World Journal of Social Science Research
ISSN 2375-9747 (Print) ISSN 2332-5534 (Online)
Vol. 9, No. 1, 2022
www.scholink.org/ojs/index.php/wjssr

Original Paper

A Curriculum, Instruction, and Assessment (CIA) Framework for Health Literacy Education (HLE) in Medical and Health Professions Schools

Valerie A. Ubbes[1*] & Benedict Njoku[2]

[1] Miami University, Oxford, Ohio, United States Affiliation

[2] Exclusive Services for Substance Abuse Treatment, Blue Ash, Ohio, United States

[*] Valerie A. Ubbes, Miami University, Oxford, Ohio, United States Affiliation

Received: January 18, 2022 Accepted: January 31, 2022 Online Published: February 20, 2022

doi:10.22158/wjssr.v9n1p15 URL: http://dx.doi.org/10.22158/wjssr.v9n1p15

Abstract

There is increasing need to implement Health Literacy Education (HLE) as essential curriculum content in medical and health professions schools, supported by skill-based instructional strategies and authentic assessments. This paper reviews two decades of historical progress in health literacy and advances a new conceptual model to organize Curriculum, Instruction, and Assessment (CIA) themes for Health Literacy Education (HLE). Three themes are integrated into the Health Literacy Education (HLE) ***curriculum****: 1) interprofessional communication in HLE, 2) cultural and linguistic competencies in HLE, and 3) a language typology that informs HLE. Two pedagogical themes are integrated into HLE* ***instruction****: 1) skill-based instructional strategies to improve oral communication (n = 7), and skill-based instructional strategies to improve written communication (n = 3). Skill-based instructional strategies to improve* ***oral communication*** *of medical and health professions students includes use of plain language, use of Teach Back or Show Me, encourage patients to ask questions, use medical interpreters and translators, be an active listener, respond with empathy when breaking bad news to patients, and use Chunks and Checks method. Skill-based instructional strategies to improve* ***written communication*** *of medical and health professions students includes write in plain language, evaluate written materials, and use pictures or visual aids to aid patient understanding. Two themes are integrated into HLE* ***assessments****: 1) formative assessment, and 2) summative assessment. The paper promotes the Curriculum, Instruction, and Assessment Framework for Health Literacy Education (CIA-HLE) for use by faculty in medical and health professions schools to ensure their students are well prepared to use oral and written communication with their patients as guided by selected research studies and initiatives. To*

further advance interprofessional collaboration and dialogue across the medical and health professions, a language typology and a knowledge typology are provided as building blocks to health literacy education.

Keywords

Health Literacy Education (HLE), health literacy history, medical and health professions students, curriculum, instruction, assessment, CIA-HLE framework, written communication, oral communication, interprofessional communication, language typology, knowledge typology, skill-based instructional strategies, pedagogy

1. Rationale and Historical Context for Health Literacy Education

This paper advocates for continuing improvements in the planning and implementation of health literacy education in medical and health professions schools. For the purposes of this paper, "health literacy education" is conceptualized as curriculum content, instructional strategies, and learning assessments that are planned and implemented in academic coursework for teaching about health literacy. The triadic model of curriculum, instruction, and assessment is abbreviated as CIA to organize how Health Literacy Education (HLE) could be deliberated within and across the medical and health professions.

The growing interest in health literacy education began to take shape in 2011 with Coleman's review of the literature for health care professionals, which highlighted the need for a health literacy curriculum that could be implemented with a variety of teaching techniques and tools. Coleman (2011) outlined didactic one-way transfer of information for teaching health literacy via traditional lecture, print materials, and electronic materials (e.g., video, web-based tools), then outlined experiential teaching methods for skill development in the form of health literacy workshops, small group role plays, simulated patient encounters, and standardized patients. Later, Toronto and Weatherford (2015, p. 675) conducted an integrative review of nine health literacy studies for the purpose of investigating curriculum content, instructional strategies, and out-of-class assignments (assessments) among students enrolled in pharmacy, nursing, and medical education courses. Their integrative review was followed by a systematic review of health literacy training in health professions education (Sauders, Palesy, & Lewis, 2019), which highlighted a *curriculum* framework for health literacy that listed role plays, peer teaching, presentations, case studies, and resource development as key *instructional strategies* supported by formative and summative *assessments*. Hence, this current paper advances a triadic model of curriculum, instruction, and assessment known as the CIA-HLE Framework to organize the content knowledge and skill-based instructional strategies for faculty who are responsible for health literacy education in medical and health professions schools. We begin by selectively reviewing the last two decades of governmental and organizational guidelines along with research studies in medicine and the

health professions to provide a historical context for health literacy education.

1.1 Historical Context

Some of the earliest conceptual frameworks for health literacy education were released in the book, *Health Literacy: A Prescription to End Confusion* (Nielsen-Bohlman, Panzer, & Kindig, 2004), which advocated for professionals in medicine, dentistry, pharmacy, social work, anthropology, nursing, public health, and journalism to learn about health literacy. At that time, continuing education opportunities in health literacy were also suggested for health care professionals who were working in hospitals, schools, universities, organizations, and institutions.

Some early reviews about health literacy were written by Rudd, Moeykens, and Colton (1999), Rudd, Anderson, Oppenheimer, and Nath (2007), Berkman, Davis, and McCormack (2010), and Pleasant (2014). These early papers may have helped to lay the groundwork for health literacy education today, followed by the publication of *Healthy People 2010* (USDHHS, 2000), which identified health literacy as a public health concern and promoted health literacy as a national health objective within the focus area 11.2 of health communication. A decade later, *Healthy People 2020* (2010) continued to outline how to "improve the health literacy of the population" in three objectives (e.g., HC/HIT 1.1, 1.2, and 1.3) with another seven objectives focusing on Health Communication (HC) and Health Information Technology (HIT). *Healthy People 2030* (2020) currently focuses on "increasing the health literacy of the population". Health literacy is now differentiated between personal health literacy and organizational health literacy. Personal health literacy is "the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others" whereas organizational health literacy is "the degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others" (*Healthy People 2030*, 2020). [See Ancker, Grossman, and Benda (2020) for a thoughtful review of adverse research effects for redefining the Medical Subject Heading term "health literacy", which has been used by the National Library of Medicine since the implementation of *Healthy People 2010*].

