



Increasing Digital Health Literacy in Refugee Communities

LITERATURE REVIEW



Health
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Local Health District

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INTRODUCTION

This literature review was the first stage of a research project to inform a Digital Health Literacy Project among refugee communities initiated by the South Western Sydney Local Health District (SWSLHD).

'The Digital Health Literacy and Refugee Project' developed by SWSLHD received funding for two financial years from the NSW Refugee Health Flexible Funding Pool.

Following and informed by this literature review, the first stage of the project involved:

1. Conducting **consultation with refugee community leaders** in south western Sydney to gain understanding of social, cultural, structural, economic and other factors influencing health literacy, media use, and digital skills in their communities, based on understanding of the *antecedents* of health literacy and a *culture-centred approach* to planning and delivery of services and communication (See 'What research literature tells us');
2. Engaging with a **refugee community Advisory Group** to gain further insights into social and cultural factors influencing health literacy, media use, and digital skills in their communities and to collaboratively design interventions based on understanding of the *antecedents* of health literacy and a *culture-centred approach* to planning and delivery of services and communication (See 'What research literature tells us');
3. Developing a **program and content for a series of activities** (what some call interventions) to increase digital health literacy among refugee community leaders and volunteer influencers in south western Sydney;
4. Identifying or designing **tools to test the digital literacy and digital health literacy** of refugee community leaders and members;
5. Delivering the first of the **proposed series of health literacy development activities** for refugee community leaders and volunteer influencers.

Researchers from the University of Technology Sydney (UTS) were contracted as research partners to work with the SWSLHD Health Literacy Unit under the coordination of the Manager, Health Literacy, SWSLHD Multicultural Service, Dr Michael Camit.

BACKGROUND AND CONTEXT

South Western Sydney Local Health District (SWSLHD) is responsible for public hospitals and healthcare facilities in south western Sydney from Bankstown stretching to Bowral on the southern tablelands of NSW.

SWSLHD covers seven Local Government Areas (LGAs) and has a population of almost 1 million people.

The District operates 14 major community health centres providing prevention, early intervention and community-based treatment, palliative care and rehabilitation services.

The vision of SWSLHD is to be a leader in care and create healthier communities.

In delivering on that vision, SWSLHD has identified a need to increase the health literacy of the population of refugees living in south western Sydney as a key strategy for improving public health in those communities. Noting that public communication is largely conducted via digital technologies and platforms today, the SWSLHD seeks to specifically improve digital health literacy.

South Western Sydney – Home to refugees and CALD communities

At 30 June 2020, 30% of the estimated resident population of Australia was born overseas, amounting to 7.6 million people, and this is increasing – up from 27% (6.4 million people) in 2013.¹

Of a total more than 1 million refugees who have been settled in Australia, more than 500,000 arrived as offshore refugee and humanitarian entrants between 1977 and 2020, and a further 76,000 were granted onshore protection visas between 1980 and 2020.² In the decade from 2006 to 2016, a total of 44,082 refugees and humanitarian entrants settled in NSW, with almost 75% of them settling in Greater Western Sydney.³ In particular, many CALD communities cluster in areas such as South Western Sydney. (See Box 1 in relation to the term CALD.)

The Digital Health Literacy and Refugee Project aims to build digital health literacy and social media skills in refugee communities in South West Sydney.

OBJECTIVE

The objective of the Digital Health Literacy and Refugee Project is to **develop digital health literacy within a pilot group of refugee community leaders and influencers who, in turn, can develop digital health literacy within their communities.**

The project is based on a ‘train the trainer’ approach with a view to the development of digital health literacy becoming scalable and self-sustaining.

It is envisaged that the Digital Health Literacy and Refugee Project will involve a series of collaboratively developed and co-designed workshops. It is also anticipated that the project will result in an online information hub and a closed online group for participants and health organisations to share evidence-based health information and techniques for increasing digital health literacy.

Thus, the project lays the foundations for future digital health literacy development among refugee communities, translating academic research findings, the recommendations of Government inquiries, and professional knowledge into community practice.

¹ Australian Bureau of Statistics. (2021, April 23). 30% of Australia's population born overseas. <https://www.abs.gov.au/media-centre/media-releases/30-australias-population-born-overseas>

² Refugee Council of Australia. (2022). How many refugees have come to Australia. <https://www.refugeecouncil.org.au/how-many-refugees-have-come>

³ Mahimbo, A., Kang, M., Sestakova, L., Smith, M., & Dawson, A. (2022). Factors influencing refugees' willingness to accept COVID-19 vaccines in Greater Sydney: A qualitative study. *Australian and New Zealand Journal of Public Health*. (Advance online publication), p. 2.

Box 2. Why focus on refugees and CALD communities?

“Australian Bureau of Statistics (ABS) data in January 2021 showed that Australian residents born in the Middle East and North Africa are over 10 times more likely to die of coronavirus than people born in Australia.

“Those born in South-East Asia and southern and central Asia ... were around twice as likely to die of COVID.”⁴

Box 2. Going cold on CALD

The categorisation of people as culturally and linguistically diverse, often abbreviated to CALD, has been critiqued by many researchers as too diverse and imprecise to be meaningful for the purposes of needs assessment or service design in the Australian context. This is because of Australia’s long-established commitment to multiculturalism whereby ethnic and cultural identities are increasingly complex and hybrid due to long-term migration, inter-marriage and intergenerational changes.⁵ The description ‘culturally and linguistically diverse’ can include migrants who arrived shortly after World War II and who have become fully assimilated into Australian society, but retain their cultural heritage, as well as new migrants and refugees. It could also include Indigenous Australians, although this group would often be considered (additionally or alternatively) within the separate category of Aboriginal and Torres Strait Islander (ATSI).

To understand differences that require special consideration by policy makers and service providers, such as language skills and social connectedness, a more precise description is required. One option might be ‘recently-arrived CALD migrants’, or even more specific categories such as ‘forced migrant or refugee’. While these are less inclusive terms, it is important for researchers, policymakers, and service delivery organisations to ensure that the circumstances of groups who need additional support and care is not lost in a category that is overly broad. Particular focus is also required to identify and support non-English speaking migrants and people with low or no literacy.

“Country of birth and language spoken at home have historically been the main diversity indicators used by Australian government agencies [for identifying so-called CALD communities and ethnicity]. But experts say this does not adequately capture the diversity of the community.”⁶

⁴ Yussuf, A., & Waiden, M. (2022, 16 June). Multicultural groups welcome federal government’s move to collect ethnic data. *ABC News Online*, paras 10–11. <https://www.abc.net.au/news/2022-06-16/federal-government-to-measure-ethnicity-data-multiculturalism/101158038>

⁵ Robertson, S. (2019). Status-making: Rethinking migrant categorization. *Journal of Sociology*, 55(2) 219–233, p. 233. <https://doi.org/10.1177/1440783318791761>

⁶ Yussuf & Waiden, 2022, paras 2–3.

WHAT RESEARCH LITERATURE TELLS US

Health literacy

A 2012 systematic literature review found that there is no consensus on the definition of health literacy or its conceptual dimensions. The systematic review identified 17 definitions and 12 conceptual models.⁷ Diversity in understanding is partly because health literacy is studied in medical and clinical contexts as well as in communication and media studies.

The systematic review proposed an integration of medical and public health views of health literacy, offering the following definition.

Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course.⁸

As could be expected, this definition links health literacy to literacy generally (i.e., people's ability to read and write), as well as requiring motivation and certain levels of knowledge and competences in order to understand and apply health information.

Don Nutbeam notes that health literacy was a relatively new concept at the beginning of the new millennium. He describes health literacy as "a composite term to describe a range of outcomes [of] health **education** and **communication** activities".⁹

In later work, Bauman and Nutbeam focus on health education as a driver of health literacy, but include media communication as part of education.¹⁰ Some clarification of these key concepts associated with health literacy is useful and perhaps necessary.

Health promotion, education, and communication – interrelated concepts

Health promotion

The World Health Organization (WHO) describes health promotion as:

"... the process of enabling people to increase control over, and to improve their health ... Health promotion represents a comprehensive social and political process, it not only embraces actions directed at strengthening the skills and capabilities of individuals, but also action directed towards changing social, environmental and economic conditions so as to alleviate their impact on public and individual health."¹¹

The *Ottawa Charter* for health promotion identifies five priority areas for health promotion as follows:

- Build healthy public policy;
- Create supportive environments for health;
- Strengthen community action for health;
- Develop personal skills; and
- Re-orient health services.¹²

⁷ Sørensen, K., Van den Broucke, S., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12(80), 1–13. <http://www.biomedcentral.com/1471-2458/12/80>

⁸ Ibid, p. 3.

⁹ Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, 15(3), 259–267, p. 259. <https://doi.org/10.1093/heapro/15.3.259>

¹⁰ Bauman, A., & Nutbeam, D. (2014). *Evaluation in a nutshell: A practical guide to the evaluation of health promotion programs*. McGraw Hill Education.

¹¹ World Health Organization. (1998). Health promotion. Promotion glossary. WHO/HPR/HEP/98. https://apps.who.int/adolescent/second-decade/section/section_9/level9_15.php

¹² Ibid.

Health promotion is thus a broader concept than health education and health communication, involving focus on health policy and delivery of relevant health services, as well as focussing on supportive environments, community action, and personal skills.

Health education

The World Health Organization (WHO) says health education “comprises consciously constructed opportunities for learning involving some form of **communication** designed to improve *health literacy*, including improving knowledge, and developing life skills which are conducive to individual and *community health*.”¹³ Thus, health education is directly relevant to the objective of this project.

The Australian Commission on Safety and Quality in Health Care similarly refers to the ability of people to understand and apply health information saying:

Health literacy is about how people understand information about health and health care, and how they apply that information to their lives, use it to make decisions and act on it.¹⁴

Thus, health education and health communication are closely inter-related and overlapping practices.

Health communication

A recent study of the state of health communication research over the past decade noted that:

Health communication is a multifaceted field of research, theory, and practice concerned with delivering health-related information to diverse populations. The field’s goal is to promote, sustain, and adopt beneficial health or social behaviours, policies, and practices to improve individual, community, and public health outcomes.¹⁵

Seth McCulloch and colleagues quoted above say that “grounding research in theory can further the development and rigor of health communication”.¹⁶

The systematic review of health literacy by Kristine Sørensen and colleagues identifies a number of what they call *antecedents* of health literacy, or what could be called pre-conditions of health literacy. They note that “most authors refer to demographic, psychosocial, and cultural factors, as well as to more proximal factors such as general literacy, individual characteristics and prior experience with illness and the healthcare system”.¹⁷ They break these down as follows.

Demographic and social factors impacting health literacy

- Socioeconomic status
- Occupation
- Employment
- Income
- Social support
- Culture
- Language
- Environmental and political forces
- Media use
- Peer influence (parental influence in the case of adolescents).

