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James Gomez and Robin Ramcharan

MIL in Post-Pandemic Southeast Asia: Approaches to Measuring Effectiveness in the Academic Literature

James Gomez and Robin Ramcharan[2]

Abstract

This article reviews recent scholarship on the effectiveness of media information literacy (MIL), advanced as a tool to fight an "infodemic" in Southeast Asia. The latter refers to the overload of false information that has consumed Southeast Asia during the COVID-19 pandemic, ravaging the world since January 2020 and is reaching an endemic stage by mid-2022. Asia Centre has suggested that of all of the remedies available to combat this infodemic, media literacy may be the most effective for the long term, in combination with other approaches including accurate information sharing by authorities, fact-checking, take-down action by technology/social media companies and quality journalism. This article probes scholarship on the effectiveness of MIL to distil models of MIL and an assessment of its utility in light of extant studies. The review is based on desk research using publicly available and specialized databases to identify academic articles on MIL.

Keywords: Media Information Literacy, Infodemic, COVID-19

[2]Regional Director & Executive Director, Asia Centre
email: james@asiacentre.org and robin@asiacentre.org

Introduction

"Infodemic" (WHO, 2020) of false information about the COVID-19 pandemic consumed Southeast Asia from 2020 to 2022. Aside from the scores of deaths caused by the virus itself, the proliferation of fake news about the virus and the pandemic over its duration also contributed to deaths and hospitalisations in the region as elsewhere in the world (Washington Post, 2022). Such disinformation has originated from the highest levels of governments to the ground levels of societies, as ordinary citizens consume such information, often in bewilderment (Gomez and Ramcharan, 2020).

A major question that has emerged in relation to combatting the rabidity of the infodemic is *what is the best way to fight it?* A number of possible solutions have been advanced: accurate information sharing by authorities, fact-checking, strike-down action by technology/social media companies, quality journalism and media information literacy (MIL). The merits and demerits have been outlined by Gomez and Ramcharan (2022), who argue that MIL is the best approach to fight the infodemic.

This article probes this argument by examining extant academic literature on the effectiveness of MIL. From this literature, it aims to identify models for such measurement. It proceeds first by identifying the infodemic Southeast Asia and then undertaking a literature review. The review is based on desk research using publicly

available and specialized databases to identify academic articles on MIL. It seeks to distil models of MIL, distil ideas on how to approach the study of effectiveness and distil challenges an assessment of its effectiveness in light of extant studies. It then discusses the implications for policymakers, civil society and academics in designing such interventions.

The COVID-19 Era Infodemic in Southeast Asia, 2020-2022

Of the many millions of people who perished from being infected by the COVID-19 virus or were hospitalised, many of them were affected by the spread of fake news about the virus and the pandemic. COVID-19 killed around 352,000 people in Southeast Asia, 1.2 million across Asia and over 6.2 million worldwide as of early May 2022 (Worldometer, 2022).

Fake news circulates at virtually uncontrollable speed on social media. Even when corrective action is taken, such news proliferates beyond the reach of fake news controllers. In the social media era, 75% of the world population acquires news from the Internet and social media – Facebook, WhatsApp, Instagram, etc (Datareportal, 2022). The uncontrollable amount of fake news that proliferates exponentially causes damage to society in various ways, including death and breaching their rights to health and to accurate information. The latter is vital to the former.

A recent publication by Gomez and Ramcharan (2022; 2020) reviewed the nature and evolution of infodemic in the turbulent preliminary stages of COVID-19 en/pandemic in Southeast Asia to identify types of COVID-19 infodemic that were prevalent. Tracking the life cycle of the pandemic, fake news circulated about the origins of the virus, the infections and deaths, false remedies and vaccine efficacy. Such an effort worked in tandem with studies finding causal relationships to the infodemic in order to inform researchers, policy-makers and other stakeholders as to what information was in demand and for what reason. MIL emerged as the most desirable solution to combatting the infodemic, in combination with other approaches.

