ability to search for information from reliable sources and the capacity to create productive content. The design of assessment of media literacy, according to Ofcom, should encompass learning and skills; digital inclusion, participation & delivery of public services; and safety, protection and security.

The American Association of College and Research Libraries (ACRL) proposes an assessment framework (2014) encompassing five elements for understanding Information Literacy as follows:

- Determining the extent of information needed.
- Accessing information in an effective and efficient way.
- Evaluating the information and resources critically and incorporating them into a knowledge base.
- Using information for a specific purpose.
- Understanding the legal, economic and social context surrounding information in order to be able to use it in an ethical and legal way.

The assessment proposed in Australia (Australian Curriculum Assessment and Reporting Authority, 2015) for digital media literacy development considers skills and competences related to technological skills; abilities to work with the information; and the use of information to communicate.

Based on the above frameworks and self-assessment initiatives, this study arrived at a practical framework that could be used in the Malaysian context. The digital media literacy assessment matrix proposed here comprises of 10 core domains based selectively on the structure and works developed by Ala-Mutka (2011); Ferrari (2013) and Van Deursen et al. (2014). Ala-Mutka (2011) and Ferrari (2013) deliberated on skills related to five areas: information, communication, content creation, safety and problem-solving. Van Deursen et al. (2014) followed the above five areas and highlighted the need for creative thinking to be included digital skills.

The quest for a digital media literacy assessment tool in Malaysia is a crucial one, but fraught with difficulties. Digital media literacy skills are not assessed in comprehensive ways because they are not taught in broader contexts in Malaysian schools which encompass the cognitive, technical and ethical dimensions of 21st century learning. The design of the assessment tool was based on the 5 areas as propounded by Ala Mutka and Ferrari. However, it was felt that the five areas as presented by the above scholars were rather broad and included many indicators. Some of the areas and indicators could be broken into smaller domains. For example, information was divided into operational and information navigation. Communication encompassed social and mobile while content creation was constructed as critical and creative thinking. Safety and Problem solving were kept in the original form and digital citizenship and regulation were added as separate domains. These domains were further verified by a panel of media scholars and presented to the Malaysian Commission of Communications and Multimedia (MCMC). Based on the works above, a self-assessment tool was designed and tested before being used in the field work. The 10 domains in this self-assessment tool thus encompassed Operational, Information Navigation, Social, Mobile, Creative, Critical Understanding, Digital Citizenship, Safety, Regulation and Problem Solving. The Likert-

type format was used in the self-assessment section. Students were asked to indicate their confidence levels using the scales and scores as follows: 1 for 'Don't know', 2 for 'Know a little', 3 for 'Fair', 4 for 'Competent' and 5 for 'Very competent'. This framework provides a general overview of the needs of young people aged 16 to be competent in a digital society. The digital media literacy measurement framework delved into the creation of indicators, measurement, scales and scores. The study deliberated on the challenges related to time and cost constraints, specifically in taking time to administer research activities in school settings which are very examination oriented. In addition, it is asserted here that the framework was pitched at a level that will enable young people aged 16 from diverse school settings to participate in the project.

5. METHODOLOGY

The study adopted here is part of a bigger project that aimed to create spaces where students from secondary schools could work together to better understand the power and place of participation in digital media cultures. The project encompassed three major components, comprising of a self-assessment tool; and a digital media literacy test and followed by focus group discussions. While self-assessment is a commonly used method in many models of digital media literacy in school settings, there are limitations to this method. It is quite likely that the respondent may underestimate or overestimate his/her confidence in the different skill domains. Thus, data on self-assessment need to be read and interpreted with caution (Bulger, 2012). Nonetheless, given that digital media literacy is a not clear element in the primary or secondary school curriculum in Malaysia, it appeared sensible to start research in digital media literacy with a self-assessment tool that presents an understanding of digital media literacy levels among secondary school students. The self- assessment tool was piloted in several schools and the pilot research showed that there was reliability, internal and external validity across different subsamples of the population of secondary school students in Malaysia. The findings reported here focus on the self-assessment surveys conducted with 1200 students from 12 secondary schools who completed self-assessment surveys in eight states Malaysia, including Sabah and Sarawak. The study was conducted in rural and urban schools from June 2015 till October 2019. A total of 100 students aged 16 from each school were invited to voluntarily participate in the self-assessment surveys that consisted of 10 domains identified as key indicators of digital media literacy. The time required to answer the self-assessment survey was approximately 25 minutes. The Likert scale (McLeod, 2014) is a type of rating scale and this was used to measure students' confidence levels with regard to digital media literacy in the self-assessment tool.

