From Apprehension to Application:

Exploring the Requirements in an eHealth Literacy Curriculum for Older Adults

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Abstract

This thesis explores digital literacy and the gaps that are created between digital health literacy (or eHealth literacy) and its use by older adults. The paper highlights changes within the patient/provider relationship, the impacts and barriers in digital literacy, eHealth literacy and social capital/socio-technical literacy, and the challenges and opportunities in curriculum development for an older adult population. This paper examines various research in relation to Norman and Skinner's (2006) eHealth literacy model, Norman's (2011) Web 2.0 eHealth Literacy model and the research by Pickard (2007) regarding Bloom's Taxonomy to support the study's findings of the extensive focus on "remembering" and functional knowledge, social capital as an "added value"—not as a strategy for learning, reported value of hybrid learning approaches, excluding creation and metacognitive knowledge and the nonexistent use of social media. From the finding, the whitepaper suggestions included link learning objectives to Bloom's Taxonomy and Norman's (2011) Web 2.0 eHealth Literacy competencies, include opportunities for participants to build up social capital (both face to face and online) and have program instructors teach participants using a scaffolded teaching method.

Keywords: digital literacy, eHealth literacy, social capital, digital literacy curriculum, digital literacy program recommendations

As changes in healthcare have evolved over the last century, it is important to look at the transformation of the patient/provider experience and how it has affected how health information is transferred and received. At the turn of the 20th century, "the relationship between physician and patient was typically patriarchal" (Agarwal & Murinson, 2012, p. 1). In the early 1900's, the traditional societal norm was that "physicians had exclusive access to medical knowledge and special experience with health-related values and were thus in the best position to make medical decisions on behalf of the patient" (p.1). For example, if a patient were to go to a physician regarding a symptom, the physician would have full authority over the interaction, provide the patient with their own medical knowledge, and the patient would be unlikely to insert any of their own thoughts or questions into the conversation. In a typical encounter, "the physician [would] independently decide . . . the interventions to be taken, providing the patient with minimal medical information" and they would not provide the patient with all of the information (p. 2). In this patient/physician model, the patient most likely would not have access to health information or make decisions based off their own opinions. However, as society and culture began to change over the last one hundred years, so did the way patients interact with their health professionals.

Nowadays, instead of a patient/physician focus that is purely patriarchal, healthcare follows a more Patient Activation Model in the 21st century. The Patient Activation Model or PAM, approach "takes a health communication approach to engage patients with the knowledge and confidence to maintain health behaviors" ("New Tool for Health . . ., 2014, p. 1). Instead of a patient's primary source of information coming from their primary health provider, this model is utilized for patients to take an active role in maintaining their healthcare needs by researching information (oftentimes alone) about symptoms, their conditions, and/or find second opinions

from other healthcare providers. However, while this model allows for greater control for the patient to research knowledge and make decisions based off their own health needs, there are still a large majority of people who are less likely to be able to utilize this model. One example of a population that is less likely able to be informed and make decisions based off their health needs are older adults, particularly due to the digital divide amongst this population. Hargittai & Dobransky (2017) state that there is an "increasing digital divide and inequality in both skills and uses for older adults compared to younger populations" (p. 196). With this "digital divide of physical internet access has evolved into a divide that includes differences in skills to use the internet" (p. 1).

According to Northridge, Vaughn and Cohall (2009) "the global population is aging, and the prevalence of persons age 65 and over is projected to reach 973 million worldwide by 2030" (p. 29). Due to the various shifts in the patient experience and the rise in technology use, older adults digital health literacy will "be important to the design of targeted health communication strategies" (p. 30). This project will study digital health literacy to better understand the needs of digital health literacy for older adults. According to Northridge, Vaughn and Cohall (2009) "the increasing numbers of U.S. seniors will require a new world of health care and social service delivery, transportation and housing arrangements, and much more to meet the complex needs of those requiring care" (p. 32).

One benefit of exploring this audience's digital health needs and challenges is that targeted programming and curriculum will lessen the digital divide among seniors and improve their digitally literacy. According to Bergstrom (2017), over the last decade "there [has been] an increase in online services relevant for the economic, political, cultural and private life," meaning that more and more services are being placed online, necessitating the skills to

effectively access them (p. 79). This increase in digital services is creating a divide between

seniors and younger age groups. Individuals who are "more fully in a digitally mediated social

life enjoy advantages over their digitally disadvantaged counterparts" (Bergstrom, 2017, p. 79).

Those who use these online applications report feeling more fulfilled compared to those who are

not using these available online services. It is also important to note that only "18% [of seniors]

would feel comfortable learning to use a new technology device . . . on their own" thus

illustrating a need for digital classes or training for this age group (Smith, 2014, pg. 1). A study

by Lie, Karlsen, Oord et al. (2017), also found that in a diabetes "eHealth intervention . . .

without face-to-face encounters . . . reduced participants' motivation for engagement in the

intervention" (pg. 1). So not only is there a need for eHealth literacy training, but also a need to

examine the learning strategies by which digital health literacy is communicated and taught (e.g.,

face to face instruction) to enhance learning (and increased possibilities for health) specific to

targeted audiences.

Another digital health necessity amongst this population is that "almost half (42%) of the

population ages 65 years and older reported some type of long-lasting condition or disability,"

which will result in their increased need to find appropriate health resource to maintain their

overall health needs (Northridge, Vaughn and Cohall, 2009, p. 30). Those who were more

eHealth literate must also be able to self-manage their conditions or disabilities. Because of the

amount of information and resources that is increasingly being added onto the internet, and

"people's increasing dependence on information, internet skills should be considered as a vital

resource in contemporary society" (van Deursen & van Dijk, 2010, pg. 1). Consequently, there is

an increasing need for "age-friendly health communication strategies [that] ought to be

encouraged" (Northridge, Vaughn and Cohall, 2009, p. 35).

Literature Review

By examining the historical and social contexts of the patient/provider experience, the growing digital divide among older adults, and looking at how health organizations continue to utilize digital technologies, it is important to explore the gaps that are created between digital health literacy (or eHealth literacy) and its use by older adults. While eHealth literacy is an important skill that is necessary in order to navigate the many facets of healthcare information, it is oftentimes assumed that the individual has the necessary base level digital literacy and eHealth literacy competencies to access and use information. However, this is often not the case, particularly within older adults who already lack basic digital literacy skills. Specifically, there is a gap for digital health literacy curriculums for older adults that goes beyond simple digital literacy skills and improves metacognitive skills to better evaluate and examine health related information and resources.