Early conceptualizations about health literacy were released by the Ad Hoc Committee of the American Medical Association (1999) that defined health literacy as "a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment". One year later, Ratzan and Parker (2000) defined health 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". Health literacy has also been defined as both "the mediator between literacy skills and an individual's ability to negotiate the health care environment" (Nielsen-Bohlman, Panzer, & Kindig, 2004, p. 32) and as a "mediator of the relationship between socioeconomic status and health" (Lastrucci, Lorini, Caini, Florence Health Literacy Research Group,

Bonaccorsi, 2019). Changing definitions for literacy and health literacy were reviewed by Berkman, Davis, and McCormack (2010), and a historical summary of health literacy papers, reports, and workshops was compiled by Parnell (2015, pp. 108-109).

Why should medical and health professions schools establish health literacy education? More than 90 million Americans (which is about one-out-of-two adults) cannot understand and act on health information (Parnell, 2015, p. 45). The first national assessment of health literacy occurred with the 2003 National Assessment of Adult Literacy (NAAL) in the United States. Results showed that only 12 percent of adults had proficient levels of health literacy in the United States, but 36 percent of adults had inadequate health literacy at the basic and below basic levels (Kutner, Greenberg, Yin, & Paulsen, 2006). People with limited health literacy have higher hospitalization rates, use medical services less frequently, and have severely limited understanding of health interactions with their doctors (Sudore & Schillinger, 2009). Adults who have difficulty reading, writing, and using numbers also engage poorly in basic health activities such as taking their medications and managing their health conditions. Some physicians may not see literacy and numeracy problems as their responsibility or may lack self efficacy to tackle this phenomenon. For example, studies over the last twenty years have indicated that medical residents lacked confidence to screen and counsel adults about literacy (Rosenthal, Werner, & Dubin, 2004); lacked specific methods for recognizing literacy problems in clinical settings (Chew, Bradley, & Boyko, 2004); and infrequently used clear communication techniques and overestimated their communication clarity during patient encounters (Howard, Jacobson, & Kripalani, 2013).

Low health literacy affects how patients communicate their chronic disease symptoms to their doctors (Gazmararian, Williams, Peel, & Baker, 2003). For example, patients with lower health literacy tend to ask fewer questions to learn or to seek information (Katz, Jacobson, Veledar, & Kripalani, 2007). Patients with lower health literacy may feel a sense of shame, decreased confidence, and lower self-worth when interacting with their medical providers (Nielsen-Bohlman, Panzer, & Kindig, 2004). Patients may also be too embarrassed to ask questions of their doctors or to ask them to repeat instructions that were given during the patient-physician exchange (Parnell, 2015). Physicians on the other hand may be under production pressure to see more patients in a shorter time interval, which may limit their ability to gather some valuable patient details and listen fully to patients. Physicians may also lack competency in communication skills to ask effective questions, especially if they were not equipped in medical school education to practice evidence-based strategies for health communication and health literacy. Miller (1990) has argued for a competency-based framework for the assessment of clinical skills where medical and health professionals progress from knowledge to action using the cues “knows, knows how, shows how, and does” for the benefit of the patients.

Competency in health literacy education refers to the ability of health care professionals to effectively communicate health-related information and skills so they can be understood by all people regardless of

their educational qualifications or sociocultural backgrounds. Because medical schools have crowded educational curricula due to the extensive scientific and practical information to be taught (Weston, 2018), health care professionals may graduate with inadequate knowledge, skills, and appreciation for the limiting factors of low health literacy on patient-provider interactions. Additionally, physicians may not demonstrate effective communication with low health literacy patients if they did not have adequate practice time in their medical school curriculum (Schwartzberg, Cowett, VanGeest, & Wolf, 2007) or during their clinical precepting sessions (Coleman, 2011).

Twenty years ago, medical schools focused more on treatment options and spent limited time addressing communication between health care providers and their patients, especially patients presenting with low literacy skills (Parker, 2000). Ten years ago, a web-based survey of deans responsible for medical education at 133 U.S. schools of allopathic medicine showed that almost 50% of respondents reported teaching about health literacy in their required curriculum for approximately three hours (Bombeke, Van Roosbroeck, De Winter, Debaene, Schol, Van Hal, & Van Royen, 2011). Unfortunately, the majority of the health literacy content occurred in the first two years of medical school and was not reinforced in the latter stages of training. More recently, U.S. medical and health care organizations have begun to incorporate more health literacy practices in medical education (Coleman, Peterson-Perry, & Bumsted, 2016), including a pilot study looking at the long-term effects of a health literacy curriculum for family medicine residents (Coleman, Peterson-Perry, Sachdeva, Kobus, & Garvin, 2017).

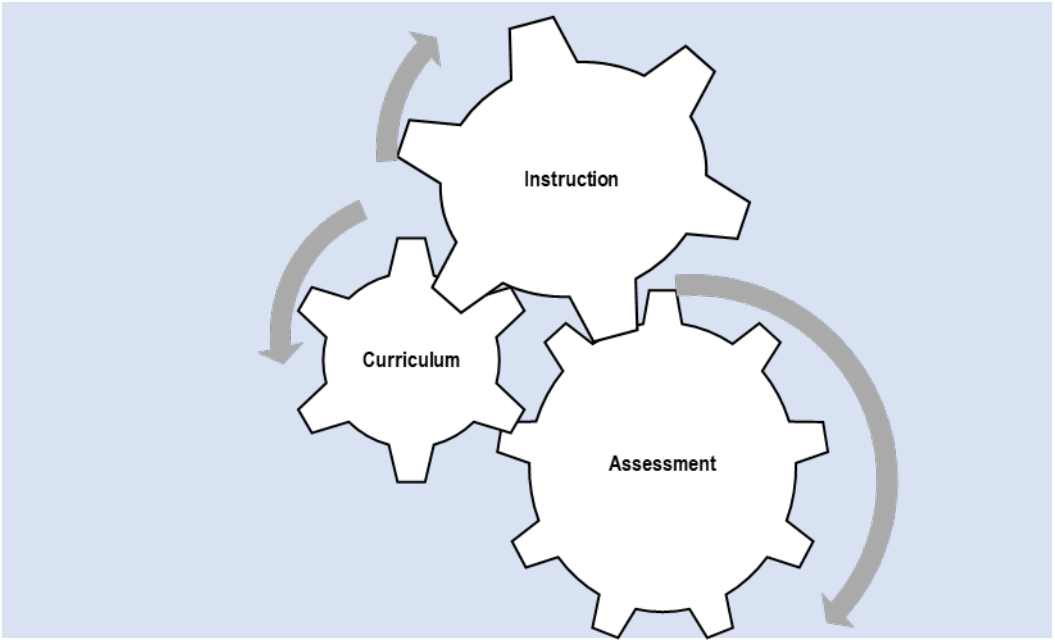
These changes are essential based on an early study of medical residents who identified less than 10 percent of their patients presenting with low health literacy skills when the actual number of patients with low health literacy was more than 33 percent (Bass, Wilson, Griffith, & Barnett, 2002). This discrepancy occurred because the medical residents had asked patients about their highest level of education completed. Kirsch, Jungeblut, Jenkins, and Kolstad (2005) found that education levels had a low association with health knowledge and literacy levels were lower than educational levels among participants. When patients were assessed via the Newest Vital Sign-Italian (Lastrucci, Lorini, Caini, Florence Health Literacy Research Group, & Bonaccorsi, 2019), functional health literacy was found to mediate 18.5 percent of the association between education and self rated health ($p = .02$) when assessed by a single survey item that queried: “In general would you say that your health is excellent, very good, fair, or poor?”