The question that needs to be probed is the effectiveness of MIL. The latter refers to the ability of an individual to identify different types of media and understand the message they are consuming or sending. Being media information literate requires four components: the ability to access, analyse, evaluate and create messages (Livingstone, 2004). In the pandemic, MIL is held to be a key to preventing infections and death for the reason that “many … were unaware of how much information about the pandemic was incorrect, deliberately misleading or malicious” (Rattray, 2020). Of all the measures used to deal with disinformation, it was held that media and information literacy education works the best, especially

on a long-term basis, since it relies directly on users' awareness (MacGregor, 2020) and serves as a bottom-up strategy to counter false and misleading content.

Does this bottom-up MIL strategy work and is it better than other approaches? What is the state of research on this? This article, now turns to a probe of scholarship specifically on the effectiveness of MIL.

Literature Review

Media information literacy enjoys a rich discussion in extant literature.[3] Suffice it to note academic works on a variety of themes since 2010, when increasing attention has been paid to the impact of social media. Basic definitions of MIL – the what, why and how – have been explored by Grace (2005). After 2010, authors began to delve into the types of literacies. Similarly, Koltay (2011) began exploring the new media age and the linkage between digital technologies and the media. Chen, Wu and Wang (2011) had already noted the need to unpack new media literacy versus traditional literacy. Lin et al. (2013), while tracing media literacy from the beginning of the 20th century, offer a theoretical framework for understanding MIL, in particular in the digital media environment.

[3] For example, Butler (2019; 2020), Cubbage (2018), Hall (2015), Silverblatt (2015), Tan (2009), Yildiz (2015).

These authors noted the new media literacy is a convergence of all literacy developed over the past centuries including classic literacy, audiovisual literacy, digital literacy (see Pandya 2014), and information literacy.

The potential for MIL to help identify 'what' is fake news was probed by Jones-Jang et al. (2019). In this vein, the relationship between media literacy and education (Kotilainen and Arnolds-Granlund, 2010) and more specifically MIL and 'media' education (Fedorov, 2015) have been also treated. In a study involving 400 American high school students using digital media literacy approaches, the positive correlation between engagement in a media literacy program and enhanced civic engagement was treated by Martens and Hobbs (2013). Knaus (2020) identified the need for a greater understanding of the powerful connection between media literacy and technological literacy to properly harness the potential of MIL.

Martens (2010) in reviewing scholarship by then, noted that conceptual debates about the aims of MIL were at least three-fold and went beyond merely the ability to access, analyze, evaluate and communicate messages in a variety of forms[4] (see also Livingstone, 2004):

[4] Definition of the National Leadership Conference on Media Literacy (USA) in Martens (2010)

1) A *psychological information-processing view* of Potter (2004), which pointed to perspectives from which individuals exposed themselves to the media and interpreted the meaning of the messages they encountered. This cognitive approach required that individuals have good knowledge about media industries, media messages, media effects, the real world and of the self. To sort through this information and organize it, people skills of analysis, evaluation, grouping, induction, deduction, synthesis, and abstracting were required.

2) A *cultural studies* perspective, like that of Buckingham (2003), questions if the individual is key to understanding how best to teach media literacy. It argues that we cannot teach a limited set of cognitive abilities which individuals somehow come to possess. Instead, a number of key media concepts – production, language, representation, and audience – provided a theoretical framework to be applied to the whole range of contemporary mass media. Teachers should start from students' existing understanding of the media and use these concepts to enable them to think in a more conscious and deliberate way. "The aim of media [literacy] education, then, is … [to] enable them to reflect systematically on the processes of reading and writing, to understand and to analyze their own experience as readers and writers" (Buckingham, 2003). Dialogue between teacher and student is central to a learning

process: teachers should be working in so-called "zones of proximal development", guiding students until they can understand without support" (Martens, 2010).