Digital Literacy

Before delving further into the components that are the framework for health literacy, it is important to first understand digital literacy. Although the term had been around during the early part of the 1990's, Paul Gilster 1997 book, *Digital Literacy*, was one of the first coined iterations of this phrase where he described it as the "ability to understand and to use information from a variety of digital sources and regarded it simply as literacy in the digital age" (as cited in Schreurs, Quan-Haase & Martin, 2017, p. 362). While the original definition has been critiqued by other scholars as being too "generic [of an] expression of the idea," it provided a bases for other communication theorist to further articulate (Bawden, 2008, p. 18). However, "developments in the decade since it was proposed, from the ubiquity of Google to the rise of social networking have validated the list as representing . . . the needed form of literacy for the

present time" (pg. 20). As technology continued to grow as a presence and in everyday life, the

need for digital literacy became even more abundant. According to Bergstrom (2017), over the

last decade "there [has been] an increase in online services relevant for the economic, political,

cultural and private life" meaning that with more and more services being placed online in order

to access them, those without the proper digital literacy will not be able to access these resources

(p. 79). Gilster (1997) states that "those born before the proliferation of digital media this means

adapting their skills to an evocative new medium" (As cited in Schreurs, Quan-Haase & Martin,

2017, p. 362). The need for digital literacy goes beyond being a privilege and has become a

necessity to function in the 21st century.

    Today, the term digital literacy is described as a "broad concept, linking together other

relevant literacies, based on computer/ ICT competences and skills, but focused on "softer" skills

of information evaluation and knowledge assembly, together with a set of understandings and

attitudes" despite inconsistences in the terms use (Bawden, 2008, p. 28). Digital literacy is not

meant to only examine technical based skills, but also the application of how the information can

be best applied to the individual. According to Bawden (2008), there are four generally agreed

components of digital literacy including ICT literacy, background knowledge, central

competencies and attitudes and perspectives (p. 29). The first is ICT (information computer

technology) literacy. This type of literacy is used to describe having basic computer literacy

skills that can allow an individual to use various types of information computer technologies.

The second component is background knowledge which is the "nature of information resources"

or understanding how different information is "created and communicated" (p. 30). The third

component is having central competencies which include "actively finding and using

information," such as evaluating and communicating the information found (p. 29). Finally,

attitudes and perspectives include having the ability to use "sensible and correct behavior in the digital environment" including privacy and security in a digital format (p. 29). Through an assessment of these different components, scholars can examine if an individual can be digitally literate.

Barriers to Digital Literacy

Horrigan (2016) states that only "one-in-six adults (17%) . . . are confident in their online skills, display little hesitation about finding information online that they trust. . ., and have the technology assets to take advantage of it" and these adults were found to be highly educated, economically well off with an average age of 30's to 40's (p. 1). A 2018 study by the U.S. Department of Education exploring digital literacy in U.S. adults found that "34 percent of adults who are not digitally literate are [between the] ages 55–65" and only 17% of this age group was identified as being digitally literate (Mamedova & Pawlowski, 2018, p. 7). Although organizations have begun providing digital literacy programing such as public libraries, digital inclusion alliances and digital literacy organizations, there are significant barriers inhibiting digital literacy.

Technology Means

The first barrier to digital literacy is if a person(s) has access to the necessary equipment needed to access the internet including "cell phones or other devices that connect to the Internet and facilitate electronic communication and participation" as well as internet connectivity (Jordan-Marsh, 2011, p. 50). Studies have shown that individuals were more likely to cut back on cable use rather then broadband access (p. 51).

Autonomy of Use

Another barrier to digital literacy is autonomy of use meaning when and where an individual can use technology devices for internet access. Some internet users only have access at "school, work, or public spaces such as the library, community center, or internet cafes" (p. 50). The inability to connect to the internet at any time during the day or having to go to a specific location to access the internet limits the amount of time individuals can access necessary information or resources. Another type of autonomy is internet autonomy which means being able to visit whatever they would like. Some places such as public cafes or work spaces that might block certain websites by using a firewall thus causing individuals the inability to access certain sites (p. 51).

Use Patterns

Use patterns describes the "lack[ing] the literacy to take full advantage of Internet resources" (p. 51). Internet users can be varied in their ability to find and analyze Internet resources from very low functioning to very high functioning.

Social Support Networks

Another barrier to digital literacy that can dramatically affect levels of digital inclusion are social support networks. A social support network is the "extent to which an individual or group can call on others for assistance" (p. 53). It is particularly important for these types of support networks to have a "minimal financial, time, or socioemotional cost" to gain assistance (p. 53). By having this type of online social support, individuals are able to share information and provide additional support.

Literacies and Skills

One of the final barriers to digital literacy are the actual literacies and skills. Skills "in using technology is a critical fulcrum" in breaking down digital literacy barriers (p. 53). Skills can include being able to save a webpage to a favorites tab to knowing how to best utilize a web search. Without having the proper digital literacy skills, an individual is unable to become digitally literate.

Because of the prolific use of various ICTs in day to day activities, "it does not seem unreasonable to regard this kind of [digital] literacy, expressed appropriately . . . as an essential requirement for life in a digital age" (Bawden, 2008, p. 30). Now that a general background on digital literacy has been provided, digital health literacy can also be focused on healthcare and health information.

eHealth Literacy

A relatively new concept developed over the last several decades is eHealth literacy. Related to the concept of digital literacy, Ratzan and Parker (2000) describe eHealth literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (As cited in Norman & Skinner, 2006, p. 1). Unlike other types of skills, eHealth literacy is "not static; rather, it is a process-oriented skill that evolves over time as new technologies are introduced and the personal, social, and environmental contexts change" (p. 1). eHealth literacy does not exist in a vacuum but is constantly evolving and adapting to many contextual changes.

According to Norman & Skinner (2006), eHealth literacy is "influenced by a person's presenting health issue, educational background, health status at the time of the eHealth encounter, motivation for seeking the information, and the technologies used" (p. 2). However,

unlike other types of "paper-based" resources and literacies, eHealth literacy is much less

defined (p. 2). eHealth literacy requires a variety of different competencies to fully utilize the

skill. Consumer eHealth literacy "requires basic reading and writing skills, working knowledge

of computers, a basic understanding of science, and an appreciation of the social context that

mediates how online health information is produced, transmitted, and received" (p. 2). With

"more and more people turning to the Internet as a source of health information," it is important

to define and look at the skills required for eHealth literacy (Massey, 2016, p. 118). To help

define eHealth literacy and describe what necessary skills are required to become fully connected

in eHealth resources, Dr. Cameron Norman and Dr. Harvey Skinner created a model to provide

clarity on the topic.

eHealth Literacy 1.0

In the first iteration of eHealth Literacy 1.0, Harvey and Skinner created "The Lily

Model" to provide individuals with the power to examine resources and make decisions based

off their own health needs (p.2). The Lily Model looks like a flower with the center circle of it

being eHealth Literacy and the six petals around the center make up the various competencies

that are required to be eHealth literate. The model includes "six core skills (or literacies):

traditional literacy, health literacy, information literacy, scientific, literacy, media literacy, and

computer literacy" which can further be systematized into "two central types: *analytic*

(traditional, media, information) and *context-specific* (computer, scientific, health)" (p. 2). By

further breaking down the competencies into two central types categories, The Lily Model

illustrates that not only are technical literacy skills such as ITC knowledge necessary, but also

the ability to analyze and make decisions based off the information and utilize resources

efficiently.