A call to action highlighting the need for increased time on health literacy education has also been advanced for undergraduates pursuing professional degrees in medicine, pharmacy, dentistry, nursing, chiropractic, and other health careers over the last few years (Hernes & Ott, 2018; Coleman, Hudson, & Maine, 2013). Coleman, Hudson, and Pederson (2017) were the first to combine together and prioritize health literacy and clear communication best practices for different health professionals with an aim to reduce negative effects on patients with low health literacy. A Q-sort consensus method was used by 25

health literacy experts to rank 32 communication practices in order of importance. The same year, a health literacy training curriculum for ten health professions gained momentum in 13 European countries (Karuranga, Sorensen, Coleman, & Mahmud, 2017). And an additional call to action from the fields of health communication, health literacy, and health education was advanced with a goal for researchers and practitioners to work together in an integrated way on a new Action Collaborative on Communication and Education for Health (Allen, Auld, Logan, Montes, & Rosen, 2017).

2. Curriculum for Advancing Health Literacy Education

The purpose of this paper is to advance the implementation of health literacy education in medical and health professions schools using the triadic model shown in Figure 1. Figure 1, entitled the Curriculum, Instruction, and Assessment Framework for Health Literacy Education (CIA-HLE), shows the relationships between curriculum, instruction, and assessment and their associated themes. The CIA-HLE Framework has the potential to assist faculty in medical and health professions schools to organize their planning and implementation efforts for advancing health literacy education in the current decade. Models like the CIA-HLE Framework attempt to tell a coherent story by showing visual relationships between components in order to form a schematic for shared discussion, deliberation, and dissemination. The CIA terminology is based in the field of education, including public health education, and can provide an interdisciplinary bridge between medicine and the health professions for increased value in sharing and advancing evidence-based research.



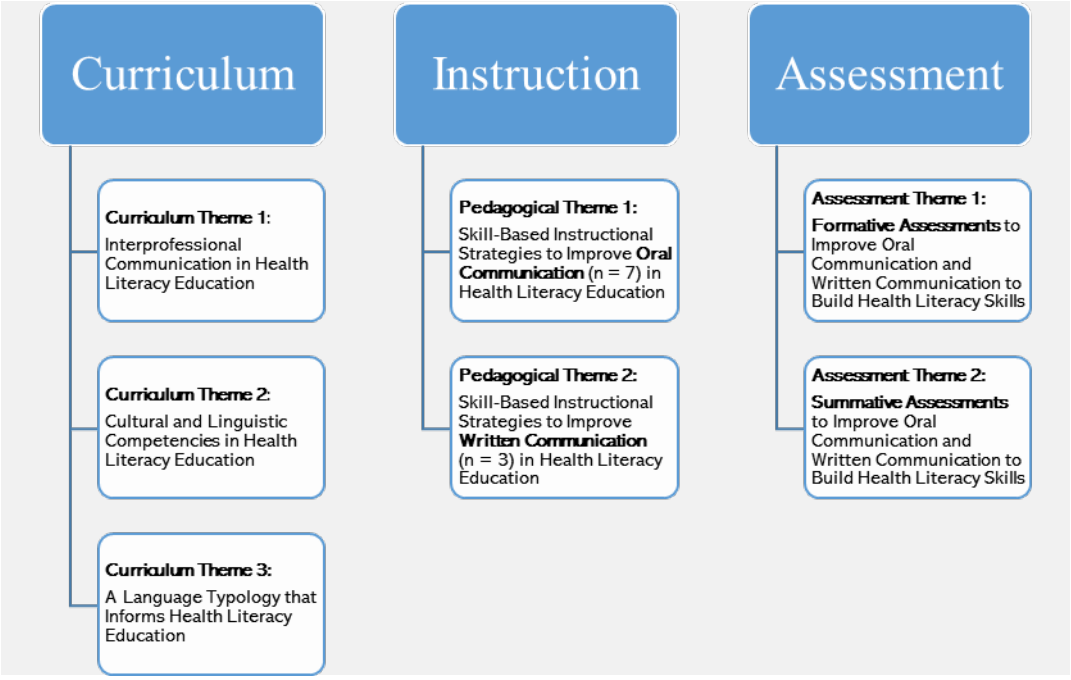


Figure 1. Curriculum, Instruction, and Assessment Framework for Health Literacy Education (CIA-HLE)

This next section will focus on three curriculum themes in Health Literacy Education (HLE). The curriculum themes will include the increasing need for interprofessional communication in HLE, cultural and linguistic competencies in HLE, and a language typology that informs HLE.

2.1 Curriculum Theme 1: Interprofessional Communication in Health Literacy Education

The first curriculum theme focuses on interprofessional communication in health literacy education. Thirty years ago, a Toronto consensus statement on doctor-patient communication focused on the call to teach communication skills in medical school, postgraduate training, and continuing medical education (Simpson, Buckman, Stewart, Maguire, Lupkin, Novack, & Till, 1991). A decade later in 2001, a Kalamazoo consensus statement was released to outline the communication skills that are needed during medical encounters (Makoul, 2001). According to King and Hoppe (2013), early work to define communication skills pertinent to medical practice included the term “physician-patient communication”, owing to a 2001 proclamation from the Institute of Medicine that medical care should become more patient-centered and more receptive to patient needs (Committee on Quality of Health Care in America, 2001). Epstein & Street (2007) later defined patient-centered communication as a three-level approach that emphasized: “1) evoking and comprehending patient perspectives (e.g., ideas, concerns, needs, feelings, expectations); 2) comprehending the patient within his or her distinctive psychosocial and cultural context, and 3) reaching a shared understanding of patient issues and treatments that are

consistent with patient values".