More recent and critical media literacy (CML) scholarship has emerged, which looks at how media studies influenced the reader/viewer to understand how information is presented to them (Funk et al., 2019). Underlying CML, notes Lewis (2021), is the probing of the impact of media on underlying stereotypes, marginalisation and exploitation. Lewis himself explores the impact of technology on humans using a phenomenological approach, specifically the concept of 'post-human'**.** Druick (2016), for example, analysed the Americanisation of media literacy studies, the 'myth of literacy' in the media sphere, which he says is nothing new and is a reiteration of old techniques to advance neoliberal capitalism, including through the deregulation of the media in the 1990s. Kleemans and Eggink (2016), explore the connection between MIL programs for Dutch teenagers and news literacy. Manca et al. (2019) and Harshman (2021) have pointed to the need for more "glocal" understanding in developing MIL strategies rather than a one-size-fits-all and for more global-minded MIL programs.

What is the impact and how effective are these literacy programs? Martens' 2010 review of the scholarship on the effectiveness of MIL explains that "evaluating and explaining

effectiveness is one of the most profound challenges for contemporary research on media literacy education".

Ideas on Measuring the Effectiveness of MIL

The focus here is on MIL literature exclusively on its effectiveness. Martens' review (2010) of the literature pointed to central ideas on measuring the effectiveness of MIL and its shortcomings. He notes that media literacy was "mostly defined in terms of the knowledge and skills individuals need to analyze, evaluate, or produce media messages". Such knowledge and skills relate to media industries, media messages, media audiences, and media effects, as outlined further below. Nevertheless, he noted that scholars evaluating MIL hailed from a variety of other research and theoretical backgrounds:

- cultural/critical studies framework – often, they pair their interest for young people's popular culture with a sociocultural conception of learning as a collective, participatory process. Therefore, they emphasize interaction and social context. Methodologically, cultural/critical scholars tended to describe and theorize media teaching and media learning within complex real-life contexts. Cultural scholars emphasized the need to understand how pupils learned about mass media.

- The social science approach, particularly psychology, offered a general theory of media literacy. In this information-processing view, individual cognitions were prime. Social science researchers typically tested the effects of media literacy interventions within controlled research environments.
- Psychological approaches of public health researchers who evaluate media literacy practices by linking psychological constructs with media learning outcomes.

One interesting study by Hobbs and Martens (2015), using social science methodologies, explored the positive correlation between engagement in a media literacy program and enhanced civic engagement. Their experiment on digital citizenship involved 400 American high school students, a clearly articulated methodology using "a quasi-experimental design with a 2x2 factorial structure", statistical tools and coding of open-ended data,[5] assessed

[5] One factor was based on ability grouping (selective-admission vs. open-admission); the other factor was based on participation in a media literacy program. This created an opportunity to examine media use behaviors and media analysis skills among students with different levels of academic talent and with differential kinds of exposure to formal education in media literacy.

"students' intent to engage in nine types of political and civic activities".[6]

Maksl et al. (2017), focusing on the growing field of news media literacy (NML), analysed 537 college students, randomly sampled, and found positive relationships between NML and two political engagement measures: current events knowledge and internal political efficacy. Emphasis on NML has grown, reflecting the call of Masterman (1997), one of the founders of the media literacy studies, who argued: "the democratization of institutions, and the long march toward a truly participatory democracy, will be highly dependent upon the ability of majorities of citizens to take control, become effective change agents, make rational decisions (often on the basis of media evidence) and to communicate effectively perhaps through an active involvement with the media".

Models of MIL Measurement in Academic Literature

[6] Students were asked to report if they expect to engage in the following activities when they become an adult: vote in national elections, get information about candidates before voting in an election, join a political party, write letters to a newspaper about social or political concerns, be a candidate for a local or city office, volunteer time to help poor or elderly people in the community, collect money for a cause, collect signatures for a petition, and participate in a peaceful rally or protest. A 4-point scale was used, scaled as *certainly will not do, probably will not do, probably will do,* and *certainly will do*.

From this literature, what are the models or approaches that are in evidence? Martens (2010) notes that media literacy education was a multifaceted and contested phenomenon. Whereas traditionally it involved "the ability to analyze and appreciate respected works of literature and, by extension, to communicate effectively by writing well" in the past 50 years "it has come to include the ability to analyze competently and to utilize skillfully print journalism, cinematic productions, radio and television." Moreover, the target audience has changed from K-12 (or secondary education) to the higher education context. The term media literacy has also morphed to include terms such as 'digital' or 'multiple media literacies'.