¹³ World Health Organization. (1998). Health education. Promotion glossary. WHO/HPR/HEP/98. https://apps.who.int/adolescent/second-decade/section/section_9/level9_15.php

¹⁴ Australian Commission on Safety and Quality in Health Care. (2022). Health literacy.

<https://www.safetyandquality.gov.au/our-work/patient-and-consumer-centred-care/health-literacy>

¹⁵ McCulloch, S., Hildenbrand, G., Schmitz, K., & Perrault, E. (2021). The state of health communication research: A content analysis of articles published in *Journal of Health Communication and Health Communication* (2010-2019). *Journal of Health Communication*, 26, 28–38, p. 28. <https://doi.org/10.1080/10810730.2021.1879320>. This definition draws on Schiavo, R. (2007). *Health communication: From theory to practice*. Jossey-Bass.

¹⁶ Ibid, p. 29.

¹⁷ Sørensen et al., p. 7.

Personal characteristics impacting health literacy

- Age
- Race
- Gender
- Cultural background
- Social skills
- Meta-cognitive skills associated with reading, comprehension and numeracy (i.e., general literacy)
- Physical competences such as vision, hearing, verbal ability, memory and reasoning.¹⁸

The contribution of health education and communication

As a third category of antecedent that influences health literacy, Sørensen et al., note and support Don Nutbeam's argument that health literacy depends on education and communication.¹⁹

There are two main branches of health communication discussed in research literature. The first is focussed on health care delivery and involves mainly communication in a clinical context such as that occurring between doctors, nurses, emergency services (e.g., ambulance and paramedics), and patients.²⁰ The second involves public communication which is discussed as part of health education and health promotion in health and medical disciplines, but referred to specifically as *health communication* among communication and media scholars. This field is involved in the use of information and persuasive communication through various media and direct channels to promote public health.²¹

The Australian Commission on Safety and Quality in Health Care separates health literacy into "two parts", or types, which it summarises as:

- *Individual health literacy* – "the skills, knowledge, motivation and capacity of a person to access, understand, appraise and apply information to make effective decisions about health and health care and take appropriate action";
- *Health literacy environment* – "the infrastructure, policies, processes, materials, people and relationships that make up the health system and have an impact on the way that people access, understand, appraise and apply health-related information and services."²²

Health education and communication are particularly important in addressing the first type of health literacy above, but also contribute to the second type.

For much of the 20th century, health education and health communication were seen as part of *development communication*,²³ which was grounded in Modernist thinking and theoretically informed primarily by psychology. Theories and models applied in public health education and communication over the past 75 years have included *theory of reasoned action* (TRA); *theory of planned behaviour* (TPB); the *integrated behavioural model* (IBM); the *transtheoretical model and stages of change* (TTM); and the *precaution adoption process model* (PAPM); as well *social cognitive theory* (SCT) or *social learning theory* (SLT).²⁴

A number of other important theories and models have drawn on psychology and social psychology, but have progressively broadened thinking and approaches to health education and communication.

¹⁸ Sørensen et al., pp. 7–8.

¹⁹ Nutbeam, D. (2000). Health literacy as a public goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International* 15(3), 259–267. <https://doi.org/10.1093/heapro/15.3.259>

²⁰ Slade, D., Manidis, M., McGregor, J., Scheeres, H., Chandler, E., Stein-Parbury, J., ... Matthiessen, C. (2015). *Communicating in hospital emergency departments*. Springer.

²¹ Kreps, G., Bonaguro, E., & Query, J. (1998). The history and development of the field of health communication. In L. Jackson & B. Duffy (Eds.), *Health communication research: Guide to developments and directions* (pp. 1–15). Greenwood Press.

²² Australian Commission on Safety and Quality in Health Care. (2022). Health literacy.

<https://www.safetyandquality.gov.au/our-work/patient-and-consumer-centred-care/health-literacy>

²³ Malikhao, P. (2020). Health communication: Approaches, strategies, and ways to sustainability on health or health for all. In J. Servaes (Ed.), *Handbook of communication for development and social change* (pp. 1015–1037). Springer Nature.

²⁴ Ibid, p. 1022.

The health belief model

A widely-applied approach to health behaviour change has been the health belief model (HBM), which proposes that behaviour in relation to health is based on four perceptions of risk (perceived *susceptibility*, perceived *severity*, perceived *benefit*, and perceived *barriers*) combined with the concepts of *cues to action* and *self-efficacy*. Cues or triggers to action include interaction with health professionals such as doctors; interpersonal communication with family, friends and peers; and media messages. Self-efficacy refers to an individual's capacity to take action (confidence, knowledge, agency, etc.). However, despite wide use, the HBM model has had mixed results.²⁵

Behaviour change communication and social & behaviour change (SBCC)

Social sciences, particularly psychology, informed further development of *behaviour change communication* (BCC) and, more recently, social factors have been increasingly recognised as influences on health, reflected in *social and behaviour change communication* (SBCC). SBCC incorporates consideration of both individual change and change of broader environmental and structural factors. SBCC remains grounded largely in epidemiological evidence, with some consideration of 'client'²⁶ perspectives, context, and needs.

Social determinants of health

Increasingly, researchers have recognised that social factors play a major role in health. The *social determinants of health* (SDH) refer to the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. Research shows that health is substantially linked to socio-economic status and social capital, influenced by factors such as:

- Income
- Education level
- Unemployment and job insecurity
- Working conditions
- Food insecurity
- Housing and basic amenities
- Early childhood development
- Social inclusion and non-discrimination
- Structural and social conflict.²⁷

The World Health Organization reports that social determinants can be more important than health care in influencing health, accounting for 30–55% of health outcomes.²⁸

Social ecology model

Contrasting top-down modernist and development communication approaches, which have come under criticism,²⁹ Catherine Panter-Brick and colleagues propose a *social ecology* model of health communication that “focuses attention on the contexts of behaviour when designing, implementing or critical evaluating interventions”. Panter-Brick et al. say: “We use the term social ecology to focus attention on the social and physical settings contextualising behaviour as well as the interplay between human actors and external factors shaping their agency”.³⁰

²⁵ Park, H. (2016). Health belief model. In D. Kim & J. Dearing (Eds.), *Health communication research measures* (pp. 25–32). Peter Lang, p. 26.

²⁶ The health field is increasingly moving away from the term 'patient' to refer to clients. Providers of other services use other comparable terms such as customers, users, and participants.

²⁷ World Health Organization. (2022). Social determinants to health. https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

²⁸ Ibid, para. 4.

²⁹ Dutta, M., & de Souza, R. (2008). The past, present, and future of health development campaigns: Reflexivity and the critical-cultural approach. *Health Communication*, 23(4), 326–339. <https://doi.org/10.1080/10410230802229704>

³⁰ Panter-Brick, C., Clarke, S., Lomas, H., Pinder, M., & Lindsay, S. (2006). Culturally compelling strategies for behaviour changes: A social ecology model and case study in malaria prevention. *Social Science & Medicine*, 62, 2810–2825, pp. 2810–2811. <https://doi.org/10.1016/j.socscimed.2005.10.009>

Informing this approach is that Panter-Brick et al. note that “behaviour change is notoriously difficult to initiate and sustain” and they observe that “the reasons why efforts to promote healthy behaviours fail are coming under increasing scrutiny”³¹ – a factor relevant to this study. In fact, citing a wide range of health communication literature they say “there are remarkably few examples of truly successful health interventions.” They recommend:

To be successful, health interventions should build on existing practices, skills and priorities, recognise the constraints on human behaviour, and either feature community mobilisation or target those most receptive to change. Furthermore, interventions should strive to be culturally compelling, not merely culturally appropriate: they must engage local communities and nestle within social and ecological landscapes.³²

A systematic review of eight peer reviewed studies focussed on refugees’ health revealed a number of factors that influence access to healthcare and concluded that these can be understood within a social ecology model of health – that is, they involve individual, interpersonal, environmental, organisational and policy factors. The novel finding of this review was the re-occurrence of similar influences across multiple healthcare service settings in Australia. This suggests that refugees experience multilayered barriers to accessing Australian healthcare.³³

Culture-centred approach

More recently, Mohan Dutta and colleagues have advocated a “culture-centred approach” (CCA) to health communication that “seeks to address health disparities by fostering opportunities for listening to the voices of those at the margins through a variety of participatory communication methods”. Dutta et al. say that co-construction, which he describes as “a process of collaboration and power sharing between academics and marginalised communities, lies at the heart of the CCA”.³⁴

These recently developed theoretical frameworks, which draw on understandings of user-centred design, co-production, and co-creation from other disciplines,³⁵ are particularly relevant and important in planning, implementing, and evaluating health communication with CALD communities. Researchers note that, particularly in the case of refugees, their voices are typically missing from discussion and policy making and, as a result, “refugees are impacted by inadequate access to health care services, bureaucratic barriers, language issues, and unfamiliarity with a new health system”.³⁶

Health communication with CALD and refugee communities

As noted above, CALD communities generally, and refugees particularly, have been identified as groups requiring specialist focus in public communication including in health communication under social ecology and culture-centred approaches, paying attention to the social and cultural context in which these groups live, work, and interact.

As noted in ‘Background and context’, Australia has one of the most diverse migrant populations in the world.³⁷ At 30 June 2020, 30% of the estimated resident population of Australia was born overseas, amounting to 7.6 million people, and this is increasing – up from 27% (6.4 million people) in 2013.³⁸

³¹ Ibid, p. 2810.

³² Panter-Brick et al., p. 2810.

³³ Taylor, J., & Lamaro Haintz, G. (2017). Influence of the social determinants of health on access to healthcare services among refugees in Australia. *Australian Journal of Primary Health*, 24(1) 14–28, p. 14. <https://doi.org/10.1071/PY16147>

³⁴ Dutta, M., Anaele, A., & Jones, C. (2013). Voices of hunger: Addressing health disparities through the culture-centered approach. *Journal of Communication*, 63(1), 159–180, p. 160. <https://doi.org/10.1111/jcom.12009>

³⁵ Tanaka, A., Gaye, L., & Richardson, R. (2010). Co-production and co-creation: Creative practice in social inclusion. In R. Nakatsu, N. Tosa, F. Naghdy, K. Wong, & P. Codognet (Eds.), *Cultural computing* (pp. 169–178). Springer.

³⁶ Jayan, P., & Dutta, M. (2022). Nobody cares about us: COVID-19 and voices of refugees from Aotearoa New Zealand. *Communication Research and Practice*, 7(4), 361–378, p. 362.