The quality of health care that patients receive is highly contingent on the quality of interactions initiated by their health care providers (Wanzer, Booth-Butterfield, & Gruber, 2004). Strong connections are needed between the communication skills of health professionals and their patients' capacity to follow medical recommendations, self-manage their chronic illnesses, and adopt preventive health behaviors (Heisler, Bouknight, Hayward, Smith, & Kerr, 2002). Researchers found that the ability of physicians to adequately explain, listen, and empathize with their patients had a profound effect on functional health outcomes and patient satisfaction. Similarly, the interpersonal relationship that patients felt toward their physicians ultimately determined patient participation in medical care, patient adherence to treatment, and patient self-management (Heisler, Bouknight, Hayward, Smith, & Kerr, 2002).

Health literacy practices and educational competencies are valuable throughout a physician's career, beginning in early professional training and advancing throughout residency training and continuing education (Coleman, Hudson, & Maine, 2013). Educational competencies for health literacy are the "knowledge, skills, and attitudes that health professionals need in order to effectively address low health literacy among consumers of health care services and health information" and these competencies should be written as measurable curriculum objectives and promoted as key health literacy practices among health and medical professionals across many disciplines (Coleman, Hudson, & Maine, 2013, p. 83).

Coleman, Hudson, and Maine (2013, p. 83) initially sought input regarding health literacy practices and educational competencies from an expert panel that was drawn from the Federation of Associations of Schools of the Health Professions, an umbrella organization representing 15 health education professional organizations in the United States. The Delphi expert panel, which consisted of 73% of the participants with known health literacy expertise, reached consensus on 24 knowledge items, 27 skill items, 11 attitude items, and 32 practice items that health and medical professionals should know and be able to do for health literacy (Coleman, Hudson, & Maine, 2013). The educational domains of knowledge, skills, and attitudes and a practice domain from that same list followed Bloom's Taxonomy, which included a hierarchy of action verbs from lower-level to higher-order thinking skills to be used across all disciplines. After a similar study was conducted in Europe (Karuranga, Sorensen, Coleman, & Mahmud, 2017), another U.S. study commenced with 25 health literacy experts who participated in a Q-sort consensus methodology to rank the original list of 32 health literacy and clear communication practices into eight curriculum topics for training health care professionals (Coleman, Hudson, and Pederson, 2017).

Interprofessional education is an important avenue for advancing health literacy skills and competencies (Saunders, Palesy, & Lewis, 2019). Interprofessional education focuses on the collaboration and consensus of different disciplines coming together to form interprofessional collaborative practice. In 2010, the Framework for Action on Interprofessional Education and Collaborative Practice (WHO, 2010)

provided policy-makers with ideas for implementing interprofessional education and collaborative practices within their current context. Today, health literacy education remains an important medium for advancing interprofessional communication and education, including a team science approach to research (Massey, Kim, Dalrymple, Rogers, Hawthorne, & Manganello, 2017).

To enhance the interprofessional nature of health literacy, medical and health professionals can help to build a stronger literature-base in health literacy education for replication and dissemination inside and outside of their disciplines. Faculty and practitioners with a commitment for health literacy education might write about actual patient-doctor experiences in clinical care. For example, Ruggeri, Vega, Liveris, St. George, and Hopp (2021) have suggested that there should be more learning experiences described by medical students when they are practicing health literacy skills in active learning workshops. Medical students in allopathic, osteopathic, and chiropractic schools along with students from over 60 health professions need more practice-based experiences in interprofessional communication during their professional training and throughout their careers (Interprofessional Educations Collaborative, 2016). The Interprofessional Education Collaborative (2016) currently aims to broaden interprofessional competencies to achieve the Triple Aim of improvements in patient care, population health, and health care costs. A framework to foster oral and general health integration along with oral health literacy provides one example of how interprofessional communication is improving (Kleinman, Horowitz, & Atchison, 2021) for health literacy.

Health literacy should be seen as a shared responsibility between patients, physicians, and other health care professionals across all organizations in the health care system (Van der Heide, Poureslami, Mitic, Shum, Rootman, & Fitzgerald, 2018), so that patients can have increased satisfaction with their care, follow advice, and adhere to their treatment plan (Tongue, Epps, & Forese, 2005). The needed advocacy work for health literacy education among health care professionals (Toronto & Weatherford, 2015) cannot be complete without the input of patients, because their views are imperative for shared decision making (Elwyn, Durand, Song, Aarts, Barr, Berger, Cochran, Frosch, Galasiński, Gulbrandsen, & Han, 2017) resulting in improved health communication in the clinical setting. When patients do not comprehend what physicians are saying to them, a "lack of understanding can lead to medication errors, missed appointments, adverse medical outcomes, and even malpractice lawsuits" (Weiss, 2007, p. 6).

A "universal precautions" approach to health literacy is needed so that all physicians and health care professionals communicate with their patients using plain language to insure improved comprehension and basic understanding (Cutilli & Schaefer, 2011). Universal precautions mean that "all patients should be considered at risk for limited health literacy" so that no patient is overlooked (McDonald & Shenkman, 2018, p. 3). A universal precautions approach ensures that every verbal and nonverbal exchange that a health professional has with a patient includes simple, clear, and accurate communication, regardless of each patient's level of health literacy, language preference, socioeconomic status, gender, race ethnicity,

abilities, and geographic location. Some physicians and health care professionals may be reluctant to use plain language when communicating with patients because they may worry that patients will be insulted by their "plain talk" and be perceived as "dumbing down" the information or be perceived as not knowledgeable about the subject (Pfizer, 2021).

However, this perception can be modified when faculty in medical and health professions schools teach from the Health Literacy Universal Precautions Toolkit (2nd Edition), which is available from the Agency for Healthcare Research and Quality (2017). The toolkit contains a list of internet resources of 21 tools and action steps for supporting primary care and patient health literacy. The first toolkit was available in 2010 and evaluated in 2011 (DeWalt, Broucksou, Hawk, Brach, Hink, Rudd, & Callahan, 2011) to assist physicians working with children and adults to reduce literacy-related barriers in communication and to build patient understanding. Because health literacy makes an essential contribution to patient safety and patient-centered care, universal precautions for specific conditions, such as atrial fibrillation, are also available to support the care, prevention, and treatment of the condition (Aronis, Edgar, Lin, Parreiras Martins, Paasch-Orlow, & Magnani, 2017). Additional resources from nursing educators are also available (McDonald & Shenkman, 2018) as another example of interprofessional collaboration for health literacy education.