6. RESULTS

This section offers data derived from the self-assessment survey conducted with 1200 students in Malaysian secondary schools. The data presented from Table 1 to Table 11 have been taken from Shanthi. et al. (2019).

Table-1. Demographic data of students (n=1200).

	Demographic	N / (%)
Gender	Male	495 (41.2)
	Female	705 (58.8)
	Malay	676 (56.3)
	Chinese	171 (14.3)
	Indian/ Punjabi	104 (8.7)
	Indigeneous Group (Kadazan, Iban, etc)	196 (16.3)
	Dayak	53 (4.4)

Source: Shanthi. et al. (2019).

Table 1 above shows that 58.8% of the participants in the study were females while 41.2% were males. The respondents were made up of different ethnic groups including the indigenous groups from Sabah and Sarawak.

In the next section, the detailed digital media literacy assessment is presented to unveil the skills that students felt confident and the skills that they felt that they were less confident. The self-assessment survey comprised of 10 domains, namely, Operational, Information Navigation, Social, Mobile, Creative, Critical Understanding, Digital Citizenship, Safety, Regulation and Problem Solving. The score was 1 for "Don't know, 2 for 'Know a little', 3 for 'Fair', 4 for 'Competent' and 5 for 'Very competent'. The mean score was calculated to indicate students' confidence in relation to the different skills of digital media literacy.

In the domain of operational as seen in Table 2, the respondents have indicated that they were only fairly confident when it comes to skills linked to adjusting privacy settings, retrieving information and uploading files and photographs.

Table-2. Mean score for operational.

Operational	Mean	Std. Deviation
Adjusting privacy settings	3.53	1.10
Retrieving information for my class assignments	3.31	0.99
Uploading files & photographs	3.51	1.06

Source: Shanthi. et al. (2019)

The same can also be seen as the respondents reckoned that they were fairly confident in information navigation activities, specifically in identifying different types of information, looking for information from different authors and websites as well as with deciding on keywords for online search as indicated in Table 3.

Table-3. Mean score for information navigation.

Information Navigation	Mean	Std. Deviation
Identifying different types of information (news, advertisement, opinion columns, fiction etc)	3.29	1.05
Looking for information from different authors and websites	3.56	1.03
Deciding on keywords for online search	3.36	1.05

Source: Shanthi. et al. (2019)

The respondents regarded that they were only fairly capable when it came to the social domain. They were fairly confident in their capacity to interact online with people from diverse communities by respecting multiple perspectives. Remarkably, the respondents suggested that they were quite confident as they knew which information that they should and shouldn't share online. The mean score for the skills Social are presented in Table 4.

Table-4. Mean score for social.

Social	Mean	Std. Deviation
Ability to interact online with people from diverse communities by respecting multiple perspectives.	3.48	1.08
Finding relevant communities and groups online that suit work interests & needs.	3.60	1.04
Knowing which information that I should and shouldn't share online.	3.96	1.04

Source: Shanthi. et al. (2019)

Students' confidence in the mobile domain was denoted in positive ways. Respondents suggested that they felt fairly capable in keeping control of the costs of the mobile device use. They also indicated fairly confident to considering other people's privacy when taking pictures. They were seen as competent in installing apps on a mobile device with a mean score of 4.2. The details of the mobile skills are offered in Table 5.

Table-5. Mean score for mobile.

Mobile	Mean	Std. Deviation
Keeping control of the costs of mobile device use.	3.66	1.09
Considering other people's privacy when taking and pictures of those around.	3.61	1.07
Installing apps on a mobile device.	4.20	0.96

Source: Shanthi, et al. (2019)

In the creative domain as in Table 6, respondents appeared to indicate that they were less confident in areas like designing a webpage/ blog or a digital poster. They also appeared to have difficulties in using a variety of media to develop self-expression on social media. The respondents suggested that they were only fairly confident in making video, music and images creatively with online applications.