Discussion on the effectiveness begins with a consideration of the ways in which scholars have approached MIL programs, from contextual/cultural studies to descriptions of teaching methods, to media learning, to understanding the limitations, to explaining the effects. Cultural studies often allude to the context and negotiated nature of media interpretation and the complex relationships between media audiences and media content. More exploration of the teacher's actual classroom practices was called for and leading to calls for "a naturalistic study of everyday settings employing qualitative methods that offer insight into the detail of media educational activities". Media learning focused on learning in media literacy education, notably on the relationships between students'

existing knowledge about mass media and the knowledge teachers make available. Scholars studying limitations of understanding focused on the complexity of social reality, of interpretations and meanings. They sought detailed descriptive accounts that provide useful insights into the messy realities of classroom practices. Thus, using mostly qualitative research methods and by working "on small cases, in naturally occurring situations, sometimes focusing on only a handful of teachers or pupils, with the chance of gaining a good understanding of them" (Ibid.). An 'explaining effects' approach saw scholars using experimental designs as standards "to assess the effectiveness of instructional interventions because they deliver harder evidence (Ibid.). To investigate the impact of media literacy curricula, "most evaluators prefer experimental field studies or quasi-experimental research to take into account the real-life characteristics of the school environment". Most of the studies use quantitative measures, sometimes in combination with qualitative measures. Theoretical models and empirical results are sought by scholars in assessing media literacy and how individuals respond to media messages. There has been a paucity of studies combining theoretical work with empirical hypothesis testing, though this has changed recently.

A prominent theory in the latter camp is Potter's Cognitive model. Maksl et al. (2015) note that Potter's model is useful

because it considers several factors affecting overall literacy, including the knowledge that is necessary to be prepared for media exposure as well as the ways in which individuals process information once exposed. Potter (2004) argues that his model requires more "conscious processing of information" and "preparation for exposures" than earlier conceptualizations of media literacy.

Potter's model exhibits five basic "knowledge structures" – knowledge about media content, media industries, media effects, the real world, and the self – and how they interact with a person's combination of drives, needs, and intellectual abilities (called the "personal locus") that govern information processing and construct meaning from that information. Potter states that "with knowledge in these five areas, people are much more aware during the information-processing tasks and are, therefore, more able to make better decisions about seeking out information, working with that information, and constructing meaning from it that will be useful to serve their own goals".

Two other theoretical approaches noted by Martens (2010) are noteworthy. Inoculation theory and the message interpretation process model (MIP) have been used to explore effectiveness in a media literacy education context. Inoculation theory, a theory of reasoned action, focuses on how to make people more resistant to

persuasion. It proposes that people can be motivated to refute specific challenges to existing attitudes. MIP studies the ways in which logic- and affect-based dimensions of decision-making work together to produce decisions. Media literacy is theorized to affect how individuals respond to media messages. Therefore, it is used as a model that treats decision-making as a process of evaluation and understanding, rather than as a simple response to message stimuli.

A study by Maksl et al. (2015), using Potter's model, adapted it to measure levels of news media literacy among 500 teenagers using a new scale measure based on Potter's 2004 model. The adapted model posits that news media literate individuals think deeply about media experiences, believe they are in control of media's influence and have high levels of basic knowledge about media content, industries, and effects. Based on measures developed to assess news media literacy, highly news literate teens were found to be more intrinsically motivated to consume news, more skeptical, and more knowledgeable about current events than their less news literate counterparts.

Among the many areas that are explored in relation to MIL, is that of NML, which is particularly relevant to countering COVID-related or other disinformation content. Ashley et al. (2013) developed a scale to measure news media literacy with a focus on news production techniques and consumption. Their model

included items to measure authors and audiences (AA) focusing on how authors target audiences, messages and meanings (MM) addressing the values and production techniques in messages that appeal to different viewers and the representation and reality (RR) focused on the filtering of information in the media and how this affects perceptions of reality. Vraga et al., building on Potter's 2004 model, expanded on this cognitive approach by introducing two additional scales: the Self-Perceived Media Literacy (SPML) and the Value for Media Literacy (VML). The SPML measures are designed to tap into individuals' belief that they are in fact media literate and thus able to access, analyze and evaluate media content. The VML probes individuals' perceptions about their news media literacy skills, tapping into notions of self-efficacy and competence. McWhorter (2020), building on Maksl et al. (2015), argues for participation in the "agenda melding model" as an inducer of higher levels of NML. Agenda melding refers to the "social process by which we meld agendas from various sources, including other people, to create pictures of the world that fit our experiences and preference".