2.2 Curriculum Theme 2: Cultural and Linguistic Competencies in Health Literacy Education

The second curriculum theme focuses on cultural and linguistic competencies in health literacy education. Health literacy education may be better understood when viewed from a cultural context. The influence of culture on health literacy education is very important given the ethnic and linguistic diversity of the U.S. population. The 2020 U.S. Census identified population gains in nearly all racial and ethnic groups except White which has been declining by 8.6% since 2010. From a total population of 332 million people (https://www.census.gov/popclock/), the Multiracial population has increased 276% to 33.8 million people (U.S. Census Bureau, 2021). A culturally diverse population will have varying beliefs about health and medical issues, when and where they will get medical care, and how they will respond to advice about lifestyle routines and daily habits.

According to the Joint Commission (Schyve, 2007), low health literacy, cultural differences, and limited English proficiency are the triple threat to effective health communication. The Joint Commission evaluates and accredits more than 21,000 health care organizations and programs in the United States and is the nation's oldest and largest standards-setting and accrediting body in health care (Schyve, 2007). One way to reduce the triple threat to effective health communication and health literacy is to acknowledge that our ability to communicate a language, whether as a mainstream language or one of the 7099 different languages in the world (Eberhard, Simons, & Fennig, 2021), provides individuals and their communities a sense of identity and autonomy (Vaughn, Jang, Sotirovska, & Cooper-Novack, 2020) from which to learn and acquire knowledge and understanding about health-related information and

medical care. Medical educators initiate the modeling of agency which is at the core of learning by "recogniz[ing] and build[ing] upon their students' ideas, languages, interests, instructional needs, and strengths" (Vaughn, Jang, Sotirovska, & Cooper-Novack, 2020, p. 728). That in turn, may jumpstart the reciprocal process of effective communication between medical and health professionals and their patients.

Many patients receiving care from the U.S. health care system have Limited English Proficiency (LEP), but the use of terms, English Language Learners (ELL) or English Learners (EL), can acknowledge that language does not have to use a deficit model as indicated by the term, LEP. For ELL (for whom English is not their native language and may be a second or third language), health literacy problems are further complicated by the use of health care jargon. In 2000, the effect of language diversity on health status gave rise to U.S. Executive Order No. 13166 for "improving access to health services for persons with limited English proficiency", including a subsequent report to the Congress of the United States. Even though a majority of the U.S. population speaks English at home, the most recent American Community Survey (U.S. Census, 2021) found that 350 different languages are spoken in American homes today with demographic highlights available for the fifteen largest metro areas.

The cultural language of individuals influence three determinants of their health literacy: comprehension, understanding, and decision-making (Nielsen-Bohlman, Panzer, & Kindig, 2004). For some people, words may have little or no meaning or an entirely different meaning. For example, telling a patient to take a teaspoon or tablespoon of medication implies that the patient has a calibrated teaspoon or tablespoon that holds that exact amount of liquid. To advance health literacy in the medical context, clinicians need to study and understand differences in word meanings from different cultural contexts. For example in Native American cultures, dream stories from everyday life serve as a cultural language to communicate ways to deal with health and illness. This was highlighted by Lincoln (2003) with respect to Navajo Indians in Arizona: "Diagnosticians are called upon to treat illness caused by dreams or to prevent illness predicted by dreams". Physicians who listen to dream stories as a cultural lexicon of Native Americans will increase patient-centered health communication and health literacy. Other examples include the language or languages that a medical student uses in order to translate and communicate information to their patients while reflecting with sensitivity on how their patients are able to interpret and understand the medical jargon.

In 2001, the U.S. Department of Health and Human Services (USDHHS, 2001) advanced the National Standards for Culturally and Linguistically Appropriate Services (CLAS). The National CLAS Standards provide real-life examples of ways to implement and improve the provision of services to all individuals regardless of race, ethnicity, language, socioeconomic status, and other cultural characteristics. The National CLAS standards state that "Health care organizations must make easily readable patient-related materials available in the languages of frequently encountered groups" (USDHHS, 2001, p. 11). The

CLAS standards also state that patient-related materials should be culturally and linguistically responsive and written at the literacy level of patients (USDHHS, 2013). More specifically, people from culturally and linguistically diverse backgrounds (CALD) need "health communication that engages with their language, cultural beliefs and idioms of [their] health literacy level" (de Souza, Butt, Jethani, & Marmo, 2021, p. 5), and the use of people-first language to reduce bias and discrimination (Feldman, Gordon, White, & Weber, 2002).

Cultural competence is a key curricular need in health literacy education because many medical and health professions students do not have a wide base of cultural experiences (Nielsen-Bohlman, Panzer, & Kindig, 2004). The impact of health literacy on the quality and efficacy of cultural health-care encounters is very deep (Nielsen-Bohlman, Panzer, & Kindig, 2004). Interpersonal skill development and cultural competency training should occur throughout medical training and residencies (Rice & Harris, 2021). Curricula in medical and health professions schools should include shared readings and cross-cultural events related to language, literacy, and dialogue in order to become deeply rooted in the patient challenges of functional health literacy, which is defined by Ubbes and Ausherman (2018) as the ability to read, write, and speak about health. Although the Institute of Medicine identified reading, writing, speaking, listening, and numeracy to be foundational to health literacy (Nielsen-Bohlman, Panzer, & Kindig, 2004), more research and teaching about speaking and listening should be expanded to enhance the patient-provider relationship which is known to influence decision making and health behaviors (Harrington & Valerio, 2014) through a cultural lens. Patients need to hear, read, and see health-related information and have time to process it so they can provide a response to show their understanding. Thus, health professionals need to actively listen to what patients say, but also what they do not say, because missing information can reflect gaps in patient understanding (Osborne, 2008). And health professionals need to learn how to talk *with* their patients, not just talk *to* them, while also slowing the pace for reciprocal thinking and responding.