Table-6. Mean score for creative.

Creative	Mean	Std. Deviation
Designing a webpage / blog/ digital poster.	2.15	1.14
Using a variety of media to develop self-expression on social media.	2.97	1.10
Making video, music and images creatively with online apps.	3.17	1.15

Source: Shanthi, et al. (2019)

The respondents appeared to be fairly confident in critical thinking. The respondents suggested that they were fairly able to know the difference between news articles and sponsored articles for promotion purposes. They also claimed that they were fairly confident with skills linked to assessing the truthfulness of information before sharing them on social media. The students' confidence in relation to critical thinking are indicated in Table 7.

Table-7. Mean score for critical thinking.

Critical Thinking	Mean	Std. Deviation
Knowing the difference between news and sponsored articles for promotion purposes.	3.47	1.14
Assessing the truthfulness of information before sharing them on social media.	3.45	1.09
Checking who created media content, why it was created and whether it was credible.	3.24	1.19

Source: Shanthi, et al. (2019)

As seen in the Table 8, the respondents remarked that they were only fairly confident when it came to digital citizenship in online settings. According to the respondents, they seemed to have doubts on knowing what to do when a social media account has been hacked. They were also reasonably doubtful about their capacity in contributing to comments on online platforms with regard to social issues encountered in daily life.

Table-8. Mean score for digital citizenship.

Digital Citizenship	Mean	Std. Deviation
Knowing what to do when they find out that a social media account has been hacked.	3.12	1.35
Taking appropriate action when a friend is being bullied on social media.	3.33	1.16
Contributing to comments on online discussion (online forum, blog or wiki) on social issues encountered in everyday life.	3.17	1.32

Source: Shanthi, et al. (2019)

In the case of safety, respondents noted that they face difficulties in tracking digital footprint as they felt less competent in this area. They also asserted that they were only fairly capable in avoiding activities that were considered as cybercrimes and in blocking unhealthy content published on the Internet as seen in Table 9.

Table-9. Mean score for safety.

Safety	Mean	Std. Deviation
Tracking how my digital footprint can be seen by others.	2.65	1.22
Knowing when to avoid activities that are considered as cybercrimes.	3.45	1.21
Blocking unhealthy content published on the internet.	3.44	1.24

Source: Shanthi. et al. (2019)

According to the following Table 10, intricacies in managing issues on regulation appeared as a concern to the respondents and they deemed that they were only fairly confident in knowing about Malaysian laws related to spreading of lies and dangerous comments. They were also only fairly confident in understanding rules and rights related to content creation. They also seem to have some difficulties pertaining to how and when to acknowledge the source of information in essays and creative work.

Table-10. Mean score for regulation.

Regulation	Mean	Std. Deviation
Knowing about Malaysian laws that affect me if I spread lies and dangerous comments on my websites.	3.36	1.16
Understanding rules and rights related to content creation.	3.26	1.04
Knowing how and when to acknowledge the source of information in essays and creative work.	3.10	1.08

Source: Shanthi. et al. (2019)

The case for problem-solving in digital environments was considered as not problematic by the respondents. Many of them believed that they were able to evaluate the problem by gathering appropriate information using digital tools. However, as seen by the mean scores, team work appeared as a challenge for them. They also thought that they were competent in creating thoughtful explanation with the support of digital applications. The findings of the skills in problem-solving are presented in Table 11.

Table-11. Mean score for problem solving.

Problem Solving	Mean	Std. Deviation
Able to evaluate the problem by gathering appropriate information using digital tools	3.94	0.76
Working in team to choose the best answer to solve the problem	3.53	0.86
Creating thoughtful explanation with the support of digital applications.	3.87	0.85

Source: Shanthi. et al. (2019)

7. DISCUSSION

Students today are growing and living in age where digital media technologies dominate their life-worlds with images and messages that shape their ideas and their capacity to actively engage in public conversations and activities. As noted earlier, a self-assessment tool, despite its limitations, was deemed as an appropriate way to start understanding the difficulties and the capacities students' confront when participating in digital cultures.