³⁷ Rao, D., Warburton, J., & Bartlett, H. (2006). Health and social needs of older Australians from culturally and linguistically diverse backgrounds: issues and implications, *Australasian Journal of Ageing*, 25(4), 174–179. <https://doi.org/10.1111/j.1741-6612.2006.00181.x>

³⁸ Australian Bureau of Statistics. (2021, April 23). 30% of Australia’s population born overseas. <https://www.abs.gov.au/media-centre/media-releases/30-australias-population-born-overseas>

Between 2006 and 2016, a total of 44,082 refugees and humanitarian entrants settled in NSW, with almost 75% of them settling in Greater Western Sydney.³⁹ In Western Sydney LGA, for examples, almost 39% of residents were born overseas.⁴⁰

CALD communities are often among the least accessible and hardest to reach sections of society.⁴¹ A 2022 study of COVID-19 vaccination rates among refugees in Australia concluded that they:

... face a multitude of barriers including language, cultural, financial and logistical barriers and a lack of familiarity with the health care system, which impede their ability to navigate health care services. These access barriers compounded by limited literacy and limited health literacy, place refugees at a disproportionately higher risk of COVID-19 related morbidity and mortality compared to the general population.⁴²

A 2021 *Pulse of Western Sydney CALD Communities: Amplifying Voices During COVID-19* report produced by the Western Sydney Migrant Resource Centre similarly found that a lack of access to health information, a lack of digital literacy, and a lack of local language content were barriers to vaccination.⁴³

Studies also show that older people, along with Aboriginal and Torres Strait Islands (ATSI) people lack digital inclusion and digital literacy.⁴⁴

Researchers note that digital health literacy occurs at the intersections of *literacy*, *digital literacy*, and *health literacy*.⁴⁵ To that can be added *media literacy* for the reasons discussed in the following.

Media literacy

Contemporary societies are highly *mediatised*. This refers to the fact that most information and debate in the public sphere occurs through media of some type, whether it is newspapers, radio, TV, written letters, e-mail, or social media platforms.

This contrasts with earlier oral societies. As Nick Couldry and Andreas Hepp say in *The Mediated Construction of Reality*, “the basic fabric of the social world has been constructed through mediated communications” with recent decades characterised by “successive waves of mediatisation that have resulted in the current stage of ‘deep’ mediatisation.”⁴⁶ Sonia Livingstone commented as early as 2009 that “everything is mediated.”⁴⁷ Social and political scientists and media and communication researchers agree that media play a central role in distributing information to people.

In *Media, Society, World: Social Theory and Digital Media Practice*, Nick Couldry says:

Many factors (economic, political, military) and many processes (trade, transport, measurement) contributed to the making of the world we take for granted today, but it is media that install that world as ‘fact’ into everyday routines.⁴⁸

³⁹ Mahimbo, A., Kang, M., Sestakova, L., Smith, M., & Dawson, A. (2022). Factors influencing refugees’ willingness to accept COVID-19 vaccines in Greater Sydney: A qualitative study. *Australian and New Zealand Journal of Public Health*. (Advance online publication), p. 1. <https://onlinelibrary.wiley.com/doi/epdf/10.1111/1753-6405.13252>

⁴⁰ idcommunity. (2022). Western Sydney LGA. [https://profile.id.com.au/cws/birthplace#:~:text=In%202016%2C%2038.6%25%20of%20people,in%20Western%20Sydney%20\(LGA\)](https://profile.id.com.au/cws/birthplace#:~:text=In%202016%2C%2038.6%25%20of%20people,in%20Western%20Sydney%20(LGA))

⁴¹ MacFadyen, L., Stead, M., & Hastings G. (2003). Social marketing. In M. Baker (Ed.), *The marketing book* (5th ed., pp. 694–725). Butterworth Heinemann.

⁴² Ibid, p. 2.

⁴³ Voola, A. (2021, September). *Pulse of Western Sydney CALD communities: Amplifying voices during COVID-19*. Western Sydney Migrant Resource Centre. <https://wsmrc.org.au/wp-content/uploads/2021/09/MRC0643-Pulse-Survey-final-LR.pdf>

⁴⁴ Commonwealth of Australia. (2021). Indigenous Digital Inclusion Plan – Discussion paper – September 2021. <https://www.niaa.gov.au/sites/default/files/publications/indigenous-digital-inclusion-plan-discussion-paper.pdf>;

Jung, S., Son, Y., & Choi, E. (2022). E-health literacy in older adults: an evolutionary concept analysis. *BMC Medical Informatics and Decision Making*, 22(28), 1–13. <https://doi.org/10.1186/s12911-022-01761-5>

⁴⁵ Harris, K., Jacobs, G., & Reeder, J. (2019). Health systems and adult basic education: A critical partnership in supporting digital health literacy. *Health Literacy Research and Practice*, 3(3), S33–S36, S34. <https://doi.org/10.3928/24748307-20190325-02>

⁴⁶ Couldry, N., & Hepp, A. (2017). *The mediated constructed of reality*. Polity, p. 213.

⁴⁷ Livingstone, S. (2009). On the mediation of everything. *Journal of Communication*, 59(1), 1–18, , p. 2.

⁴⁸ Couldry, N. (2012). *Media, Society, World: Social Theory and Digital Media Practice*. Polity, p. 1.

Couldry adds that media have a “systemic impact on everyday life”.

This is the case in Australia. A 2020 survey of 3,510 adult Australians to understand the different types of media they use found that most Australians use several different types of media each day and they believe a diverse range of media activities are important in their lives.⁴⁹

However, the study found that people have a **low level of confidence in their media abilities**. Furthermore, Tanya Notley and colleagues found that “far too many Australians don’t have access to any media literacy support when they need it.”⁵⁰

A 2020 study of the teaching of media literacy in schools similarly found that educators believe that the ability to check and verify news is “considered very or extremely important for nearly all respondents (94%) and the ability to use and compare multiple news sources was seen to be very or extremely important (93%). However, teachers report that many barriers restrict teaching of news literacy.⁵¹

Figure 1. Adult media literacy in Australia.

LEVEL OF MEDIA LITERACY

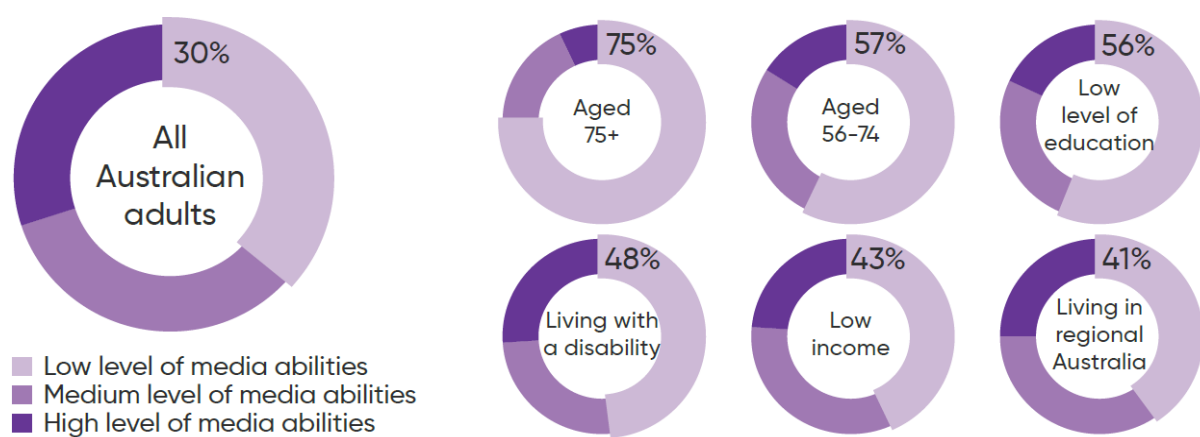
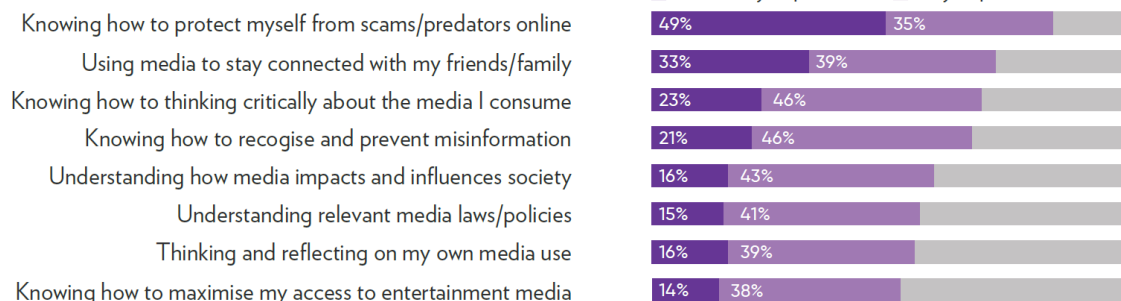


Figure 2. Research shows media literacy is important.

AUSTRALIANS BELIEVE THAT MEDIA LITERACY IS IMPORTANT



More than 50% of adults say the following media abilities are **important** in their life:



⁴⁹ Notley, T., Chambers, S., Park, S., & Dezuanni, M. (2021). *Adult media literacy in Australia: Attitudes, experiences and needs*. Western Sydney University, Queensland University of Technology and University of Canberra. https://www.westernsydney.edu.au/__data/assets/pdf_file/0007/1824640/Australian_adult_media_literacy_report_2021.pdf

⁵⁰ Ibid.

⁵¹ Corser, K., Dezuanni, M., & Notley, T. (2021). How news media literacy is taught in Australian classrooms. *Australian Educational Researcher*. (Advance online publication). <https://doi.org/10.1007/s13384-021-00457-5>

Media literacy has been defined as the ability to apply critical thinking to digital and non-digital media through analysis, evaluation and reflection. Core concepts of media literacy are (1) critically reflect on one's own and others' media use; (2) develop knowledge of media industries and technologies and how they work; (3) consider the social and cultural contexts in which media are produced and consumed; and (4) analyse media representations. These core concepts have provided the foundation for the design of media literacy education for more than three decades.⁵² However, while this approach has been used extensively in school-based education in the UK, Australia and many other countries, it has been less frequently included in adult education.

Furthermore, this is one aspect of media literacy as it is understood today.⁵³

Media literacy of consumption

The long-standing approach described above is referred to as the *media literacy of consumption*.⁵⁴ Increasingly in the age of 'democratised' social media, a number of scholars and advocates also call for media literacy in terms of producing and distributing information.

Media literacy of production

The *media literacy of production* involves development of skills for people to go beyond critical consumption of content to produce and distribute information that provides facts and trustworthy advice for others. Also, the media literacy of production can include 'armies of fact checkers' correcting misinformation and disinformation.⁵⁵

Media literacy is widely identified in research as necessary for a viable public sphere and for the functioning of contemporary societies.

Digital literacy

Until the late 20th century, media literacy initiatives focussed on traditional mass media (i.e., press, radio, and TV).