Different organizations have defined "cultural competence" at various times. For example, the CLAS standards define cultural competence as "the ability to function well as an individual and as an organization within the context of cultural beliefs, behaviors, and needs presented by consumers and their communities". The National Medical Association (2020), the oldest national organization representing African American physicians and their patients in the United States (Morris, 2007), defines cultural competence as "the use of cultural knowledge, behaviors, clinical and interpersonal skills that increases a provider's effectiveness in patient care".

In 2002, the Institute of Medicine published a seminal document entitled "*Speaking of Health: Assessing Health Communication Strategies for Diverse Populations*", which outlined four dimensions of cultural competency. These dimensions included: 1) *cultural knowledge* which is the process of searching for the worldviews of different cultures in order to comprehend the worldviews of patients; 2) *cultural*

awareness which is the process from which health care professionals begin to appreciate and value the lifestyles, beliefs, and practices of their patients; 3) *cultural encounter* which is a process that motivates health care professionals to directly engage in cross-cultural interactions with patients who come from a variety of culturally diverse backgrounds; and 4) *cultural skill* which involves physicians getting culturally sensitive physical histories from their patients and recognizing and gathering relevant data from their presenting problems. These cultural competencies could be helpful additions to health literacy education in medical and health professions schools.

In summary, cultural competence is a vital component of health literacy. Different language types and cultural backgrounds support effective patient-provider communication. Researchers continue to call for a collaborative pedagogy among health professionals (Lie, Carter-Pokras, Braun, & Coleman, 2012) to show how health literacy and cultural competency can work together.

2.3 Curriculum Theme 3: A Language Typology that Informs Health Literacy Education

The third curriculum theme focuses on a language typology that informs health literacy education. Table 1 (below) outlines four language types: body language, oral language, written language, and multimodal language. This language typology describes what individuals and groups interpret from spoken and written information, including non-verbal body language and multimodal language in patient-provider interactions. Medical and health professions students can use the language typology in Table 1 to reflect on how well they communicate with each other on an interprofessional level and with their patients on an interpersonal level. Faculty can discern whether these basic building blocks of language are explicitly or implicitly discussed in the medical and health professions school curriculum. To develop a clearer understanding of how a language typology informs health literacy education, students should be able to write a collection of case studies on how multimodal types of language play out in their patient-provider interactions. A collection of case studies could include how certain patients present during clinical checkups or during treatment interventions, and what steps are needed by the provider to support patient health literacy during that care. More descriptions of the four language types are provided below.

Table 1. A Language Typology that Informs Health Literacy Education (Ubbes & Njoku, 2022)

Language Types	Language Definitions
Body Language	Body language patterns of breathing, eye movements, facial expressions, gestures, mannerisms, body positions and movements, nonverbal behaviors, emotions, and proxemics that can be expressed and interpreted as embodied signs, signals, symptoms, and rhythms for health communication.
Oral Language	Oral language patterns of spoken words, intonations, vocal babbles, and that can be expressed and interpreted as verbal sounds, signals, speech,

	and rhythms for health communication.
Written Language	Written language patterns of words, pictures, and numbers that can be expressed and interpreted as visual-textual signs, symbols, signals, and signatures for health communication.
Multimodal Language	An integrated communication pattern of body language, oral language, and written language that informs emergent literacy development, functional and interactive health literacy, and health literacy education.

2.3.1 Body Language

Individuals and cultural groups vary in the way they interpret the signs, symbols, symptoms, signals, and sounds of health communication, supported by a variety of gestures, mannerisms, and body movements (Ubbes & Ward, 2007). Body language, a form of nonverbal communication, is at the heart of medicine. Physicians use their eyes, nose, ears, and hands to interact with patients from a short distance away at first and then use a close-up assessment in order to make patient diagnoses. Being able to recognize and discern non-verbal communication from patients is analogous to “reading people” (O’Connor, 2021), which involves the ability to know, understand, and empathize with the lived experiences of others. Bertone and Volpato (2009, p. 52) indicate that “handshakes, orientations, positions, and movements of hands, arms, body and facial expressions” exploit visual modes of knowing as does the reading of sign language, which is a visual-gestural language.

Educational accommodations for pre-medical and pre-dental students who have hearing impairments (and visual impairments) have been improving with greater acceptance at osteopathic and allopathic institutions (https://www.rit.edu/ntid/healthcare/). Health literacy education should support ways for students in medical and health professions schools to work with their peers who may have vision and hearing impairments and are in need of academic accommodations. Kushalnagar, Ryan, Smith, and Kushalnagar (2018) have promoted critical health literacy with deaf students by stating that “Health communication is a key public health issue that impacts low-literate patients, including deaf people who use sign language. Access to health communication allows deaf individuals to effectively use health information to engage in preventative healthcare techniques, seek appropriate medical attention when symptoms arise, and participate in physical activities to reduce or avoid significant health risks”.

More than twenty years ago when Nutbeam (2000) named health literacy as an outcome of health promotion, he defined health literacy as a public health goal with three related levels: functional health literacy, interactive health literacy, and critical health literacy. Mogford, Gould, and DeVoght (2011) then used critical health literacy as a way for students to become change agents by promoting the social determinants of health. Critical health literacy training may be important for medical faculty to emphasize before, during, and after medical student residencies, guided by the World Health

Organization's Final Report of The Commission on Social Determinants of Health (WHO & CSDH, 2008, p. 30), which promoted the need to "incorporate the social determinants of health into medical and health training, and improve social determinants of health literacy more widely".

The developmental interactions between oral language, body language, and written language are refined throughout the life course. After the birth of a baby, parents learn to read their baby for body language cues, e.g., startle reflex, puckered face, tears in eyes, big pupils, and smiling whereas health professionals learn to read the signs, symptoms, and signals of the baby for thriving. Physicians who learn to respond nonverbally to patients and their families while using an appropriate pacing during a medical examination, can be advantageous for putting patients at ease before initiating conversations about certain procedures or treatments. Health care providers can also learn to read the body language and proxemics of their patients to establish rapport (Tickle-Degnen & Rosenthal, 1990; Fernandez, 2010). And research on emotional body language continues to grow as a developing field in neurobiology (de Gelder, 2006) with import to the medical and health professions, including body expression skills training for dental students (Riga & Kossioni, 2014).