The Lily Model "aims to empower individuals and enable them to fully participate in health decisions informed by eHealth resources" (p. 2) The six core competencies allow individuals to examine various aspects of these digital resources when looking up information regarding their health needs. By using this model and the core skills it articulates, scholars are more "open [to] opportunities to create more relevant, user-friendly, and effective health resources to promote eHealth for all." (p. 8). Although mastery in all six competencies is not a requirement, "it can be argued that without moderate skills *across* these literacies, effective eHealth engagement will be unlikely" (p. 7). Lacking knowledge in any of the six skill areas will present further challenges and difficulties for individuals searching for health resources. However, with the rise of Web 2.0, this iteration of eHealth literacy needed further changes.

eHealth Literacy 2.0

While the first iteration of eHealth Literacy 1.0 provided a baseline level of the various competencies that are required to help measure eHealth literacy, it was created before the time of social media. The second iteration (or eHealth literacy 2.0) integrates social media into the fold and examines how the six competences operate as a whole. According Norman (2011) "the original Lily Model of eHealth literacy and scale used to assess it were developed at a time when the first generation of web tools gained prominence before the rise of social media" and with it, the way that information is shared and consumed by individuals (p. 1). The six original competencies that comprise the Lily Model in the first iteration of eHealth Literacy 1.0 "have not likely changed, but the contexts in which they are expressed in the dynamic realm introduced by social media have" (p. 3).

The updated Web 2.0 literacy model, ". . . operates as part of a learning system, whereby the component parts operate as a whole and not in a means that is easily amenable to subdivision" (p. 2). Instead of being broken up into individual skills or categories like the original Lily Model in Web 1.0, this updated eHealth 2.0 model focuses more on the integration and fluidity of each of the six skills, instead of looking at each skill as a separate entity.

Measuring eHealth Literacy

But how can this literacy be assessed to eHealth literacy and know if individuals are able to successfully participate with eHealth information and resources? One way to assess an individual's eHealth literacy is through eHEALS. According to Norman and Skinner (2006), the eHealth Literacy Scale or eHEALS:

> . . . has been developed to address the need to assess eHealth literacy for a wide range of populations and contexts. The eHEALS is a self-report tool that can be administered by a health professional and is based on an individual's perception of her or his own skills and knowledge within each measured domain. The instrument is designed to provide a general estimate of consumer eHealth-related skills that can be used to inform clinical decision making and health promotion planning with individuals or specific populations (p. 2).

eHeals was designed as an easily administered and simple assessment "thus can be used on its own or incorporated, and by figuring out an individual's perceived skills, individuals and providers can come up better informed health planning and decision making for individuals or specific population" (p. 2). It can be used to provide the best steps for a specific person or a specific population (i.e. older adults). Since "the need to navigate the Internet with confidence is

particularly important for health issues in which the consequences for using low quality,

misleading, or false information are great," eHEALS is a way to enhance an individual's

understanding of their eHealth literacy skills and empower them to make better health decisions

through different health interventions or programs (p. 2). Although the model for eHealth

literacy and eHEALS provides a better understanding of how health information should be

obtained and utilized, there are significant barriers and challenges for individuals to be eHealth

literate in a Web 2.0 world.

Barriers to eHealth Literacy

While there are advantages for the improvement and use of eHealth literacy, there are

certain limitations and barriers that are brought to light. Egbert & Nanna (2009) state several

challenges that can affect eHealth literacy.

Access to Information

Although health information is available online, many people do not have "regular access

to the internet" including individuals in these populations: minorities, less educated, elderly and

those in poverty (p. 2). Because of the lack of internet access, many individuals are still receiving

their main sources of health information from medical providers. However:

> Even in countries with high rates of absolute access to the Internet, such as the United
>
> States and Canada, over 40% of adults have basic (or prose) literacy levels below that
>
> which is needed to optimally participate in civil society" (Norman & Skinner, 2006, p. 1)

There are still difficulties in gaining health information from medical providers. Individuals in

low poverty are more likely to see different health providers for each visit which makes having

consistent relationship and trust with your provider impossible (Egbert & Nanna, 2009, p. 2).

However, over the last several years there has been a:

> greater emphasis on the active and informed consumer in health and health care . . . [that]
> has led to the realization that ensuring the public has both access to and adequate
> comprehension of health information is both a problem and an achievable goal for health
> services (Norman & Skinner, 2006, p. 2)

Another barrier is that some individuals may feel embarrassed that they do not

understand health information from their provider and "do not want to appear to challenge the

health care provider in anyway" (Egbert & Nanna, 2009, p. 2). A report from the US Institute of

Medicine (IOM) looked at the relationship between health and literacy and found that "those

with limited literacy skills have less knowledge of disease management and health promoting

behaviors, report poorer health status, and are less likely to use preventive services than those

with average or above average literacy skills" (Norman & Skinner, 2006, p. 2).

The third challenge is "age, ethnic background, education, and socio-economic status, it

may be difficult for the patient to feel comfortable asking questions or disclosing personal health

information" (Egbert & Nanna, 2009, p. 2). Even if an individual is able to obtain health

information, there are still challenges in the processing and use of the information.

Processing Information

If information is obtained, the next barrier comes in being able to process the

information. According to Zarcadoolas & Pleasant (2009) "low fundamental literacy in the

United States and around the globe continues to be a critical yet often ignored social detriment of

health inequities. This is equally true of accessing, understanding, evaluating, and using health

information and health systems" (p. 305). The ability to be health literate is directly related in

one's ability to be literate. This means that those "low health literacy is a widespread problem in

many communities" including the elderly, poor and urban areas (Egbert & Nanna, 2009, p. 4).

While North America has one of the highest levels of Internet-use population in the world, there

is still a tremendous ". . . gap between the electronic health resources available and consumers'

skills for using them" (p. 1).The elderly, in particular, "are more likely to have low health

literacy skills compared to their younger counterparts due to a decline in their reading and

cognitive abilities" (p. 4).

        But finding out and identifying if patients have low health literacy is not always the

easiest because patients may feel that they are in denial about what they are able to process,

might hide their limitations, or the information patients receive might not be in their native

language (p. 5). If an individual can find and process the information, the final barrier is the

ability to affectively use health information.

Using Information

        Now that information is obtained and processed, another barrier is the ability to

understand the health information. Even if the first two barriers are dealt with, "there is still no

guarantee that the information will be utilized as it was intended" (p. 6). For example, if an

individual is able to obtain information about their condition and are able to understand it, but do

not know how to implement the information into their life, then the information has not

succeeded in its goal. It only has provided the individual with a base level understanding of what

they were trying to research without the ability to utilize it in a meaningful way. Individuals

might not be able to use the health information in a meaning way.

According to Nutbeam (2008), there have been "actions to improve health literacy [and] are focused on developing age and context specific health knowledge, and the self-efficacy necessary to put that knowledge into practice in ways that enable people to exert greater control over their health and health-related decisions" (p. 2074). Even with individuals understanding the importance of developing health and eHealth literacy, it is also important to look at the other aspects that influence eHealth literacy such as social capital and socio-technological literacy.

Social Capital and Socio-Technical Literacy

Jordan-Marsh (2011) describes social capital as "the capacity to experience reinforcement or enforcement of group or social norms" (p. 22). Social capital refers to the building of relationships or bonds with people in a group with shared interests or values. It is also described as the "social ties or connections through which one gains access to resources" (Hayat, Brainin, & Neter, 2017, p. 4). These connections can be created and formed in within a shared space. Depending on the individual's needs, social capital allows for formation of ties within the group that can lead to an increase in trust, collective identity, shared values, common knowledge, communication paths, norms and obligations (Resnick, 2000, p. 7).