Since the proliferation of personal computers and development of the internet – particularly the World Wide Web, now simply referred to as the web – along with a growing range of personal digital devices, public communication has increasingly become digitalised. While bringing major advances in delivery of services, administration, and access to information, this has brought with it a requirement for new knowledge and skills, such as:

- Online **search** for information;
- Understanding of **social media platforms** (i.e., their protocols, conventions, settings, etc.);
- **Fact checking**;
- Ways to **identify misinformation and disinformation**;
- Accessing **online support**.

A definition of digital literacy used in UNESCO papers states:

Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy.⁵⁶

⁵² Buckingham 2019, *The Media Literacy Manifesto*, Polity; Dezuanni, M. (2015). The building blocks of digital media literacy. *Journal of Curriculum Studies*, 47(3), 416–439.
<https://www.tandfonline.com/doi/abs/10.1080/00220272.2014.966152>

⁵³ Dezuanni, 2015.

⁵⁴ Mihailidis, P. (2014). *Media literacy and the emerging citizen*. Peter Lang.

⁵⁵ Ibid.

⁵⁶ Law, N., Woo, D., Torre, J., & Wong, G. (2018). *A global framework of reference on digital literacy skills for indicator 4.4.2*. Information Paper No. 51, UNESCO Institute for Statistics.
<http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>

A simpler definition in a useful chapter on “digital literacy in the 21st century” identifies three categories of digital literacy as (a) locating and consuming digital content, (b) creating digital content, and (c) communicating digital content, summarised as:

Digital literacy practices involve the ability to locate and consume, create, and communicate digital content, while simultaneously employing a process of critical evaluation.⁵⁷

Digital health literacy

Digital health approaches are defined quite broadly in some literature. For example, an analysis of health literacy and digital health literacy by Emma Kemp and colleagues reported that:

Digital health approaches, including electronic medical records, data registries, decision support systems, wearable monitoring or reporting devices, electronic therapy and education platforms, have high potential to improve health care access, offering better integration and personalisation of care.⁵⁸

In this study, the focus is on health education and health communication rather than the wide range of digital technologies used in relation to medical records, data registries, and electronic therapy, or advanced health technologies such as wearable monitoring and reporting devices.

Digital health literacy is defined by the creators of one Australian community healthy literacy project as “the ability to seek, find, understand and appraise health information from electronic resources and apply such knowledge to addressing or solving a health problem.”⁵⁹ Such abilities are increasingly important for maintaining health.

The Federal Government recognises the importance of digital health literacy, establishing the Australian Digital Health Agency in 2020, which launched a digital health literacy initiative to help “bridge the ‘digital divide’ that precludes many Australians accessing improved health services” through the *Health My Way* program.⁶⁰ However, while working with community organisations, this initiative did not address digital health literacy in refugee communities.

Digital health literacy, also referred to as *e-health* literacy, is described in some literature as a “super determinant of health”.⁶¹

The **Transactional Model of eHealth Literacy** identifies four competence levels of digital health literacy as follows:

- *Functional* – the ability to successfully read and write about health using technological devices;
- *Communicative* – the ability to control, adapt, and collaborate in communication about health with others in online social environments;
- *Critical* – the ability to evaluate the relevance, trustworthiness, and risks of sharing and receiving health-related information through the digital ecosystem (i.e., the internet); and
- *Translational* – the ability to apply digital health-related information in different contexts.⁶²

⁵⁷ Spires, H., Paul, C., & Kerkhoff, S. (2019). Digital literacy for the 21st century. In M. Khosrow-Pour (Ed.), *Advanced methodologies and technologies in library science, information management, and scholarly inquiry* (pp. 12–21). IGI Global.

⁵⁸ Kemp, E., Trigg, J., Beatty, L., Christensen, C., Dhillon, H., Maeder, A., Williams, P., & Koczwara, B. (2020). Health literacy, digital health literacy and the implementation of digital health technologies in cancer care: The need for a strategic approach. *Health Promotion Journal of Australia*, 32, (S1), 104–114. <https://doi.org/10.1002/hpja.387>

⁵⁹ Canberra Health Literacy. (2022). Digital health literacy. <https://cbrhl.org.au/what-is-health-literacy/digital-health-literacy>

⁶⁰ Australian Digital Health Agency. (2021, March 21). Good things happening to support digital health literacy. <https://www.digitalhealth.gov.au/newsroom/media-releases/recent-media-releases/good-things-happening-to-support-digital-health-literacy>

⁶¹ van Kessel, R., Wong, B., Clemens, T., & Brand, H. (2022). Digital health literacy as a super determinant of health: More than simply the sum of its parts. *Internet Interventions*. (Advance online publication). <https://doi.org/10.1016/j.invent.2022.100500>

⁶² Paige, S., Stelfson, M., Kreiger, J., Anderson-Lewis, C., Cheong, J., & Stopka, C. (2018). Proposing a transactional model of ehealth literacy: Concept analysis. *Journal of Medical Internet Research*, 20(10). e10175. <https://doi.org/10.2196/10175>

This supports the argument that digital health literacy should address both the consumption and production of health information to create critical thinking, informed searching, and active agency in distributing and sharing credible health information.

These definitions and models provide guidance for developing digital health literacy initiatives.

In a recent special issue devoted to digital health literacy in a cardiology journal, Scott Conrad noted that, at a basic level:

Digital solutions allow for the delivery of multi-media education, such as videos, voice, and print, at different reading levels, in multiple languages, using formal and informal teaching methods. By giving the patient a greater voice and empowering them to be active participants in their care, they can develop their decision making and shared decision making skills.⁶³

In addition, Conrad pointed to more advanced digital health solutions including the use of artificial intelligence (AI), machine learning tools, augmented reality, and blockchain technology. He proposes that, through use of such digital technologies, “rather than being a passive participant, digital solutions provide the opportunity for the individual to be an active participant in their health.”

However, it is important to provide digital health literacy skills appropriate to the knowledge level and needs of participants. A study of *telehealth* solutions – patients and medical professionals interacting via a digital device or telephone – during the COVID-19 pandemic estimated that 10 million telehealth interactions have occurred since the beginning of the pandemic in March 2020. The majority of telehealth consultations continue to occur via telephone rather than through video conferencing.⁶⁴ This indicates that there is an opportunity for an expansion of digital health services, but it also indicates the modest level of digital skills and confidence in many communities.

The ‘digital health divide’ is recognised as an issue impacting the uptake of digital health initiatives in both Australia’s *National Digital Health Strategy and Framework*⁶⁵ and the National Digital Health Workforce and Education Roadmap.⁶⁶

Local level initiatives, such as proposed by the South Western Sydney Local Health District are, therefore, an important supplement and complement to national initiatives.

The risks of low levels of digital health literacy

Numerous studies identify limited health literacy and “a health literacy problem” even in highly educated developed societies.⁶⁷ This has led to a focus on increasing health literacy in many societies.

In today’s age of digital media and communication, a low level of digital literacy and *digital inclusion*, which refers to ability to access and use digital technologies effectively,⁶⁸ contribute to a lack of digital health literacy and leave many individuals and communities facing a lack of health information. Also, a low level of digital literacy, and digital inclusion, leaves many individuals and communities at risk of accessing and believing *misinformation* and *disinformation*.

The extent of misinformation and disinformation online has led to Oxford Dictionaries announcing ‘post-truth’ as its word of the year in 2016⁶⁹ and researchers describing contemporary society as “post-truth” society.⁷⁰

⁶³ Conrad, S. (2019). Best practices in digital health literacy. *International Journal of Cardiology*, 292, 277–279, p. 292. <https://doi.org/10.1016/j.ijcard.2019.05.070>

⁶⁴ Good Health Foundation. (2022). Digital health literacy. <https://www.goodthingsfoundation.org.au/the-digital-divide/digital-health>

⁶⁵ Australian Digital Health Agency. (2022). *National digital health strategy and framework for action*. <https://www.digitalhealth.gov.au/about-us/strategies-and-plans/national-digital-health-strategy-and-framework-for-action>

⁶⁶ Australian Digital Health Agency. (2020). *National digital health workforce and education roadmap*. https://www.digitalhealth.gov.au/sites/default/files/2020-11/Workforce_and_Education-Roadmap.pdf

⁶⁷ Centers for Disease Control and Prevention. (2022). Understanding health literacy. <https://www.cdc.gov/healthliteracy/learn/Understanding.html>

⁶⁸ Australian Digital Inclusion Index. (2022). Measuring Australia’s digital divide. <https://www.digitalinclusionindex.org.au>

⁶⁹ Oxford Dictionaries (2016). Oxford Dictionaries word of the year: Post-truth. <https://en.oxforddictionaries.com/word-of-the-year/word-of-the-year-2016>

⁷⁰ McIntyre, L. (2018). *Post-truth*. MIT Press.

The UK Government defines disinformation as “the deliberate creation and dissemination of false and/or manipulated information that is intended to deceive and mislead audiences, either for the purposes of causing harm, or for political, personal or financial gain.”⁷¹

Misinformation includes accidental distribution of false information. But, despite its lack of malicious intent, misinformation can be equally damaging in many cases.

The damaging effects of misinformation and disinformation has been brought into sharp focus during the COVID-19 pandemic. The World Health Organization declared the pandemic an “**infodemic**”⁷² and subsequently the UN labelled it a “**disinfodemic**”,⁷³ noting that misinformation and disinformation were potentially as damaging as the disease itself.

The Australian Government recognises the significant role played by digital platforms and the threats posed by misinformation and disinformation online. This manifested in the Digital Platforms Inquiry conducted by the Australian Competition and Consumer Commission (ACCC) in 2019.

The ACCC’s *Digital Platforms Inquiry Final Report* recommended that “a Government program be established to fund and certify non-government organisations for the delivery of digital media literacy resources and training”.⁷⁴ The Federal Government has accepted this recommendation, but has not yet established this program.

Digital health literacy intervention approaches

An important part of improving digital health literacy is learning from interventions that have achieved some success and avoiding interventions that have failed to produce positive results. Accordingly, as part of this literature review, the researchers searched academic and professional databases to identify approaches, interventions, and measurements that have been applied.

A 2022 report of research to evaluate NSW Government communication with CALD communities in relation to COVID-19 criticised top-down media campaigns and official translations, finding that they had minimal effects. Instead, the report recommended that authorities collaborate with local community leaders to identify effective strategies and use native language speakers as translators in line with a social ecology and culture-centred approach to health communication.⁷⁵

Similarly, in their study of COVID-19 vaccination rates among refugee communities in Australia, Mahimbo et al., found that **community and religious leaders are key intermediaries in health education and mobilisation**. They reported:

When asked about strategies to enhance vaccine uptake, participants affirmed the critical role community leaders, religious leaders, and other natural leaders played in engaging refugees to take up the vaccines. These leaders were reported to be important conduits for disseminating information on COVID-19 vaccines as they could speak in their vernacular and were viewed as vaccine enhancers due to their authoritative positions to influence communities to take up vaccines.⁷⁶

They further reported that “all participants reiterated the need for urgent community engagement strategies at the grassroots level to empower refugees with the knowledge to make informed decisions”. Strategies recommended included **community education sessions** for responding to individuals’ questions and concerns and receiving feedback.⁷⁷

⁷¹ Government Communication Service. (2019). *RESIST: Counter disinformation toolkit*.