2.3.2 Oral Language

Oral language is described as expressive communication that can also be categorized as verbal communication. Verbal Exchange Health Literacy (VEHL) is conceptualized by Harrington and Valerio (2014) as "the ability to speak and listen that facilitates the exchanging, understanding, and interpreting of health information for health decision making, disease management and navigation of the healthcare system". The verbal exchange of speaking constitutes an oral modality whereas listening constitutes an aural (hearing) modality. One rationale for the development of a VEHL model is that patients with limited health literacy are less likely to ask questions in the health care context (Katz, Jacobson, Veledar, & Kripalani, 2007). However, more research can be done on adult conversational skills and what patients want to tell their health care provider; people will talk more than write or read during the medical or health care encounter. Research shows that humans can typically speak at 125 to 150 words per minute, but they can read at speeds of 300 words per minute. Listening is even slower at 150 words per minute (Rubin, Hafer, & Arata, 2000). Other researchers have found that reading rates and an efficient listening rate can be highly similar (Kuperman, Kyröläinen, Porretta, Brysbaert, & Yang, 2021).

Oral language in the form of doctor-patient talk is a key component of health literacy education. Oral language that is spoken by a physician needs to be understood by patients. Similarly, oral language that is spoken by patients needs to be understood by physicians. Reciprocal speaking and listening skills form a loop of two-way communication in order to exchange information. Luks and Goldberger (2020) have reminded physicians and health care professionals to reduce problematic phrases in the health professions by adopting a patient- and family-centered care perspective in order to achieve better communication without jargon. This non-jargon approach is supported in dentistry as well (Hamilton,

Lamey, Ulhaq, & Besi, 2021). In a key study by Howard, Jacobson, and Kripalani (2013), medical residents were asked to compare their self-reported use of clear verbal communication while being observed during a standardized patient encounter. Results showed that medical residents tended to overestimate the clarity with which they communicated with their patients.

Oral language is a prerequisite before learning to read in early childhood (Hutton, DeWitt, Hoffman, Horowitz-Kraus, & Klass, 2021); oral language development can be maximized when children are exposed to adequate conversations and social interactions around books at home and in school (Sanders, Zacur, Haeckel, & Klass, 2004; Grolig, 2020; Chang, Taylor, Rastle, & Monaghan, 2020). Language capacity in humans evolved about 100,000 years ago with oral language capacity being innate from specific networks hardwired in the brain for the development of speech and language processing. However, this is not true for reading or writing. Reading and writing must be learned since hardwired brain network do not exist at birth (Klass, Hutton, & DeWitt, 2020).

In health care, many health literacy assessments are based on oral and written language in which patients speak or read aloud medical or dental terminology to determine their health literacy status (Davis, Long, Jackson, Mayeaux, George, Murphy, & Crouch, 1992; Khan, Ruby, Goldblatt, Schensul, & Reisine, 2014). Researchers should be clear about their goals for understanding oral language capacity and/or written language capacity in health literacy, realizing that both forms of language are essential in the development of functional and interactive health literacy, supported by body language and multimodal language.

2.3.2 Written Language

Written health information has consistently failed to communicate basic information to the target audiences for which they are intended. Rudd, Moeykens, and Colton (1999) discovered disparities between the readability of health education materials and patient reading levels. Readability disparities have been shown in ambulatory settings (Cooley, Moriarty, Berger, Selm-Orr, Coyle, & Short, 1995; Davis, Crouch, Wills, Miller, & Abdehou, 1990), pediatric hospitals (Davis, Mayeaux, Fredrickson, Bocchini, Jackson, & Murphy, 1994), and substance abuse treatment centers (Davis, Jackson, George, Long, Tally, Murphy, Mayeaux, & Truong, 1993). Similar readability challenges were found for patients with lupus (Hearth-Holmes, Murphy, Davis, Nandy, Elder, Broadwell, & Wolf, 1997), and diabetes (Hosey, Freeman, Stracqualursi, & Gohdes, 1990). Reading levels of patients in these studies were between 6^{th} and 10^{th} grade level, but the readability of the materials designed for them were between 7^{th} and 13^{th} grade level. Even when examining the reading level of internet medical information, Hutchinson, Baird, and Garg (2016) found a reading grade-level range of 10^{th} to 14^{th} grade level, which was above the suggested sixth and seventh grade levels.

According to Rudd, Moeykens, and Colton (2000), researchers analyzed health education materials prepared for specific ethnic groups and found that many of them were not appropriate for the audience.

Medical terminology, abbreviations, and acronyms can make it extremely difficult for patients to understand what their physician is talking about (Cosic, Kimmel, & Edwards, 2019). Sometimes jargon even confuses physicians because every medical and health specialty has its own language, terminology, and abbreviations. As "a coded language," jargon is communicated in a group with very few people who are able to understand outside that particular group. Most medical terminology is a combination of Greek and Latin suffixes and prefixes which describes human body parts, diseases, drugs, medical equipment, and surgical procedures. Ultimately, health literacy education should encourage medical and health professions students to consider the impact of education and language on the level of patient understanding whether it is written or spoken (Hayes, Dua, Yeung, & Fan, 2017).

2.3.3 Multimodal Language

Multimodal language is an integrated pattern of body language, oral language, and written language that is expressed during health communication and health literacy encounters. Kress and Van Leeuwen (2001) have indicated that meaning-making occurs through the use of language and as such "meaning-making" is a form of knowledge production. This reminder is important in medical and health professions education because if only the faculty are using language to impart information, then they will be making meaning in the process of knowledge production while the non-participants remain passive and marginalized. This can translate to similar effects in clinical practice if only the health care provider is using multimodal language. By knowing multimodal language through a pedagogical lens, medical educators can seek to use "participatory methods" (Veale, 2005) to facilitate learning. One example of a participatory method for multimodal communication includes a pediatric workshop on how to build rapport with patients during an emotionally charged exchange using the mnemonic: Take the HEAT which stands for "hear me out, empathize, apologize, and take action" (Marsh, Reed, Mahan, Schneider, Fernandes, Liao, Spears, & Lauden, 2021). Another example of a multimodal curriculum with patient feedback showed promising results in improved communication skills among fourth-year medical students when compared to a control group (Dubosh, Hall, Novack, Shafat, Shapiro, & Ullman, 2020). More research and practice is needed on multimodal language in health literacy education, especially the extent to which multimodal language informs emergent literacy development as well as functional and interactive health literacy across the lifespan.