Regarding eHealth literacy, a study by Hayat, Brainin, & Neter (2017) found that social capital has had a "positive impact on participants' emotional and physical wellbeing, either through gratifying the health information needs of the individual or through communication with healthcare providers" (p. 4). By building up social capital within their health network, participants improved their overall health.

Like social capital, socio-technical literacy (is in regard to computer mediated communication (CMC) and by using technology and "ICTs make it possible to interact with

much larger social networks" to build social capital that many individuals would not have been

able to have done before (Resnick, 2000, 10). With the use of technology to "enable interactions"

and break down distance barriers that would not have been available before, individuals are able

to build up their socio-technical literacy by expanding social and interaction networks, "restrict

information flows" such as having anonymity, better manage routines, and manage history (p.

10-11). Particularly with eHealth information, individuals can share information and discuss

experiences. Fox (2014) sites that while "clinicians are still a top source of health information in

the U.S. . . . but online information, curated by peers, is a significant supplement" (p. 2). Online

sharing is equated to the "modern version of an age-old instinct to seek solace among peers" and

individuals "want to share what they know to help other people" with similar health concerns (p.

2).

However, there are barriers in accessing social capital and achieving socio-technical

literacy. Gleckman (2018) states that while "physicians generally agree that assistance with

[social support] is important to the health of their patients, most doctors feel they are not

responsible for helping them get these services" (p. 1-2). Even though healthcare providers

believe that it is an essential need for individuals, particularly with older adults that may suffer

from chronic conditions or disabilities, it is not their responsibility to be knowledgeable in

resources or provide patients with this sort of information. Another barrier to socio-technical

literacy is whether an individual is digitally and eHealth literate. Without being able to perform

basic technical functions to access the appropriate information or know what information to look

for, individuals are not able to effectively utilize social capital in relation to their health needs.

Ehealth Literacy Challenges for Older Adults

Along with challenges with achieving socio-technical literacy, there are also challenges and a great need for more eHealth literacy resources for the older adult population. According to Jordan-Marsh (2011) "older adults tend to need health information and to use health services at a far higher rate than younger adults" (p. 146). Over the last several decades, there has been a "massive cost of caring for the "near elderly" – baby boomers ages 55 – 64" who will become the largest age group in the world by 2050 (p. 364). This age demographic will be one of the largest age populations in society and there will be an increased need for the ability to obtain and use health information.

Compared to other age populations, "older adults tend to need health information and to use health services at a far higher rate than younger adults" due to an increase in chronic conditions, health needs and additional health services often needed for this age demographic (p. 146). In 2007 in the U.S., "hospitals spent $56 billion on care for this group" and this cost summary "does not include costs related to outpatient or rehabilitation" care (p. 364). With the increase in number of individuals aging into this population, and with it, the increased cost associated with them, there is a heightened "pressure for healthcare agencies to provide sufficient health information, support, and services to the older population" (p. 146). There are "massive efforts to improve knowledge about detection, prevention, and treatment" (Keller & Lehmann, 2008, p. 117). eHealth literacy support will be increasingly important and necessary soon. It is important to examine what elements make up a digital curriculum to better understand what needs must be addressed for an older adult population.

Digital Health Literacy Curriculum Challenges and Opportunities

According to Nutbeam (2008):

> Improving health literacy in a population involves more than the transmission of health information, although that remains a fundamental task. Helping people to develop confidence to act on that knowledge and the ability to work with and support others will best be achieved through more personal forms of communication, and through community based educational outreach. If the goal of promoting greater independence in health decision-making and empowerment among the individuals and communities is to be achieved, there will need to be more sophisticated understanding of the potential of education to strengthen political action, and efforts to ensure that the content of health communications not only focuses on personal health, but also on the social determinants of health (p. 2077).

The creation of an eHealth literacy program/curricula focused for older adults opens a large area of opportunity for this population. There are several factors that need to be included when contemplating the creation of a digital literacy curriculum, such as digital literacy support, health literacy support and education resources to name a few. An important aspect to look at for this type of program is to examine the elements of Bloom's Taxonomy and how it influences curriculum and program creation.

Bloom and the Creation of Curriculum

In the creation of a successful scaffolded curriculum, it is important to look at elements that need to be included in the creation of a curriculum and learning objectives such as Blooms Taxonomy.

Blooms Taxonomy was created by Benjamin Bloom during the 1950's as a way "to categorize subject matter content into learning objectives" (Pickard, 2007, p. 45). It was "a means to express qualitatively the different kinds of intellectual skills and abilities" that, ideally, would be expressed by a student by the end of a unit (p. 46). The original Bloom's Taxonomy consisted of six levels of learning represented as a pyramid shape. As the student masters a specific level, they build upon prior information to reach the top of the triangle or to reach mastery of a subject. The six levels of learning included "knowledge, comprehension,

application, analysis, synthesis and evaluation" (p. 47). The original Bloom's Taxonomy was a one-dimensional chart that simply showed the progression of information from base knowledge to evaluation of information. However, a revised Bloom's Taxonomy was introduced to better "enlarge. . . understanding of the teaching and learning processes" that became available (p. 46)

Instead of a pyramid representing the different stages of Bloom's Taxonomy, the revised Bloom's Taxonomy is represented as a two-dimensional grid. The Y axis of the grid represents the revised six stages of learning and is meant to signify the "cognitive process dimensions" of learning, and the six stages were rewritten as "remember, understand, apply, analyze, evaluate and create" (p. 47). A new element of the revised taxonomy is the addition of a X axis to represent the different "knowledge dimensions" that help in benchmarking student progress, and these dimensions include "factual knowledge, conceptual knowledge, procedural knowledge and metacognitive knowledge" (p. 49). By expanding the taxonomy framework, it allows educations and curriculum creators to clarify instructional plans and outcomes.

In the creation of lesson plans, "the intersection of the cognitive process dimensions and the knowledge dimensions can facilitate instructional planning and assessment" and ultimately help in the deciding what activities or assignments would work best to facilitate the appropriate dimension (p. 50). According to Shabatu (2018), Bloom's Taxonomy is a useful and effective to develop learning objectives, as well as figuring out what learning level to begin your students at depending on their previous background and goals (p. 2). To create effective learning objectives based off of Bloom's Taxonomy, instructors should utilize a verb from a Bloom's Verb Chart that will demonstrate in the learning objective what Bloom's Taxonomy level is being evaluated. The learning objectives must be measurable, and can demonstrate a student's mastery of the objective, and needs one verb (p. 5).

Given the breadth of Web 2.0 skills, and the interconnectedness of digital health literacy skills/competencies, to my knowledge, there has been little emphasis on whether digital health literacy curriculums that are being used across the United States addresses the (1) needs and challenges of digital health literacy skills of older adults (2) using learning objectives and best practices associated with learning. Consequently, the following RQs will be addressed in this study:

RQ1. How, and in what ways, do current digital health literacy training programs/curricula seek to address the digital health literacy needs and challenges of older adults?

RQ2. What are the gaps in existing eHealth literacy curricula designed for older adults?