<https://gcs.civilservice.gov.uk/guidance/resist-counter-disinformation-toolkit>

⁷² World Health Organization (2020b) Novel coronavirus (2019-nCoV). Situation report 13, 2 February. Available at <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200202-sitrep-13-ncov-v3.pdf>

⁷³ Posetti, J., & Bontcheva, K. (2020). *Disinfodemic: Deciphering COVID-19 Disinformation*. Policy Brief 1. UNESCO. <https://en.unesco.org/covid19/disinfodemic>

⁷⁴ Australian Competitive and Consumer Commission. (2019, July). Digital platforms inquiry – final report. <https://www.accc.gov.au/publications/digital-platforms-inquiry-final-report>

⁷⁵ Macnamara, J., Taylor, M., & King, M. (2022). *Review of NSW Government COVID-19 communications with CALD communities: Delta strain period June – December 2021*. University of Technology Sydney.

⁷⁶ Mahimbo et al., 2022, p. 6.

⁷⁷ Ibid.

Emphasising this point, Mahimbo et al. said that “**community leaders and key local opinion leaders and other natural leaders may be the gateway to disseminating information and reaching groups with trust issues with the government and limited literacy in their language.**”⁷⁸

A 2016 study of young newly-arrived migrants and refugees also highlighted the **importance of community organisations**, reporting that “the participants emphasised the importance of community organisations to their developing sense of belonging, both in their local community and as Australians”.⁷⁹

The Commonwealth Government’s *Building a New Life in Australia*, a longitudinal study of humanitarian migrants, provides further comprehensive information on the experiences of migrants and initiatives that have been taken, including in relation to health.⁸⁰

Other studies of COVID-19 public communication also have shown challenges with centrally distributed public health information not reaching linguistically diverse Australians.⁸¹ The editors of an extensive 2021 volume of country reports on COVID-19 communication conclude that the chapters reporting studies from 13 countries and regions “highlight **the necessity of communities as partners and key collaborators with the government in public health responses**”. They elaborate saying:

The mobilisation of community-led organisations as key partners with government structures ensures ongoing dialogue with, and agency for, the people most severely impacted ... The need to strengthen these government-community partnerships is indicated through the global absence of communication interventions for hard-to-reach marginalised communities.⁸²

This view is supported at a community-wide level in studies of organisational listening that emphasise the importance of **two-way communication in which organisations engage with and actively and attentively listen** to those with lived experienced and local knowledge.⁸³

A pre-print report of a study of COVID-19 health communication with CALD and refugee communities in Australia by Holly Seale and colleagues identified the ineffectiveness of direct translations and that “information voids” were being filled with international materials and concluded that “newly emerging communities (migrant/refugee) would be most at risk from missing out on messages and support services.”⁸⁴ Seale and colleagues also strongly supported development of partnerships with local community groups and supporting those groups, saying:

It is critical that alliances be set up that can be activated in the future to reduce issues around resource development, translation, and dissemination of messages to minimise gaps in the response. Financial assistance must be provided in a timely way to community organisations to support the development and dissemination of culturally appropriate communication materials.⁸⁵

In a related paper, Seale et al. specifically identified the key role of community leaders in distributing health information, saying: “The need to identify and work with local community information

⁷⁸ Ibid.

⁷⁹ Bansel, P., Denson, N., Keltie, E., Moody, L., & Theakstone, G. (2016). *Young newly arrived migrants and refugees in Australia: Using digital storytelling practices and to capture settlement experiences and social cohesion*. Young and Well Cooperative Research Centre and Western Sydney University, p. 6. https://www.westernsydney.edu.au/_data/assets/pdf_file/0003/1105698/young_newly_arrived_migrants_and_refugees_in_australia.pdf

⁸⁰ Department of Social Services. (2017). *Building a new life in Australia (BNLA): The longitudinal study of humanitarian migrants – Findings from the first three waves*. Australian Government. https://www.dss.gov.au/sites/default/files/documents/03_2018/d17_1138305_bnla_report_final_word_accessible_version.pdf

⁸¹ Lewis, M., Govender, E., & Holland, K. (2021). *Communicating COVID-19: Interdisciplinary perspectives*. Palgrave Macmillan, p. x.

⁸² Ibid, p. 375.

⁸³ Macnamara, J. (2016). *Organisational listening: The missing essential in public communication*. Peter Lang; Macnamara, J. (2019). Explicating listening in organization-public communication: Theory, practices, technologies. *International Journal of Communication*, 13, 5183–5204. <https://ijoc.org/index.php/ijoc/article/view/11996/2839>

⁸⁴ Seale, H., Harris-Roxas, B., Heywood, A., Abdi, I., Mahimbo, A., Chauhan, A., Woodland, L. (2022a). Speaking COVID-19: Supporting COVID-19 communication and engagement efforts with people from culturally and linguistically diverse communities. *BMC Public Health* (Pre-print), p. 7. <https://doi.org/10.21203/rs.3.rs-1277807/v1>

⁸⁵ Seale et al. (2022a), p. 15.

intermediaries was recognised as being instrumental in bridging the divide within the community and ensuring that information reaches all community members.”⁸⁶ However, they call for broadening beyond formally identified community and religious leaders. From their study of COVID-19 communication, they reported that:

Participants acknowledged the need to move beyond relying on already-recognised community and religious leaders, and to identify other possible community contacts. One key reason for this was to reduce the issue of ‘burn out’ amongst the community leaders.⁸⁷

Furthermore, research literature indicates that **young people, and even children, can play a key “bridging” or intermediary role** given that they often have higher levels of language skills and digital literacy⁸⁸ – a conclusion supported by Seale and colleagues.⁸⁹

To achieve this broadening of community partnerships and mobilisation, Seale et al. argued that there is **a need to provide support and training to community intermediaries**.

Cultural factors indicate that digital health literacy training for refugee groups likely needs to involve **face-to-face engagement**, rather than be offered entirely online. There are a number of fully online digital health literacy training programs, such as that of the Australian Library and Information Association⁹⁰ and the Health My Way program of the Good Things Foundation Australia.⁹¹ A hybrid approach is likely to meet a range of needs and interests, based on findings from the higher education sector during the COVID-19 pandemic.

Addressing misinformation and disinformation requires more than presentation of facts and figures. A 2017 Council of Europe study of *information disorder*, a term coined by First Draft,⁹² concluded that a **multidisciplinary, multi-faceted approach is essential**. This noted that, while corrections of misinformation and disinformation in traditional media and on social media platforms are a necessary part of a solution, the report recommended that a combination of fact checking, use of “powerful narratives” to counter conspiracy theories and misinformation narratives, and techniques such as *nudge* methods drawn from behavioural insights are required. The authors, who include Claire Wardle, a leading authority of disinformation and Executive Director of First Draft, concluded that we need to:

... connect the excellent experimental work that has helped us to understand how people process information with the sociological and cultural theories that highlight how and why people seek out information and use it to position themselves within certain ‘tribes’.⁹³

Digital health literacy intervention tools and methods

Within these approaches and considerations, an important step in improving digital health literacy is learning from specific methods and tools that have achieved some success and avoiding interventions that have failed to produce positive results.

Education programs

What has been called “the world’s largest media literacy campaign” was conducted in the United States and India in 2017 and the intervention was found to have “improved discernment between mainstream and false news headlines among both a nationally representative sample in the United States (by

⁸⁶ Seale, H., Harris-Roxas, B., Heywood, A., Abdi, I., Mahimbo, A., Chauhan, A., Woodland, L. (2022b). The role of community leaders and other information intermediaries during the COVID-19 pandemic: Insights from the multicultural sector. *Humanities and Social Sciences Communications*, 9(174), p. 3. <https://doi.org/10.21203/rs.3.rs-1360132/v1>

⁸⁷ Seale et al., (2022b), p. 5.

⁸⁸ Worrell, S. (2021). From language brokering to digital brokering: Refugee settlement in a smartphone age. *Social Media+ Society*, 7(2), 1–11. <https://doi.org/10.1177/20563051211012365>

⁸⁹ Seale et al., p. 6.

⁹⁰ Australian Library and Information Association. (2020). New digital health literacy online training program. <https://read.alia.org.au/new-digital-health-literacy-online-training-program>

⁹¹ Good Things Foundation Australia. (2022). Health My Way. <https://www.goodthingsfoundation.org.au/what-we-do/our-projects/health-my-way>

⁹² Kwan, V. (2019, October). Responsible reporting in an age of information disorder. First Draft. https://firstdraftnews.org/wp-content/uploads/2019/10/Responsible_Reporting_Digital_AW-1.pdf?x88639

⁹³ Wardle, C., & Derakhshan, H. (2017). *Information disorder: Interdisciplinary framework for research and policy making*. Council of Europe, pp. 77–78. <https://rm.coe.int/information-disorder-toward-an-interdisciplinary-framework-for-research/168076277c>

26.5%) and a highly educated online sample in India (by 17.5%).” This intervention involved Facebook’s “**Tips to Spot False News**” developed in collaboration with the non-profit organisation, First Draft, and subsequently promoted at the top of users’ news feeds in 14 countries and printed in full-page newspaper advertisements in the USA, the UK, France, Germany, Mexico, and India (35–40). A variant of the tips was also distributed by WhatsApp.⁹⁴

Digital education programs such as the **Civic Online Reasoning Program** developed by the Stanford History Education Group,⁹⁵ which produces exercises and assessments to instruct students on how to judge the credibility of online content and provides rubrics that can be used to assess online literacy, also offers insights to inform this project. This program aims to combat disinformation by creating a cohort of information consumers who are better able to identify and avoid false information online.

A number of digital literacy education programs and resources have been developed in Canada including:

- The immigrant Services Society of British Columbia (ISSofBC) [Digital Literacy Curriculum Resource](#) designed to support English language instructors helping newcomer clients overcome digital literacy barriers. The resource includes an Assessor Rubric for teachers to identify digital skills gaps and learning needs;
- The Norquest College [WebSafe curriculum](#) in Canada, an online program that provides users with information on phishing, scams, safe browsing, and online shopping, as well as misinformation and disinformation online;
- [Newcomer Introduction to Classes Online \(NICO\)](#) produced by The Immigrant Education Society (TIES) in Canada, an online course to help newcomers overcome barriers to online learning.

Google also offers free [Applied Digital Skills](#) training online. Such programs introduce participants to a range of checklists and tests of information veracity.

Information seeking tests

An example of a test for users to determine if a website is a credible source is the **CRAP test** developed by Molly Beestrum.⁹⁶ This involves answering a series of questions in four areas: Currency; Reliability; Authority; and Purpose or Point of view (CRAP). The questions in each category are as follows.