Regarding theoretical approaches generally, scholars have cautioned that if media literacy scholars wish to theoretically explain the effectiveness of media literacy practices, they should consistently differentiate between several types of explanatory

variables: analysis vs. production; factual vs. evaluative approaches and peer-led vs teacher-led methods (see Martens 2010).

Policy Implication

A number of serious limitations in MIL programs were in evidence according to Martens (2010). For a start, there is a demand for real-life field studies requiring organisational and methodological difficulties: cooperation of a large number of researchers, schools, teachers, and students; limited access to schools for multiple time periods; sample biasing in data; potential extraneous sources of variation and contamination across groups; and programs that measure the short term effects of interventions versus the difficulty of implementing programs to assess long-term effects and behavioural change. This is highly problematic, because long-term cognitive, attitudinal, and behavioural effects are often the main media literacy target outcome.

A recent study of the validity of tests of the effectiveness of designs of published studies of media literacy, by Potter and Thai (2019), concluded after studying 88 studies that used the term “media literacy intervention” that:

> “A meaning analysis found that 22 studies (25.0%) provided no conceptual foundation for media literacy, and 21 (23.9%) used an existing definition of media literacy. Despite there being hundreds of definitions for media literacy in the literature, the authors of the remaining 45 studies

> (51.1%) presented their own definition for media literacy. … The assessment of validity found that none of the studies presented a test of media literacy that completely captured the elements in their definitions of media literacy, so the content validity of this literature was judged as poor. … The evaluation of face validity uncovered many problems in a lack of correspondence between what authors intended to measure and what they actually measured. The most prevalent discrepancy was with measures of skills where authors frequently measured beliefs about study participants' levels of skills rather than taking measures of actual performance" (Ibid.).

Policymakers, civil society programmers and academic researchers must pay careful attention to a number of key aspects of the design of MIL programs. A number of questions must be asked and answered clearly.

First, *what is media information literacy about?* Well after media literacy studies began in the 1990s, Livingstone (c.2005) noted the lack of agreement over media literacy in general and authors note the multiplicity of literacies – media, information, digital. On the latter, Zhang and Zhu (2016), note many terms have appeared such as ICT literacy, ICT competence, digital literacy, and digital competence. Evidencing this point is the distinction between the cultural studies approach and the psychological information processing approach. Martens has noted the need for researchers to be more explicit about "the media literacy core concepts/skills they include in their interventions, and should more carefully address who delivered the intervention with what fidelity, in what setting,

for how long and utilizing what pedagogical approach". Jones-Jang et al. (2019), for example, while investigating the inoculation theory, concludes that information literacy – but not other literacies such as media literacy, news literacy, and digital literacy – significantly increases the likelihood of identifying fake news stories.

Second, *what is type of fake news that is being addressed* (see Gelfert, 2018)? A well-known definition of fake news is that of Allcott & Gentzkow (2017): "news stories that have no factual basis but are presented as news". Nevertheless, Mason et al. (2018) called for a deeper understanding of the term "fake news", which has been around for a long term in different guises and involved state manipulation of views on events.[7] In political divided societies the challenge of distinguishing between 'biased' versus 'fake news' is ever-present, notes Friesem (2018), who discusses the need to find a balance between critical thinking and cynicism (see also Lombardo, 2018). Gelfert notes the idea of conceiving 'fake news' as a "cluster concept that is best captured by a taxonomy of

[7] For example, *yellow journalism* fanned the Spanish-American war of 1898, *state manipulation* to affect public opinion and to stoke nationalism, *canned news* or packaged news by media giants, the staging of pseudo-events (such as a press conference) to be covered by the press and other forms. Other fake news phenomena include Trading up the chain, astroturfing and cryptoptication (Mason, et al, 2018).

interrelated phenomena" – fabricated content, false context, false connection, parody, etc.