Methodology

After examining the background and particular challenges of older adults in relation to digital literacy and eHealth literacy and eHealth literacy programming/curriculum, it is important to explore what is currently available for older adults in terms of resources and programs/curricula. For this study, I will be conducting a meta-analysis to examine articles[1] regarding digital programs/curriculums designed for older adults. Before delving further into the process of the study, it is important to gain a background on the theory used in the study: meta-analysis.

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[1] Each article analyzed in this study contained information regarding a eHealth literacy program/curriculum that was created and conducted after 2008. The articles consisted of information regarding the programs/curriculum such as course goals, lesson plan objectives, program location, curriculum development and instructor training.

Meta-analysis is the "statistical technique for combining the findings from independent studies" and looking for common themes and trends based from the data (Crombie & Davies, 2009, p. 1). Researchers who use meta-analysis look at multiple studies or trials that are based off the same subject or topic area. Meta-analysis looks at individual trials/studies that may have not had "statistically significantly" findings on their own to present substantial results but, when the "results from the individual studies are combined using . . . (meta-analysis), significant benefits of treatment may be shown" (p.2). By looking at a larger sample size of studies, researchers can synthesize the information to create and report out more significant findings or recommendations.

While meta-analysis is "most often used to assess the clinical effectiveness of healthcare interventions," or in other scientific research, it has also been utilized in communication research (p. 1). More recent applications of "the technique have included areas as diverse as . . . health communication" (Johnson et. al., 2007, p. 313). According to Johnson, Scott-Sheldon, Snyder, Noar and Huedo-Medina (2007), over the last several decades, "meta-analysis has become quite common and well accepted because scholars realize that careful application of [meta-analysis] techniques often will yield the clearest conclusions about a research literature" and it is a "a nearly indispensable tool in order to statistically summarize empirical findings from different studies" (p. 312). While there are definite benefits for conducting a research study, there are several criticisms that come along with it such as sample bias, quality of studies being used, "nonindependence of effect sizes," under and over representation of published and published studies and summarizing studies that utilize different methodologies (p. 315). But while there are criticisms to this method, there are several benefits as indicated above. In order to best complete a meta-analysis, there are several steps that need to be completed.

The seven elements required in a meta-analysis are to define the question(s), set study boundaries, locate relevant studies, code studies for distinctive characteristics, "estimate the size of the study's effect on the standard metric," analyze the data and finally, interpret and present the results (p. 315). Step one, defining the question(s), means to come up with research questions that will need to be answered after analyzing the studies. Step two and three requires the researcher to find relevant studies related to the topic area that will be used for the meta-analysis and set boundaries of the studies being used such as study quality and cultural factors (p. 320). The fourth step involves coding the studies based from key characteristics like a content analysis. Step five requires the researcher to look at the effect size of each study used "which quantitatively captures the phenomenon under scrutiny" (p. 324). The sixth step has the researcher look at the data that is pulled from the coding step, and the last step is to look at the data that was collected, interpret the findings and showcase the results (p. 331). For my thesis study, I followed the seven steps above as the guideline and to answer this study's two research questions.

Given the exploratory nature of this study, I examined five articles regarding different digital literacy programs/curricula that have been taught in the last 10 years and have the programs focus be for older adult (age 55+) participants. Three of the articles about programming focus on improving general eHealth literacy skills, one of the articles focuses on creating an eHealth Literacy Program for a specific condition (i.e. stroke) and one article is focused on just digital literacy skills in a blended program format. Next, I coded the different programs for common themes. After examining my coding informed by the literature regarding eHealth literacy and (digital health) curriculum design, I created a whitepaper (see Table 1) addressing the gaps and challenges that have been found through the coding process of digital

literacy programming for older adults, interpreted these findings considering the specific needs

and challenges of older adults, and made recommendations for future programing. As such, the

whitepaper acts as a potential guide to future creators of eHealth literacy programs for older

adults to explore how, and in what ways, the needs, challenges, and learning strategies specific to

this population can be more fully actualized in programming.

Findings

After examining the five different articles about the different digital programs/curricula

while using meta-analysis as the method, I was able to glean information in order to address my

two research questions. Regarding RQ1, there were three significant findings that were revealed

during the analysis.

Extensive Focus on "Remembering" and Functional Knowledge

After examining all five of the articles/programs examined for this thesis, the cognitive

dimension in the revised Bloom's Taxonomy and the type of knowledge that was most heavily

utilized and demonstrated throughout the course materials and supplemental instruction was

understanding and factual and procedural knowledge. For example, in the program conducted by

Xie (2012), much of the lesson plan learning objectives focused on helping participants

"remember" how to use certain eHealth literacy functions such as "learn how to use the medical

encyclopedia" or "recall how to take an online quiz" (p. 19). The action verbs most closely

associated with Bloom's dimension of remembering (e.g., learn, use and recall) are the

predominant focus of attention as the cognitive process involved in the learning objectives for

each of the nine module lesson goals (p.19-20). Moreover, out of the 49 lesson learning

objectives in the nine modules for this program, 34 of the learning objectives used the verbs

"learn" or "recall" as the main key word in the learning objective (p. 19-20).

In the 2011 article by Xie, the author created similar cognitive processes in the learning

objectives of the eHealth literacy program. The lesson learning objectives he asked over the

course of the four modules included "learn[ing] how to explore" or "learn[ing] how to find"

different health related information (p. 8). The main topics for the four class sessions

demonstrate how the participants would gain the functional knowledge in a topic area or learning

objective. For example, the first lesson is titled "Internet Basics" where students learn functional

processes such as how to use a search engine and explore a health website. Similarly, the

remainder of the classes demonstrated similar emphasis on functional processes (p. 5). The

extensive focus of functional knowledge, while helpful for older adults who might not have as

strong of a base knowledge in these skills, does not allow for them to move forward and utilize

more conceptual or reflective types of knowledge when processing health information.

Moreover, this an over-reliance on the learning outcome most associated with "remembering"

and functional knowledge, re-emphasizes participants' role as passive recipients of online

information and underplays the need to contextualize and/or use online information in the

context of their everyday lives.

The article by Martinez-Alcala, Rosales-Lagarde, de los Angeles, et al. (2018)

demonstrated similar findings when discussing the cognitive functions focused on over the

course of the program. While this study was not health literacy focused, it addressed digitally

literacy programming for an older adult audience and focused on this audience in learning and

understanding the functional knowledge of an "Introduction to ICT, Computer Programs and

Getting to Know the Internet" to name a few example module titles (pg. 3). By emphasizing

learning about technology (e.g. the Internet), this programming's emphasis is also synonymous with functional knowledge.