Currency:

1. How recent is the information?
2. How recently has the website been updated
3. Is it current enough for your topic?

Reliability:

1. What kind of information is included in the resource?
2. Is content of the resource primarily opinion? Is it balanced?
3. Does the creator provide references or sources for data or quotations?

Authority:

1. Who is the creator or author?
2. What are the creator/author’s credentials?
3. Who is the publisher or sponsor?
4. Are they reputable?
5. What is the publisher’s interest (if any) in this information?

Purpose/Point of View:

1. Is this fact or opinion?
2. Is it biased?
3. Are there advertisements on the website?
4. Is the creator/author trying to sell you something?

⁹⁴ Guess, A., Lerner, M., Lyons, B., Montgomery, J., Nyhan, B., Reifler, J., & Sircan, N. (2021). A digital media literacy intervention increases discernment between mainstream and false news in the United States and India. *PNAS*, 117(27), 15536–15545, pp. 15536– 15537. <https://www.pnas.org/doi/full/10.1073/pnas.1920498117>

⁹⁵ Stanford University. (2022). Civic online reasoning. <https://cor.stanford.edu/>

⁹⁶ <https://ccconline.libguides.com/c.php?g=242130&p=2185475>

However, the CRAP test does not provide users with resources to answer the list of questions. The following methods offer more supportive and specific aids and advice.

Mythbusting and FAQs for debunking

Important tools for creating digital health literacy are official FAQs and mythbuster sites, such as the World Health Organization's **WHO 'Mythbusters' webpage** in relation to COVID-19. This contains hundreds of facts and corrections of misinformation.⁹⁷

In NSW, the State Government provides extensive information online which citizens should be aware of and have bookmarked in their browsers, such as **NSW Health frequently asked questions (FAQs)**.⁹⁸ Also, extensive information is available in the **FAQs published by the Centers for Disease Control and Prevention (CDC)** in the USA.⁹⁹

Insights into how to verify reliable content online also can be gained from training modules provided for journalists, which provide tips such as identifying fake accounts and bots using online tools to analyse the history of Facebook and Twitter accounts.¹⁰⁰ Other modules in this **UNESCO publication** specifically address misinformation and disinformation with a focus on developing critical thinking.¹⁰¹

There is also a growing number of **online fact checking platforms and tools**. These include:

- **RMIT ABC Fact Check** established by RMIT University and the ABC;
- **CrossCheck** operated by First Draft (<https://firstdraftnews.org>), a collaboration of journalists and media organisations founded by Claire Wardle in 2015;
- **Snope** is the oldest public fact checking site, founded in 1994;
- **FactCheck.org**, a non-profit, non-partisan consumer advocate founded by The Annenberg Public Policy Center, but this is mainly focussed on correcting political misinformation and disinformation;
- **PolitiFact**, founded by Australian editor and journalist, Peter Fray, similarly focussing largely on political issues.

Use of fact checking sites is a key example of strategies that all consumers can use to identify misinformation and disinformation. Awareness of fact checking sites is therefore part of developing digital health literacy.

These resources for providing corrections to misinformation and disinformation are referred to as *debunking*, which is a reactive approach.

Inoculation theory and prebunking

Another approach used in developing digital literacy to counter misinformation and disinformation favoured by many is *prebunking* – the process of debunking lies, false claims, and manipulative tactics before they take hold in people's consciousness. Prebunking is an application of *inoculation theory*,¹⁰² which proposes that it is better to proactively prevent misinformation and disinformation taking hold, rather than try to correct it afterwards.¹⁰³ Inoculation works by making people aware of the techniques and methods used to deceive, so they are able to identify them when viewing online content.

⁹⁷ World Health Organization. (2022). Coronavirus disease (COVID-19) advice for the public: Mythbusters. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>

⁹⁸ <https://www.health.nsw.gov.au/Infectious/covid-19/Pages/self-isolation-and-testing.aspx>

⁹⁹ <https://www.cdc.gov/coronavirus/2019-ncov/faq.html>

¹⁰⁰ Trewinnard, T., & Bell, F. (2018). Module 6: Social media verification: assessing sources and visual content. In *Journalism, 'Fake News' and Disinformation: A handbook for journalism education and training* (pp. 97–108). UNESCO. https://en.unesco.org/sites/default/files/module_6_1.pdf

¹⁰¹ Abu-Fadil, M. (2018). Module 4: Combatting disinformation and misinformation through and information literacy (MIL). In *Journalism, 'Fake News' and Disinformation: A handbook for journalism education and training* (pp. 70–80). UNESCO. <https://en.unesco.org/fightfakenews>

¹⁰² Compton, J. (2013). Inoculation theory. In J. Dillard & L. Shen, L. (Eds.), *The SAGE handbook of persuasion: Developments in theory and practice* (2nd ed., 220–236). Sage; Compton, J., & Pfau, M. (2005). Inoculation theory of resistance to influence at maturity: Recent progress in theory development and application and suggestions for future research, *Annals of the International Communication Association*, 29(1), 97–146. <https://doi.org/10.1080/23808985.2005.11679045>

¹⁰³ Lewandowsky, S., van der Linden, S. (2021). Countering misinformation and fake news through inoculation and prebunking. *European Review of Social Psychology*, 32(2), 348–284. <https://doi.org/10.1080/10463283.2021.1876983>

A basic example of prebunking is **proactively informing people of nascent or potential conspiracy theories, misinformation, and disinformation** before they become widely circulated, at the same time pointing out the deception involved (e.g., the lack of qualifications or expertise of the source).

A more creative approach is the use of **games** such as *Go Viral!* (<https://www.goviralgame.com/en>), a 5-minute online game that claims to protect users against COVID-19 misinformation. The game works by teaching users “common strategies used to spread false and misleading information about the virus”. The developers claim that “understanding these tricks allows you to resist them the next time you come across them online”. Scientists who worked on the development of *Go Viral!* found that playing the game (a) increases the perceived manipulateness of misinformation about COVID-19, (b) improves people’s attitudinal certainty (confidence) in their ability to spot misinformation and (c) reduces self-reported willingness to share misinformation with others”.¹⁰⁴

Another online game that intentionally exposes users to the tactics and manipulation techniques used to mislead people and build up a following is *Bad News* (<https://www.getbadnews.com/en>). The game “works as a psychological ‘vaccine’ against disinformation” – or what researchers refer to as *inoculation*.

A useful contemporary review of both debunking and prebunking approaches to misinformation and disinformation is provided by a number of social psychology researchers.¹⁰⁵

While misinformation and disinformation have escalated during the COVID-19 pandemic, digital health literacy also has been studied in relation to other health issues such as cancer and examples of effective approaches are available in this field of literature.¹⁰⁶

Measurement and evaluation

Best practice stipulates that all programs should be evaluated. In particular, research literature identifies that evaluation should be conducted before as well as after interventions in order to identify change, and thus effectiveness. In fact, best practice recommends *formative* (ex-ante) measures, *process* evaluation (tracking), and *summative* (ex-post) evaluation.¹⁰⁷

Health literacy

Digital health literacy is a specialised form of health literacy. It is therefore relevant to consider health literacy measurement methods as well as specific digital health literacy measurement and evaluation tests and tools.

One of the best-known measures of health literacy is the **Health Literacy Questionnaire** (HLQ), a multi-dimensional instrument that provides “a robust measure of nine identified health literacy dimensions” to identify the health literacy strengths and limitations of individuals and populations. The HLQ consists of 44 questions and can be self-administered or orally administered. It is available in paper and online formats. Completion time varies depending on the skills and approach of respondents. It usually takes between seven and 30 minutes to complete. When orally administered by telephone or in person the HLQ takes 20–45 minutes to complete.¹⁰⁸

¹⁰⁴ Basol, M., Roozenbeek, J., Berriche, M., Uenal, F., McClanahan, W., van der Linden, S. (2021). Towards psychological herd immunity: Cross-cultural evidence for two pre-bunking interventions against COVID-19 misinformation. *Big Data & Society*, 8(1), Advance online publication. <https://doi.org/10.1177/20539517211013868>

¹⁰⁵ van der Linden, S., Roozenbeek, J., Maertens, R., Basol, M., Kácha, O., Rathje, S., & Traberg, C. (2021). How can psychological science help counter the spread of fake news? *The Spanish Journal of Psychology*, 24(e25), 1–9. <https://doi.org/10.1017/SJP.2021.23>

¹⁰⁶ Kemp, E., Trigg, J., Beatty, L., Christensen, C., Dhillion, H., Anthony Maeder, A., et al. (2021). Health literacy, digital health literacy and the implementation of digital health technologies in cancer care: The need for a strategic approach. *Health Promotion Journal of Australia*, Supplement 1, 104–114. <https://doi.org/10.1002/hpja.387>

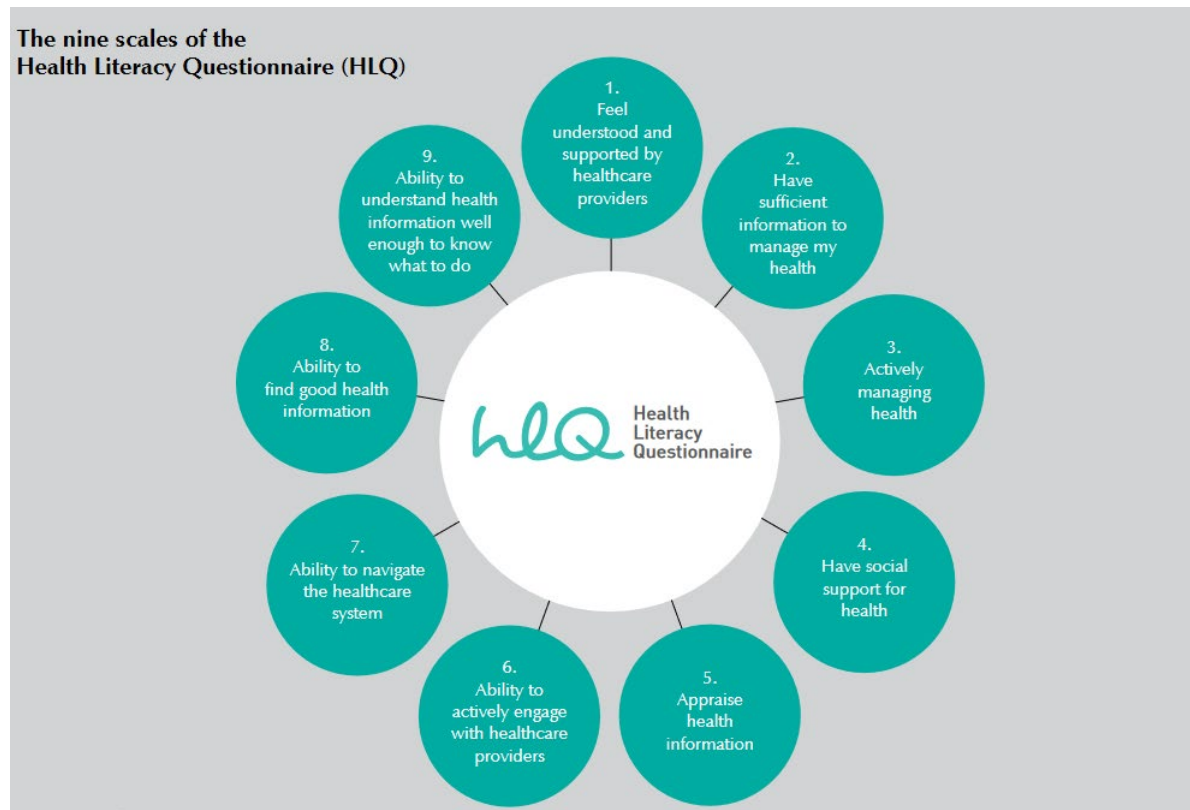
¹⁰⁷ Bauman, A., & Nutbeam, D. (2014). *Evaluation in a nutshell: A practical guide to the evaluation of health promotion programs* (2nd ed.). McGraw-Hill; Macnamara, J. (2018). *Evaluating public communication: Exploring new models, standards, and best practice*. Routledge.