The digital media literacy self-assessment tool presented here encompassed 10 core domains and each domain is made up of three skills. Using a 5 point Likert scale, students were asked to denote their confidence levels in accomplishing each skill. The discussion here is drawn based on the respondents' own opinion on the level of their digital media literacy skills.

Generally, it can be said that the mean score suggests that the students were only fairly confident in many of the domains. In Operation, they were fairly confident in adjusting privacy settings, in retrieving information for class assignments and in uploading files & photographs. The mean score for Information navigation also indicate that the students were fairly confident in identifying different types of information, in looking for information from different authors and websites and in deciding on keywords for online search.

As far the Social domain was concerned, the findings register higher mean scores; unveiling students' better confidence in their ability to interact online with people from diverse communities by respecting multiple perspectives; in finding relevant communities and groups online that suit work interests & needs; and in knowing which information that they should and shouldn't share online. This is quite an interesting finding given the controversies surrounding fake news, misinformation, fabrication and online falsehoods that impinge upon people's perception but the students deem that they can manage online information effectively.

The mean scores for the Mobile domain denoted high confidence in skills related to keeping control of the costs of mobile device use; in considering other people's privacy when taking pictures of those around and in installing apps on a mobile device.

Lower mean scores were registered with the Creative domain when students noted less confidence when dealing with webpage / blog/ digital poster design. The findings also suggest that students appeared less confident in relation to making video, music and images creatively with online apps.

Critical thinking emerged as another domain that warranted attention as students marked only fairly confident for these skills. The mean score was fair for skills in knowing the difference between news and sponsored articles for promotion purposes. The same can be said with skills related to assessing the truthfulness of information before sharing them on social media and in checking who created media content, why it was created and whether it was credible.

Digital citizenship appeared to be an added difficult domain as students seem to grapple with the skills here. Indicating fair confidence only, the findings revealed lower mean scores for skills linked to knowing what to do when they find out that a social media account has been hacked; taking appropriate action when a friend is being bullied on social media; and contributing to comments on online discussion (online forum, blog or wiki) on social issues encountered in everyday life.

It was not surprising that mean scores suggested that students were struggling with lower confidence in the safety domain, specifically with skills related to tracking digital footprint as they seemed to know only a little about it. The students were also fairly confident with knowing when to avoid activities that were considered as cybercrimes and with blocking unhealthy content published on the internet.

Students were again fairly confident with skills in the Regulation domain. The mean scores revealed that students marked fair in the case of knowing about Malaysian laws that affect them if they spread lies and dangerous comments on their websites. The findings also show that students were only fairly confident to skills linked to understanding rules and rights related to content creation and knowing how and when to acknowledge the source of information in essays and creative work.

Lastly, the problem-solving domain was one where students felt fair confidence. This was seen in the fair mean scores derived from skills related to being able to evaluate the problem by gathering appropriate information using digital tools; working in teams to choose the best answer to solve the problem and creating thoughtful explanation with the support of digital applications.

In summary, it can be said that the students in secondary schools in Malaysia confront challenges in reading the 21st century world, specifically in relation to digital media literacy. Clearly as seen from the findings above, there are difficulties in areas like information navigation, safety, digital citizenship, regulation, creative and critical thinking. This brings serious implications as their engagement with digital technologies may be problematic and pose barriers to a clear understanding of the factors that frame information and media content in hyper connected cultures. In addition, it is also vital that students be mindful of their consumption and take responsibility for their participation in digital cultures. Students today turn to digital media technologies as a key source of information, communication, learning, leisure and entertainment and it is crucial for Malaysian schools to build digital media literacy so that they can productively access to diverse reading content for personal, professional and social growth.

8. CONCLUSION

Digital media literacy is a core area of knowledge that is essential to empower students to critically evaluate the information they access, to enable them to better understand the materials they read and need. It is also important for them to be conscious of the meaning they convey through content creation as well as to respect diverse views and to take responsibility for their online actions. The development of the self-assessment tool for digital media literacy was a crucial step in determining the difficulties and anxieties faced by secondary school students in Malaysia. It is now imperative for educational authorities and policy makers to drive resources and practical measures in building an agenda on digital media literacy in the country.

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