Henner (2009) also instituted a similar emphasis and importance in functional knowledge. The author found that in the pre-assessment of the 75 participants that would complete his program, "fewer than 25% felt they were proficient using a computer. Twenty-one percent reported proficiency in using Web browser software, and 29% reported proficiency in using Internet search tools such as Google," thus causing the program developer to create a beginners workshop "designated as PC 101, [and] ensured a basic foundation in computer skills, including essentials of Windows and use of Web browsers. (p. 337). Similarly, in the article by Aspinall, Beschnett, & Ellwood (2012), when participants were asked in a pre-workshop assessment about their comfort level in "finding health information on the Internet and discussing it with doctors. In this case, the pre-test mean was 2.42" out of 5 indicating that participants were significantly less than proficient in finding and using health information (p. 308). Although technology and digital literacy are foundational skills that are often taken for granted in using or being a part of our everyday lives, being able to effectively use these skills is often not the case, particularly with older adults. Henner (2009) illustrated that these basic digital literacy "functions. . . that are generally regarded as trivial. . . can be problematic for older adults nonetheless," and need to be addressed before expanding into more specific eHealth literacy skills (p. 338). By providing a strong base of functional knowledge as it relates to digital literacy, the functional knowledge will provide a stronger foundation to learn eHealth literacy skills. By treating technology as something that is "out there" and apart from the everyday lived experience of participants, this demonstrates how programs are trying to address challenges for

older adults, but also shows the barriers they have to engage in digital literacy, particularly

eHealth literacy.

These articles illustrate how the different programs/curricula primarily focused on the

dimension of the remembering in the revised Bloom's Taxonomy and functional knowledge to

address the digital health literacy needs and challenges of older adults. By primarily focusing on

this dimension and type of knowledge, participants are not able to improve or experiment with

other types of cognitive processes such being able to evaluate or create or move from functional

to cognitive and metacognitive knowledge functions. Moreover, something more is also

communicated in this over-reliance on functional competencies. Though vital, these

competencies also reinforce a passive learning recipient and a view of digital skills incompatible

with the evolving and expected competencies of Web 2.0.

Social Capital as an "Added Value"—Not as a Strategy for Learning

Another finding in the coding process was the use of social capital even if it was not

explicitly expressed in the course outcomes or lesson learning objectives. The programs in the

articles do not specifically mention social capital in the context of a learning strategy. However,

social capital is situated as an expected side effect to the overall effectiveness of teaching of the

program material or was an overall course level learning objective.

Martinez-Alcala, Rosales-Lagarde, de los Angeles, et al. (2018) explain that in their

program, one of the main course learning objectives was based on *"cooperativeness and

collaboration. The teaching of ICT should focus on teamwork, support, cohesion and interaction

to achieve more proactive learning"* with the program instructors and others in the program (p.

3). By emphasizing collaboration and connection as one of the main program goals, but not

necessarily explicitly stated in the lesson learning objectives, the program creators included

social capital as one of the overarching goals of the program and use the interactive nature of the

class to achieve this goal.

Martinez-Alcala, Rosales-Lagarde, de los Angeles, et al. (2018) also proposed "a

community-centered model that takes into account socio-personal characteristics for future ICT

training programs" (p. 15). The program creators observed the importance of creating a

community focused program to improve social capital and know that it is a significant element to

include in future program creation.

Although social capital is shown as an important element to include in older adult

eHealth literacy programs, conspicuously missing from these programs is teaching and learning

directed toward how to use socio-technical capital. Although the five studies provided areas that

participants could engage in face to face social capital, they lacked any explication about how

someone might learn how to better utilize technology to facilitate social capital or a practice how

to do so. The article about the program created by Martinez-Alcala, Rosales-Lagarde, de los

Angeles, et al. (2018) mentioned briefly that they aimed to increase social connection ". . .

through the web with their relatives and friends, either close or distant," but the other articles did

not (pg. 3). Even in the blended workshop, the class focused more on how to use the internet to

speak and connect with others rather than practicing how to do so.

By not providing opportunities to practice or utilize this vital skill, programs missed out

on the opportunity to break down barriers in interacting with a variety of new social networks in

a way they would have not been able to before due before. The ability to meet individual from

different social networks due to distance and the opportunity for anonymity would move the program from a Web 1.0 environment to a Web 2.0 environment

These findings suggest that a key component in the successful teaching of eHealth Literacy skills is the inclusion of social capital along with the instruction of digital skills. The literature reviewed explained the importance of social capital and its positive impact on participants particularly in relation to eHealth Literacy. Since social capital was not an explicit program objective, programs assumptions are being made about social capital (e.g., it just happens; it's seen as distinct from learning skills) that assume users knowledge of digital literacy skills are equivalent to their ability to effectively "use" and "apply" knowledge within the context of their everyday lives.

Reported Value of Hybrid Learning Approaches

As illuminated in the literature review, the ability to access technology is often a challenge for individuals, particularly in this demographic. All five of the programs in the articles analyzed were facilitated in a public space that had accessibility to technology (computers). For example, Martinez-Alcala, Rosales-Lagarde, de los Angeles, et al. (2018) created and examined two different types of workshops: face to face and a blended workshop. The face to face workshop was conducted entirely face to face in a public setting with access to technology and the "the tutor used digital presentations and a projector as support material" (pg. 4). The blended workshop was an entirely digital workshop that was meant to "assist older adults with the development of digital literacy skills, through the presentation of multimedia learning activities and materials that enhance their knowledge," but was completed in a public space with the additional support of staff (p. 3). By providing hybrid learning approaches, participants were

able to practice their newly developed eHealth literacy skills more effectively than in just a lecture-based program.

The program described in the article by Henner (2009) also provided a type of hybrid learning approach "to augment training efforts, [and] the project staff also constructed a Web site, ElderhealthNevada, which served as a supplemental resource" and practice for the participants to use (p. 339). By including this type of hybrid approach in the teaching and learning of digital literacy, participants could practice accessing information that the participants know are coming from a trusted source before searching the internet for their own health information. By providing the website as an additional resource, the website creates a type of hybrid learning where participants can practice looking for health information on a website similar to how they would search for information once the program is completed.

When analyzing how program/curricula have sought to address the needs of older adults in relation to eHealth literacy, with the functional approach, technology is to be learned for technology sake. Therefore, the eHealth literacy Web 2.0 competencies (e.g. science literacy, information literacy, health literacy) denoted by Norman (2011) are de-contextualized during these programs. Using a type of hybrid learning could better contextualize the eHealth literacy competencies by allowing participants to learn the new information and practice information in a Web 2.0 environment that requires ongoing application, reflection and adaptation.

Regarding RQ2, there were two significant findings that were revealed during the analysis.

Excluding Creation and Metacognitive Knowledge

Out of the five articles analyzed, none of programs included the dimension of creation or

the use of metacognitive knowledge in their lessons, instructional materials or additional

resources. For example, in the articles that included examples of the lesson plans' learning

objectives, the final stage of Blooms Taxonomy that was completed in the lesson plan was the

evaluate stage and conceptual Knowledge. For example, in the article by Xie (2011), the last

lesson module was titled "Session 4: Evaluating Health Websites" and the lesson focused on how

to evaluate different health website resources (pg. 8). The lesson plan also did not include

activities where the participants were able to reflect on the information they were learning.

Instead, they were simply completing the instructional activities and the instructor would ask

questions of the participants at the completion of the activity. For example, one of the teaching

notes for the lesson plan told the instructor to "encourage participants to ask instructor questions

about the specific steps of the exercise" and then summarized the content learned in class (p. 7).

This overreliance on these revised Bloom's Taxonomy dimensions such as to "remember,"

"understand" or "apply, reveals how programmers underutilized many cognitive processing

dimensions and are missing essential Web 2.0 needs, such as the ability to create and share

digital health information with a wider audience.