¹⁰⁸ Dodson, S., Good, S., Osborne, R. (2015). Health literacy toolkit for low-and middle-income countries: A series of information sheets to empower communities and strengthen health systems. World Health Organization, Regional Office for South-East Asia, New Delhi, Information Sheet 12. <https://apps.who.int/iris/bitstream/handle/10665/205244/B5148.pdf;jsessionid=FC105360E25D773119D1947D06F77687?sequence=1>

A key feature of the HLQ is that it identifies societal factors, knowledge of and access to health services, and support to access health services, thus providing a holistic view of individuals and their environment.¹⁰⁹

Further information on the HLQ is available online at <https://www.swinburne.edu.au/research/global-health-equity/ophelia-and-questionnaires>.

Figure 3. The Health Literacy Questionnaire (HLQ).



Digital health literacy

There are a number of assessment methods and measures used in relation to digital literacy specifically that can be applied to digital health literacy.

Supplementary questions for the Health Literacy Questionnaire (HLQ) referred to above are available in the e-Health Literacy Questionnaire (eHLQ™), which provides insight into users' perceptions and experiences of digital health information sources and services based on seven scales that relate to the dimensions of the e-Health Literacy Framework.¹¹⁰ This tool can be licensed from the authors.

At a basic level, digital literacy is measured through **self-reporting gained through surveys**. However, self-reporting can be inaccurate through participants over-stating their digital knowledge and skills.

Another measurement methods if **online self-assessment tests**. Examples include:

- The US Public Library Association's **Tech Skills Checklist** is a self-assessment tool that helps users identify which skills they have mastered and the skills they need to improve. Each skill set in the checklist is connected to online learning opportunities so that users can access support and further learning;
- **Northstar Digital Literacy** provided by Literacy Minnesota identifies and evaluates the fundamental skills required to complete assignments on computers and the internet in a series of modules that

¹⁰⁹ Osborne, R., Buchbinder, R., Batterham, R., & Elsworth, G. (2014). The health literacy questionnaire (HLQ). Swinburne University of Technology.

¹¹⁰ Swinburne University of Technology. (2022). e-health literacy questionnaire. <https://www.swinburne.edu.au/research/global-health-equity/ophelia-and-questionnaires>

are free of charge. Users can receive a *Northstar Digital Literacy Certificate* after passing different tests.

There is a wide range of digital literacy self-assessment tests. A Google search on 'digital literacy self-assessment' produced 39,400 results, and these are being developed all the time because of the importance of digital literacy in society.

In December 2021, the European Commission launched a new online self-assessment tool for digital skills based on the Digital Competence Framework (DigComp) discussed in the following. The tool, available on the [Digital Skills and Jobs Platform](#), is available in 24 languages.

An example of a new online digital literacy test specifically related to health is the [Digital Literacy Self-Assessment Diagnostic Tool](#) being developed by Health Education England, part of the NHS. It is still in development, but is directly related to digital health literacy.

Beyond self-assessment, a more advanced method is supervised **testing of participants through computer-based and online tasks**, such as searching online for information and creating content.

Many frameworks have been developed to guide measurement of digital competency, such as the Digital Competence Framework of the European Commission, known for short as the **DigComp Framework**¹¹¹ and the digital capability framework developed by the by the Joint Information Systems Committee (JISC), a UK-based non-profit organisation (See Figure 4).¹¹²

The [DigComp Framework](#) (Version 2.2 released in early 2022)¹¹³ identified five key area of competence – information and data literacy; communication and collaboration; digital content creation; safety; and problem solving – and 21 specific competences that contribute to digital literacy.

A UNESCO Institute for Statistics (UIS) information paper containing recommendations on *Assessment Tools for Monitoring Digital Literacy within UNESCO's Digital Literacy Global Framework* (DLGF) notes that there are “pragmatic **competence-based** models” and **psychometric** approaches to measuring digital literacy with different levels of internal and external validity.¹¹⁴ This paper provides a detailed technical review of various measures of digital literacy.

The UNESCO Digital Literacy Global Framework identified seven areas of competence, adding two to the five competence areas identified in the DigComp Framework, as follows:

- Fundamentals of hardware and software
- Information and data literacy
- Communication and collaboration
- Digital content creation
- Safety
- Problem solving
- Career-related competences.

In a 2017 study, van der Vaarti and Drossaert pointed out that many instruments to measure digital *health literacy* focus only on information gathering, which they refer to as *Health 1.0* skills, and do not pay attention to interactivity with others on the Web, which they refer to as *Health 2.0*. To address this, they proposed the **Digital Health Literacy Instrument (DHLI) self-report scale**, which measures operational skills, navigation skills, information searching, evaluating reliability, determining relevance, adding self-generated content, and protecting privacy.¹¹⁵ See the DHLI scale questions in Table 1.

¹¹¹ European Commission. (2017). The digital competence framework. EU Science Hub. https://joint-research-centre.ec.europa.eu/digcomp/digital-competence-framework_en#the-digital-competence-framework

¹¹² Joint Information Systems Committee. (2018). Building digital capabilities: The six elements defined. https://repository.jisc.ac.uk/6611/1/JFL0066F_DIGIGAP_MOD_IND_FRAME.PDF

¹¹³ Vuorikari, R., Kluzer, S. and Punie, Y., DigComp 2.2: (2022). *The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*. EUR 31006 EN. Publications Office of the European Union. <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>

¹¹⁴ Laanpere, M. (2019). *Recommendations on assessment tools for monitoring digital literacy within UNESCO's digital literacy global framework*. Information Paper No. 56, UNESCO Institute for Statistics. <http://uis.unesco.org/sites/default/files/documents/ip56-recommendations-assessment-tools-digital-literacy-2019-en.pdf>

¹¹⁵ van der Vaart, R., & Drossaert, C. (2017). Development of the digital health literacy instrument: Measuring a broad spectrum of health 1.0 and Health 2.0 skills. *Journal of Medical Internet Research*, 19(1), e27, 1–13. <https://doi.org/10.2196/jmir.6709>

Table 1. Questions used in the Digital Health Literacy Instrument (DHLI) self-report scale.¹¹⁶

No.	Question
How easy or difficult is it for you to ...	
1	Use the keyboard of a computer (e.g., to type words)?
2	Use the mouse (e.g., to put the cursor in the right field or to click)?
3	Use the buttons or links and hyperlinks on websites?
When you search the Internet for information on health, how easy or difficult is it for you to...	
4	Make a choice from all the information you find?
5	Use the proper words or search query to find the information you are looking for?
6	Find the exact information you are looking for?
7	Decide whether the information is reliable or not?
8	Decide whether the information is written with commercial interests (e.g., by people trying to sell a product)?
9	Check different websites to see whether they provide the same information?
10	Decide if the information you found is applicable to you?
11	Apply the information you found in your daily life?
12	Use the information you found to make decisions about your health (e.g., on nutrition, medication or to decide whether to ask a doctor's opinion)?
When you search the Internet for health information, how often does it happen that...	
13	You lose track of where you are on a website or the Internet?
14	You do not know how to return to a previous page?
15	You click on something and get to see something different than you expected?
When typing a message (e.g., to your doctor, on a forum, or on social media such as Facebook or Twitter) how easy or difficult is it for you to...	
16	Clearly formulate your question or health-related worry?
17	Express your opinion, thoughts, or feelings in writing?
18	Write your message as such, for people to understand exactly what you mean?
When you post a message on a public forum or social media, how often...	
19	Do you find it difficult to judge who can read along?
20	Do you (intentionally or unintentionally) share your own private information (e.g., name or address)?
21	Do you (intentionally or unintentionally) share some else's private information?

Another widely cited and used measure of digital health literacy is the **eHEALS literacy scale**.¹¹⁷ The eHealth Literacy Scale (eHEALS) was designed by Norman and Skinner to (1) assess consumers' perceived skills at using information technology for health and (2) aid in determining the fit between eHealth programs and consumers. The eHEALS is an 8-item measure of eHealth literacy developed "to measure consumers' combined knowledge, comfort, and perceived skills at finding, evaluating, and applying electronic health information to health problems".¹¹⁸

Whether self-reporting surveys, practical skill tests, or sophisticated randomised controlled trials (RCTs) are conducted, measurement of digital literacy should consider the four types of access identified by van Dijk, namely: (1) motivation; (2) physical and material access (e.g., to a computer with internet connection, 5G mobile phone, etc.); (3) digital skills for a number of tasks; and (4) usage patterns such as frequency on the basis that practice increase capability (see Figure 4).¹¹⁹

¹¹⁶ van der Vaart & Drossaert, 2017.

¹¹⁷ Norman, C., Skinner, H. (2006). eHEALS: The e-health literacy scale. *Journal of Medical Internet Research*, 8(4), e27, 1–7. <https://doi.org/10.2196/jmir.8.4.e27>

¹¹⁸ Ibid.

¹¹⁹ Van Dijk, J. (2013). A theory of the digital divide. In M. Ragnedda & G. Muschert (Eds.), *The digital divide: the internet and social inequality: An international perspective* (pp. 49–72). Routledge.

Figure 4. Digital capability framework of the Joint Information Systems Committee (JISC).