Third, *what is the target group for the MIL program?* Proper design of a tailored model requires clarity on who the target group is. What are their specific needs? A pre-intervention investigation is necessary. While most MIL programs have targeted secondary school and young adolescents, more emphasis is being placed on adult learners today. Ofcom, a UK regulatory body for telecommunications, regularly researches media use, attitudes and understanding among UK adults aged 16 and over (Ofcom, 2022). The Electronic Platform for Adult Learning in Europe (EPALE), for example, targets adult learners in particular (EPALE, 2019).

Earlier work by Livingstone (c.2005), had already raised the need for greater attention to adult learning. The claim that adults had become more "media savvy" required more convincing evidence. They noted concerns that audiences lack the more complex skills for a sufficiently discerning or critical understanding to deal with the highly sophisticated construction of media messages, and that little is known about how well adults understand online content. EPALE suggests that small scale studies suggest that adults are often unaware of the provenance of information and may lack the skills to take into account the point of view from which information is presented. A considerable gap

exists in our knowledge of how people understand advertising and the economic processes of online content production.

In this vein, investigations have begun on parents' knowledge and skills related to digital threats (Tomczyk and Potyrala 2021). Similarly, a phenomenological study of academicians' opinions on digital literacy in the Vocational School of Technical Sciences of a university in Turkey revealed some knowledge of digital literacy and a willingness to receive training to deepen understanding (Yildiz, 2020).

Fourth, *what is the purpose of the program?* Echoing Martens, debates today (MacGregor, 2020) continue to centre on a distinction between the impartment of skills necessary for MIL versus awareness of the social impact of media messages, that is, the maximization of positive media effects and minimization of negative ones. With regard to the imparting of skills, scholars' views on the following four areas are of relevance: on media industries, scholars argue that children and adolescents should be able to grasp the nature of commercial mass media and the purpose of commercials; on media messages; on Media Messages media literacy researchers reason that awareness of the constructed nature of media messages is essential to a valid evaluation of media content; with regard to the impact or media effects scholars have noted that

people should be aware of mass media's effects on individuals and society.

With regard to the latter, three themes are found in the literature. The theme of active citizenship sees many scholars emphasizing views on access and understanding of contemporary media as a vital aspect of citizenship in general, teaching youth to be good citizens in a democratic society, for example, and assuming an active rather than a passive role in acquiring new knowledge and skills (See for example Maksl et al., 2013). Martens notes that this outcome is dependent on each person's attitude toward performing a given behaviour and willingness to perform it over time. The theme of public health in MIL programs aims to assist youth to understand that the media are in the business of selling them products and behaviours that may be detrimental to their health, such as Tobacco, alcohol and violence. The theme, though less featured, is learning to appreciate the aesthetic qualities of mass media, especially the cinematic arts.

A contemporary debate centres on protection versus empowerment. MIL can be a tool not only to tackle social challenges using tools such as UNESCO's MIL CLICKS to fight fake news but also "to enable and empower people to appropriate the massive opportunities that exist in the information, media and digital technological ecology" (MacGregor, 2020).

Fifth, *what is the goal of the program?* From the perspective of measuring the effectiveness of MIL programs, the problem of identifying the goals of MIL must be addressed. Is it to be able to identify fake news, to impart information literacy, to generate informed debate, to understand the impact of technology, to increase ability to participate in respectful civic debate or other goals? Should the program follow Potter's psychological information-processing point of view of media literacy as "the set of perspectives from which we expose ourselves to the media and interpret the meaning of the messages we encounter" (Potter, 2004)? Or should it follow other goals as those identified in the cultural studies or other research perspectives?