For example, the program in the article by Henner (2009) included a supplemental

website created for the participants in the class to use as an additional resource to:

> make aging-related health information easily accessible for seniors and their caregivers
>
> by bringing together locally developed information resources, online tutorials, and links
>
> to trusted Web sites in a centralized, clearly organized, easy-to-navigate fashion (p. 339)

The goal for the website was to create a supplemental resource that was easy to use and easily

accessible for the older adult participants. However, unless the participants were taught over the

course of the program to reflect on their learnings and how they could be utilized in their

everyday life or learn to create some sort of action plan of how to utilize this resource ones the

class ends, the website loses some of its usefulness to the participants. The articles that were

examined also did not provide insight in how the participant could create or build their own

eHealth literacy resources based off their individual needs or have the participants think about

how to implement the new knowledge into their everyday life However, the dimensions of the

revised Bloom's Taxonomy that were missing from the programs that would have allowed

participants to reach those higher level cognitive process include applying, evaluating and

creating.

 The Nonexistent Use of Social Media

In the five articles reviewed, none of the programs discussed int the articles mentioned

the use of social media for an older adult audience. Since social media is a significant element of

Web 2.0 world, it was interesting to find that none of the programs discuss using social media as

a resource or learn how to share social media resources with their fellow cohorts in their age

groups.

Henner (2009) discusses in the article that main focus of his program was to create a

curriculum that "aimed at resource discovery, [provide] effective Web and Web site navigation,

[provide] strategies for better Google searching, evaluation of health Web sites for usefulness

and credibility, and [the] introduction of trusted health Web sites as productive starting points in

an information search" (p. 305). Even with his program that focuses on strategies on finding

helpful and accurate health resources, he failed to introduce the addition of the role social media

can have in not only finding information, but also sharing and creating information to share with

others with similar health needs.

There was also no addressing in the articles about the programs how to create, sustain, let alone reach various communities online which is so endemic to Web 2.0 skills. For example, lesson plan that was missing from these programs was teaching about how to find, assess, use, and leverage these different communities, from Caring Bridge to Social Media.

While the five articles of the programs provide education in learning digital and eHealth literacy skills and competencies, the programs do so by Web 1.0 standards instead of a more dynamic Web 2.0 standards. With the five programs, there is not an emphasis on creating knowledge, or support opportunities online, or an acknowledgement of how to use online knowledge to inform face to face interactions or. vice versa

Based off these findings, I will create a whitepaper that will act as an area for discussion and will provide recommendations for future program creator on how to create curricula for an older adult population that utilizes Blooms Taxonomy, the six competencies of eHealth Literacy Web 2.0 and social capital as a way to best articulate the findings. The whitepaper will provide recommendations on how to improve upon and what needs to be included regarding program creation, instructional practices and available materials.

<p align="center">**Conclusion**</p>

Using meta-analysis for this qualitative process, findings revealed insight into the requirements needed in an eHealth literacy program/curriculum. By exploring how other curriculums utilized instructional time, resource recommendations and how participants can engage in the materials, it highlighted particular areas of how that programs addressed the needs of this group and the gaps that exist regarding older adult eHealth literacy curricula. By using the revised Bloom's Taxonomy and the six core competencies of the eHealth literacy web 2.0 model

by Norman (2011), the study provided greater insight into the needs for older adults and how they access, utilize and share health resources that are appropriate for their needs.

Some of the challenges and limitations that occurred during this study included the sample size/amount of studies and programs that were available for the analysis. While I was able to find some research on previously completed programs/curricula, many were not made available to the public, they did not include elements such as lesson plans or supplemental teaching materials were not available or the programs were not informed by research or analysis. Another limitation was finding programs that seek to enhance digital health literacy for this study's target audience. Many programs either focused on digital literacy or eHealth literacy skills, but not for an older adult audience. A third limitation for the study was that it was challenging to find programs within the Web 2.0 timeframe I was focusing on for my study; many programs I found were completed between the years 2000 – 2007. This study, however, begs the question as to why digital literacy programming in general, and digital literacy programming for older adults, in particular, is not transparent nor accessible. Finally, another limitation was the ability to code several studies and analyze my interpretations given the need to also construct a white paper designed for organizations, entities, and programs seeking to design and enhance the digital health literacy skills and aptitudes of older populations.

Areas of future research should include the creation and examination of an eHealth literacy program based off the recommendations listed in the whitepaper. After exploring the gaps found in this study, it would be interesting to see if there would be any statistically dramatic improvements in how older adults utilize or use digital resources to improve their eHealth literacy (and how they might understand the importance and possible uses of eHealth literacy).

Another area of future research could include a focus on the training and evaluation of the instructors who will teach the curriculum for the older adult population. After creating an updated program for this population, it would be helpful to see how the training and materials provided for the instructors effect the outcomes of the course. A third area of future research could include using the recommendations listed in the whitepaper, but creating a eHealth Literacy program for older adults with a specific condition. (For example, create an eHealth literacy class for older adults with diabetes). These potential future areas of research would further illuminate different elements of the original study.

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Appendix

Table 1

How to Make It as Easy as ABC:

Recommendations for Creating Digital Health

Literacy Programs for Older Adults

By Jackie Curran

Table of Contents

Introduction

As the world continues to become more reliant and dependent on technology in all areas of our lives, knowing how to use technology and navigate the internet for information is becoming increasingly important. It is especially important for people to know what skills are needed to find health information. People who are skilled in using technology often assume that everyone can use basic technology skills to find and use health information. But many times, this isn't the case, especially for older adults, who already lack basic digital skills needed for the Web 2.0 world.

Overview

Research has shown there is an increasing need for people 55+ to receive health resources and know how to find health information. Older adults often have many barriers to health information such as lower reading levels, limited access to health providers, limited access to technology, lack of technology skills and limited access to technology to name a few. There is an increasing need to create programs to teach older adult's skills related to digital health literacy. By providing programming specifically designed for older adults, programs will help provide necessary skills so they can become more involved and informed regarding their ongoing health needs.

Negative Effects of Low Health Literacy for Older Adults

- ✓ Less likely to find or use preventive health services

- ✓ Unable to properly find accurate health information or determine its legitimacy

- ✓ Unable to effectively use health information provided by health providers or information found online

- ✓ Increase cost of healthcare services such as hospital visits and occupational therapy

- ✓ Less likely to ask questions to health providers during visits for fear of seeming to not understand

Recommendations for Future Program Creation

When creating health literacy focused programs for an older adult population, it is important to keep in mind several key points when preparing lesson plans and program objectives. Below are recommendations to create an effective program to meet the specific needs of this vital (and growing) population.