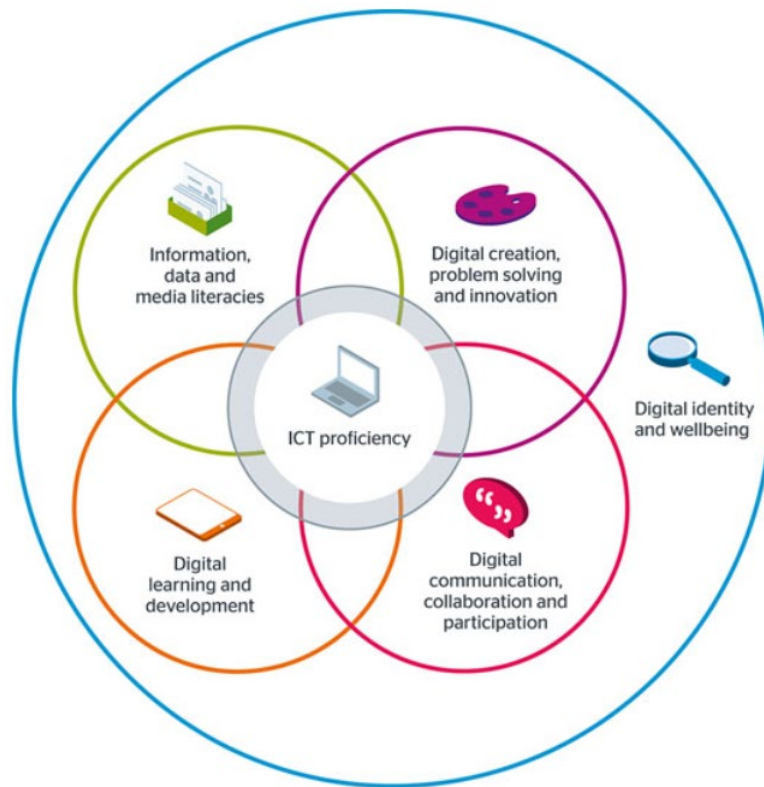
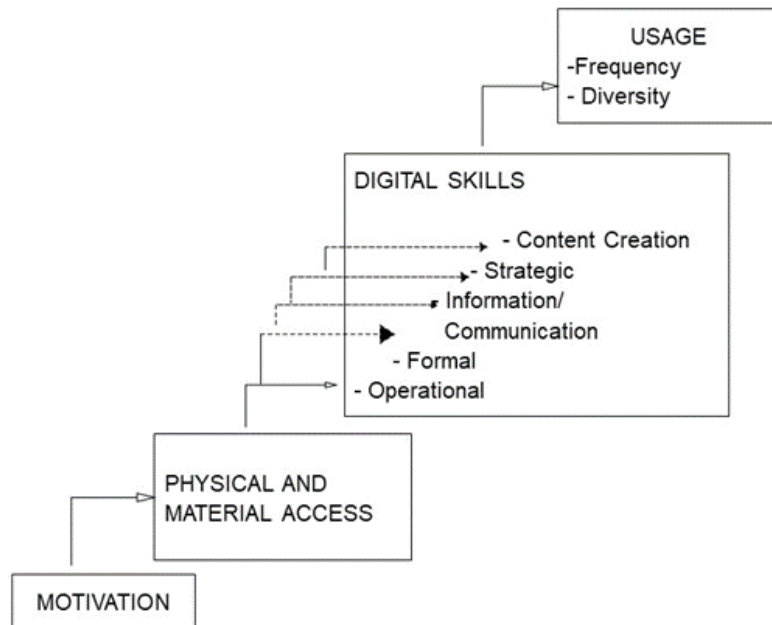


Figure 5. van Dijk's model to address the digital divide.



Summary

From a range of literature, it can be concluded that:

1. In an age when most information including health information is in digital form and accessed online, **digital health literacy is essential** for achieving public health goals.
2. However, despite its many advantages, **the digital environment is rife with misinformation and disinformation**. Therefore, as well as leading to a lack of health information, a lack of digital health literacy can lead to risks that threaten individual and public health.
3. Digital health literacy is **a composite of literacy, media literacy, and digital literacy** applied to accessing and processing health information. Therefore, digital health literacy initiatives need to consider and address general literacy (reading and writing abilities including language skills), media literacy (critical reading, viewing and listening of media), and digital literacy (technology use skills) and be developed through health education and health communication within those contexts.
4. Digital health literacy is generally lowest among the elderly, Aboriginal and Torres Strait Islander people, people living with disabilities, and refugee communities. **Refugee communities, in particular, often lag in literacy generally, media literacy, and digital literacy compared with the rest of the population – and thus are significantly disadvantaged in terms of health literacy.**
5. Refugee and CALD communities commonly cluster geographically and also are closely connected socially and culturally due to their shared backgrounds, experiences, and challenges. Many are also from collective rather than individualistic societies, thus **they turn to community leaders and peers for information and guidance. Many are also religious and look to religious leaders.**
6. Concurrently, **trust in government, authorities, and traditional media is low.**¹²⁰
7. Research confirms the important role played by community and religious leaders in refugee and CALD communities. Consequently, **community-based, collaborative, and co-designed strategies and programs are likely to be most effective in communication** with such communities.
8. Young people in refugee communities usually have greater confidence and skills in using digital technologies and can play a 'language brokering' role for their families, thus making **young people potential intermediaries for health information** (e.g., as volunteer coaches and support).
9. Capability development in digital health literacy is recognised as a necessary and important undertaking by the Australian Federal Government and national health authorities, but it is recognised as lagging, particularly in the communities referred to above. Therefore, **mobilisation of the local refugee communities in south western Sydney, supported by the South Western Sydney LHD and the NSW Refugee Health Flexible Funding Pool is an appropriate and important initiative.**
10. By collaboratively developing digital health literacy initiatives in south western Sydney working with local refugee community and religious leaders, as well as young volunteers from that community, the SWSLHD will be **applying national and international research findings and contemporary theory related to the social dimensions of health, the social ecology model of health, and a culture-centred approach.**
11. There is an extensive **body of literature on media literacy and digital literacy approaches and initiatives** that inform local strategies.
12. **There are a number of frameworks that identify the competences required for digital literacy and scales for measuring digital literacy generally and digital health literacy in particular,** that can be applied before interventions to identify baselines and ex-post to measure change and effectiveness in achieving objectives.

¹²⁰ Edelman. (2022). 2022 Edelman trust barometer. <https://www.edelman.com/trust/2022-trust-barometer>

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APPENDIX 1. METHODOLOGY

Literature review

Academic literature was sourced from leading academic publication databases such as Scopus; Web of Science, JSTOR, ERIC, PubMed, and Directory of Open Access Journals (DOAJ), as well as directly from leading health and digital communication journals.

In addition, searches were conducted via Google to identify professional practice and government reports related to the search terms.

Searches of academic and professional literature used the following key words.

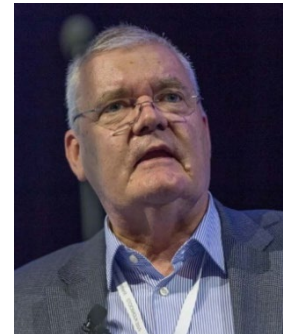
- Media literacy
- Digital media literacy
- Digital health
- Digital health literacy
- CALD health communication
- BAME health communication
- Refugee health communication
- Health communication
- Health promotion
- Health misinformation
- Health disinformation.

APPENDIX 2. THE RESEARCHERS

Distinguished Professor Jim Macnamara, PhD, FAMI, CPM, FAMEC

Jim Macnamara is a Distinguished Professor in the School of Communication at the University of Technology Sydney (UTS). He is also a Visiting Professor at The London School of Economics and Political Science (LSE), Media and Communications Department, and a Visiting Professor at the London College of Communication (LCC) in the University of the Arts London (UAL).

Jim is recognised internationally for his research into evaluation of public communication such as advertising, public relations, and health communication campaigns, and for his pioneering research into organisational listening by governments, corporations, and non-government organisations as an essential part of engagement.



His work on evaluation of communication includes being Chair of the Academic Advisory Group of the International Association for Measurement and Evaluation of Communication (AMEC) and a co-author of the AMEC Evaluation Framework; an adviser on development of the UK Government Communication Service (GCS) Evaluation Framework; a member of the Institute for Public Relations (IPR) Measurement Commission in the USA; an adviser to the European Commission Directorate-General for Communication (DG COMM) in Brussels on evaluation of EC communication; and since early 2020 he has co-lead evaluation of communication for the World Health Organization (WHO) in relation to COVID-19 and World Health Days.

Jim has led research projects to support the design and evaluation of smoking reduction programs conducted by the Cancer Institute NSW (New South Wales); promotion of breast screening among CALD communities for the NSW Multicultural Health Communication Service; and conducted studies for the NSW Department of Health into the welfare and retention of nurses and midwives and for the UK Department of Health in relation to the National Health Service (NHS).

Associate Professor Heather Ford, PhD

Associate Professor Heather Ford is Head of Digital and Social Media in the School of Communication at UTS. Heather completed her DPhil (PhD) at the Oxford Internet Institute at Oxford University. She also has a Masters in Information Management and Systems (MIMS) from the University of California, Berkeley iSchool and has worked as a fellow at Leeds University, Stanford University, and as a Google Policy Fellow and researcher at the University of the Witwatersrand LINK Center.



Prior to becoming an academic researcher and educator, Heather worked with a number of global technology corporations and non-profit technology organisations in the USA, UK, South Africa, and Kenya including as a Google Policy Fellow at the Electronic Frontier Foundation; co-founder of Creative Commons in South Africa; Executive Director of iCommons; and with the Association for Progressive Communications, Privacy International, and Ushahidi. She also has served on the boards of the Wikimedia Foundation, iCommons, and The African Commons Project.

Heather's research focuses on the social implications of media technologies and the ways in which they might be better designed to prevent misinformation, social exclusion, and algorithmic bias.

She has published in a leading journals including *Big Data and Society*, *New Media and Society*, the *International Journal of Communication*, *Social Studies of Science* and a number of Advanced Computer Machinery (ACM) journals. She is also a founder editor of ethnographymatters.net.

Associate Professor Tanya Notley, PhD

Associate Professor Tanya Notley served as an expert adviser on this project.

Tanya is an Associate Professor in Communication in the Communication, Creative Industries & Screen Media School at Western Sydney University, specialising in media literacy and digital inclusion, including the engagement of young people in news media.

She leads a major media literacy research program at WSU, [Advancing Media Literacy in Australia](#), as well as an [adult media literacy](#) project and is a Chief Investigator on a research designed to support the digital inclusion of families living in low income households.



In 2018–2020, she led a [Media Literacy and Young People](#) project at WSU and she collaborates with a number of media literacy, human rights and social justice organisations to design communication initiatives that increase community access to information in the UK, Germany, Nepal, Sri Lanka, Thailand, India, Indonesia, Singapore and Australia.

Tanya has published more than 60 academic journal articles, book chapters, research reports, and articles with a focus on media literacy and digital literacy, and she has 20 years of experience working with NGOs, government agencies, universities and the United Nations in the areas of social inclusion, social justice and human rights. She Deputy Chair of the [Australian Media Literacy Alliance \(AMLA\)](#).