Sixth, *does the design of the MIL program accurately address how the target audience engages in learning?* The education cycle, from secondary school, to tertiary, to post-graduate to adult learning typically exhibit different learning abilities and ways of engaging in learning as reflected in the terms of pedagogy, andragogy and heutagogy. Understand, how they consume information from the media – in print, online, on social media etc. – must inform the program. Whereas pedagogy involves dependent learning, andragogy involves self-directed learning and heutagogy is more process-focused aimed at highly motivated self-learners, building on andragogy approaches (Blaschke, 2012). A newer

concept of 'cybergogy' has emerged to signify self-directed learning via the internet (Mehta, 2021). Valverde-Berrocoso et al. (2022), in a systematic review of academic literature of educational models that have been developed to empower citizens against disinformation, identified three pedagogical approaches: strategies for competencies development, focus on content and education for citizenship. Emerging from the literature is the need to adopt interdisciplinary and multi-literacy approaches, notably media and information literacies. In relation to the latter, perhaps more so for older adults, is the need to understand who or what is producing fake news and disinformation in an age when media processes such as production, content generation, curation, delivery, recommendation, and filtering of information are taken over by algorithms and automation (Valtonen et al., 2019). Aydemir and Demirkan (2018) have argued for the need for gender-sensitive training for prospective teachers of media literacy.

Seventh, *what methodology is required for the program?* This requires understanding a number of issues: which knowledge and skills are most necessary? Is it to help with understanding information processing (media industries, media messages, media audiences, effects)? Or is it to engage with the aspects of the effects – social impacts – such as digital citizenship, civic engagement and so on? Should media literacy look beyond mere cognitive learning

and theories of reasoned action, to influencing the target audiences in everyday mass media consumption? Effectiveness requires that the person acquiring knowledge and skills must actively and mindfully use these in everyday life (Martens, 2010). In this line of thinking, Nierenberg, Låg and Dahl (2021) develop a quantitative assessment tool to measure "if there is a connection between what students know about information literacy and what they actually do in practice when evaluating and using sources". Jones-Jang et al. (2019), advances the information literacy approach – the intellectual framework for understanding, finding, evaluating, and using information – using a scale developed by the Association for College and Research Libraries (ACRL). This approach focuses on students' abilities to identify verified and reliable information, search databases and identify opinion statements.

Eighth, *does the program include a follow-up measurement tool depending on the goal and target audience?* Prior studies on children adolescents have revealed that pre-test and post-test designs exhibit the pitfall of 'social desirability'. They often realize and give what interviewers wish to find. It then becomes difficult to ensure that participants experience a real change and findings will generalize outside or beyond the research context (Martens 2010).

Dawson and Siemens (2014) have advocated for the use of "learning analytics" to assess the development of "multiliteracies" or "new media literacies" competencies among individuals. The authors posit that, building on big data and data mining methodologies, "learning analytics uses the data associated with a learner's interactions with content, other learners, and the educational institution to make decisions and evaluations about teaching practices, personalized content, and needed interventions for learner success".

Conclusion

This paper suggests that to effectively address the COVID-19 era of disinformation, a clear-eyed understanding of the effectiveness of MIL is needed with a view to designing programs. The paper offered in the preceding section some avenues for the design of stronger programs that must be built on awareness of the different measurement approaches stemming from different research perspectives.

Academic discussion on MIL suggests that "individuals need to acquire knowledge about key facets of the mass media phenomenon, such as media industries, media messages, media audiences, or media effects. Also, they should be able to apply this knowledge when accessing, analyzing and evaluating all kinds of

media messages" (Martens, 2010). Since Martens' review of the state of academic research then, a greater number of works have appeared with a view to validating scientifically the claims of effectiveness of media literacy programs from a variety of perspectives.

Research Implication

An important area for further research is the measurement of the impact of media literacy on adult learners. Most of the studies thus far target children and young adolescents. Mason et al. (2018), in discussing fake news and democracy, argue for a deeper engagement with media literacy in high school and higher education curricula; they note the need to prepare citizens for better democratic participation in environments where manipulation is increasingly complex. This implies research and MIL programs for adult audiences in the contemporary social media environment. Heutagogical approaches need to be studied and applied in designing effective MIL programs for highly independent and self-learning adults.

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