Link Learning Objectives

Firstly, remember to link learning objectives to skills that are necessary in order to be digitally health literate. Use Norman's (2011) Health Literacy Web 2.0 competencies as the benchmark for skills such as traditional literacy, health literacy, information literacy, scientific, literacy, media literacy, and computer literacy that participants most need. Additionally, digital health skills can best be taught and learned when relying on a taxonomy of learning (e.g., Blooms Taxonomy) to create the specific lesson level learning objectives (measurable objectives that are used to organize specific topics and activities to achieve the main course learning objectives) and the main course level learning objectives (the main goals that reflect what you want participants to know and understand by completing the program). By using Blooms Taxonomy and Norman's Health Literacy Web 2.0 skills, program providers can ground the learning objectives and lesson plans in well know health literacy research and teaching strategies that work best given the obstacles and opportunities of this audience. Grounding the program in a taxonomy of teaching and health literacy skills can improve teaching and learning in many ways, such as knowing what the skills most pertinent to this audience and how to structure each lesson plan with measurable goals.

One Size Doesn't Fit All

Remember, not all program participants are going to be the same and will have a wide range of different levels of mastery when it comes to digital health literacy. If possible, offer a beginner level course that focuses on digital literacy to better understand basic technology skills and then offer a second level class focused on digital health literacy skills. If this is not possible to create or host a beginner course, provide a technology pre-

test to determine participants technology skills and competencies. By using a pre-assessment to see where participants level of experience in their digital literacy skills will better inform the program creator on how to adjust structure of the lesson plans and inform them as to which learning objectives are (un)necessary. For example, if most of the class scores low for basic digital literacy skills, this knowledge can be used by program creators to include additional lessons focused on digital skills and to test for improvement over the course of the program.

Access for Everyone!

Since one of the challenges for older adults is the accessibility to technology, try to host classes in a public space that can be easily accessed and could provide some sort of technology for the participants to use. Workshops could be taught in public spaces such as libraries, community centers, senior citizen centers or hospitals.

Being Social Near and Far

Do not have lesson plans be entirely lecture focused. Provide a variety of different activities and opportunities where participants can interact and work together. Wouldn't you feel more comfortable asking questions in class or talking about your health concerns if it is in a class with people that support you? This type of interactive learning can also help participants practice higher level Bloom's Taxonomy dimensions such as to analyze, evaluate and create from the new information.

Building support with others in the program/curricula doesn't mean just in the classroom. Provide participants the skills to practice finding relevant online support group(s) and the opportunity to practice participating in the decorum of online support group participation. For example, in one of the lesson plans, have the participants find an online community through Facebook, online website, etc., that is related to one of their health needs and have them chat/ask questions with others in the online group. Afterwards, this activity can be an opening activity at the beginning of each lesson to practice or an activity for early finishers. This approach would allow for participants to practice using different

eHealth literacy skills and provide them with the opportunity to begin expanding their social networks with others with similar needs.

Go from A Lot to A Little

When thinking about the format for your lesson plans and what activities to include, think about the lesson plan the same you would teach someone to ride a bike: provide a lot of support in the beginning, and as they begin to feel more comfortable in the new skill, begin (taking away support). Employing this teaching strategy will allow participants to become more empowered in how they find, leverage and connect to new information. Lesson plans should follow the same format. Include a substantial amount of instructional support in the beginning by walking participants through activities and prompting questions for discussion and less support by the end of the lesson because by the end of the lesson, you'll want the participant to feel confident enough in the material to complete the activity independently.

This gradual shedding of lecture-based instructional support—or increasing participant empowerment, discussion, and application—will allow students to share the responsibility of teaching and learning by supporting their peers and going beyond their current skill level. For example, format the lesson with the first activity as a class activity where everyone is involved, and the instructor prompts the class if they are confused and completes the activity with them. The second activity should be a partner activity where two participants work together on an activity and the instructor supplies support if needed, and the third activity should be a solo activity where individuals work on their own activity with little support from others or the instructor. By providing more structured instructional support at the beginning of a lesson and allowing for more autonomous, student led learning by the end of the lesson, participants will have the opportunity to become more comfortable with the material and (hopefully) feel more comfortable with more advanced materials.

Find and Share with Social Media

Social media is an important tool for many people to find and share information. It's no different that social media can be used an important tool to find and share health information as well. By being able to find and share information using social media, it is a great way to find (typically) free resources. The added level of social media is the ability to share with others, who might need similar information and build up your social network in ways you wouldn't have been able to do previously. A sample lesson plan might include teaching participants about different social media platforms, what to look for in reliable versus fake information, and then having them create a social media account (on Facebook, Instagram, Pinterest, etc.) and practice looking for, examining and share information with others in the class. By utilizing social media, older adults (can gain connection with others who share similar health experiences, retain some level of anonymity (if wanted) and share information they know to help others that would be different from how younger generations use social media platforms. Not only will the participants gain this technical skill, they will also increase their connection with other people online.

Don't Just Learn; Create!

An important part of Bloom's Taxonomy that is often ignored when creating lesson plans is the learning level of creation. It is simply not enough to just teach someone how to recall or understand information unless participants are able to take what they have learned during the lesson plans and use that knowledge to create something from it. If you're not putting new knowledge into action, leveraging their full learning capacities. For example, in the last two lesson plans of the program, focus on having the participants create their own "health resource guide" that they can use look back on based off their health needs. This health resource guide can be as simple as a creating a Word doc page separated by different categories and with links to web resources or it can be as advanced as a blog with different health resource postings (type of resource guide would be based off each participants skill and comfort level). By creating their own resource(s) such as comments in a support group, first-hand experiences, etc., participants can use all of the

knowledge and insights they've learned during the program and make meaningful health

decisions in their lives.

Think about Thinking

During lesson plans, allow multiple times for participants to reflection on what they are

learning about. Reflections can be as formal as having them write a page in a journal or

word document, a partner pair-sharing activity in a learning context or as informal as

jotting down bullet point notes on a scrap of paper. By allowing participants time to

reflect on what they have learned, they are able to identify areas of strengths and

weaknesses, assess what strategies they can use to improve their knowledge and make

connections in how they can use the information in their everyday life. It is helpful for

the participant to know where they are in their comprehension of the material and

improves independent learning. The reflections also provide instructors a way to

encourage critical thinking and a way to gage participants understanding of the material.

And Materials for All

Additional instructional materials such as handouts, PowerPoint presentations, and

worksheets should be easy enough to read in a 5th grade reading level. Low levels of

literacy, particularly health literacy, is a widespread challenge in many communities

including the elderly. Because of this, it is important that materials are made accessible

and easy to read for a variety of different people. Materials should also chunk like

information into groups of three to help participants process. It is also important to

provide variety of graphics and other visual and auditory aids to illustrate process or steps

for different types of learners.

Key Benefits of an Older Adult Digital Health Literacy Program

✓ Increased digital health literacy skills are necessary for an increasingly growing

demographic of the population

✓ Potential saving of billions of dollars in healthcare costs related to hospital visits, occupational therapy and rehabilitation from pre-existing conditions

✓ Increase the prevention care for pre-existing conditions

✓ Improve the ability and confidence to ask informed questions to health providers regarding their health conditions

✓ Ability to find, understand, evaluate and create their own health resources based off their individual needs

Conclusion

Perhaps in the future, there can be more opportunities to introduce and practice digital health literacy skills at an earlier age. Or perhaps there will be a greater emphasis on providing free continual health education to all people. But by creating, improving and providing these health programs, older adults can use these newly developed digital health literacy skills to improve their health, provide them with additional social connections and improve the way they are able learn and contextualize new information.