3. Instruction for Advancing Health Literacy Education

In the CIA-HLE Framework, instruction represents a supportive role to curriculum and assessment. The next section will describe two pedagogical themes in Health Literacy Education (HLE) that faculty will use to teach about patient-physician interactions. Pedagogy refers to a inquiry-based study of how knowledge and skills are learned in an educational context and includes the human interactions and psychosocial development of the learners that leads to a relational pedagogy (Ubbes, 2008 & 2018). In

an interprofessional training context, all medical and health professions students need further practice in the relationships formed during teaching-learning encounters and during patient-provider interactions. In a recent systematic review, Sauders, Palesy, and Lewis (2018) indicated that a health literacy curriculum framework in health professions education will need to be implemented in order to encourage more consistency in pedagogical instruction. Therefore, the CIA-HLE Framework (Figure 1) will include seven skill-based instructional strategies to improve oral communication in HLE (Theme 1) and three skill-based instructional strategies to improve written communication (Theme 2) in HLE.

Coleman, Peterson-Perry, and Bumsted (2016) suggested that medical students should receive a health literacy curriculum divided between spoken communication and written communication. In order for medical and health professions students to learn and be able to transfer spoken and written communication effectively into their professional practice, faculty will need to be clear about the different types of knowledge that they will teach and students will learn. For example, there are three types of knowledge that are learned in any discipline: declarative knowledge, procedural knowledge, and contextual knowledge (Ubbes, 2008; Ubbes & Ward, 2007). Table 2 defines these three different knowledges when learning about Health Literacy Education (HLE):

Table 2. A Knowledge Typology that Informs Health Literacy Education (Ubbes, 2008)

What is Declarative Knowledge?	**What is Procedural Knowledge?**	**What is Contextual Knowledge?**
"Content Knowledge" in the form of health literacy facts, topics, concepts, generalizations, models, principles and theories.	"Practice Knowledge" in the form of health literacy skills, strategies, processes, and pedagogy.	"Applied Knowledge" that demonstrates knowing what to do about health literacy with whom in a certain situation in a particular place and time (context).

As described in Table 2, declarative knowledge is content knowledge that is organized as facts, topics, concepts, generalizations, models, principles, and theories to be learned. Health professionals need content knowledge or a vocabulary (lexicon) to talk, read, and write about one's professional craft. When learning declarative content knowledge, minimal demonstrations or actions are practiced. An example of declarative knowledge is knowing the definitions of the three types of health literacy (Nutbeam, 2000; Ubbes & Ausherman, 2018). In order for health professionals to develop procedural practice knowledge as shown in Table 2, faculty and students alike will need to demonstrate and practice health literacy skills and strategies. Examples of procedural knowledge include role plays and educational simulations with standardized patients (Howley, 2004; Toronto & Weatherford, 2015). When practicing health literacy

skills with different patients in a particular place and time, physicians and health professionals will demonstrate an applied knowledge, which is also called contextual knowledge, the most sophisticated type of learning. An example of contextual knowledge is knowing when to listen rather than to speak after reading the face and body language of a colleague or patient in distress.

In the next two sections, procedural knowledge in the form of skill-based instructional strategies will describe how to improve oral communication (n = 7) and written communication (n = 3) in health literacy education. Pedagogical theme 1 will focus on skill-based instructional strategies to improve oral communication in health literacy education, and pedagogical theme 2 will focus on skill-based instructional strategies to improve written communication in health literacy education.

3.1 Pedagogical Theme 1: Skill-Based Instructional Strategies to Improve Oral Communication in Health Literacy Education

There are seven skill-based instructional strategies for oral communication that faculty will use when teaching physicians how to interact with their patients during a medical encounter. The list for improving oral communication is provided below and elaborates on the study by Coleman, Hudson, and Pederson (2017), who prioritized a core of health literacy and clear communication practices for health care professionals based on a consensus study with 25 health literacy experts. The health literacy experts produced on average 7.8 published papers about health literacy and collectively had an average of 12.7 years of experience working in the field of health literacy. Four of their suggestions are listed below with an asterisk. When developing a health literacy curriculum, faculty will improve the professional practice of medical and health professions students when using the following seven skill-based instructional strategies:

3.1.1 Use Plain Language*

Plain language refers to organizing information so that the most important points come first, using an active voice, using simple language when defining technical terms, and breaking complex information into understandable chucks (Plain Language Action and Information Network, 2005). Physicians should use plain language and no medical jargon when talking with patients. Physicians need to be able to explain information and procedures to their patients as clearly as possible.

3.1.2 Use Teach Back or Show Me*

Physicians can use the “Teach Back” method (also called the “Show Me”) method to confirm that the information provided was actually understood by their patients (Weiss, 2007). The 5Ts for Teach Back strategy goes beyond asking patients if they understood what was discussed; it is more like a check of how well the physician explained information than how well the patients understood (Anderson, Leister, & De Rego, 2020). The steps to the “Teach Back” method are: 1) the health professional introduces new content to the patient, 2) the health professional assesses the ability of the patient to re-state content in their own words, 3) the health professional clarifies any incorrect content and re-explains the content, 4)

the health professional re-assesses the ability of the patient to re-state content in their own words, 5) the patient correctly states all new content in their own words (Parnell, 2015, p. 152). The "Show Me" method is useful for showing patients where, when, and how to complete actions like taking their medications properly or giving themselves injections. Physicians will confirm patient understanding by saying "I want to make sure I have explained your medicine clearly. Can you tell me how you think you will take this medicine?" Physicians should not prompt with "Do you understand? or "Do you have any concerns?" (McDonald & Shenkman, 2018), because those questions result in dichotomous "yes or no" answers which reduce interactive and elaborate conversations between physicians and patients.

3.1.3 Encourage patients to ask questions*

Physicians should encourage patients to ask questions during the many transitions of a medical examination. As part of an interactive dialogic process, patients need to feel that it is "OK" to ask questions and that their questions will be listened to, heard, and answered. Patients may have specific questions about the impact of their medical condition on their ability to work or to interact with their families. Patients need to feel comfortable enough to ask specific questions so they become active partners in their medical care and health decision making. One simple approach for asking questions is the Ask-Me-3® strategy (Mika, Wood, Weiss, & Trevino, 2007), which encourages patients to ask specific questions when meeting with their health care provider: 1) What is my main problem? 2) What should I do? and 3) Why is it important for me to do this? Several health organizations worked together as a coalition to form the Partnership for Clear Health Communication which now disseminates the Ask-Me-3® campaign for patients who speak English and/or Spanish. At the end of the medical visit, another effective strategy that physicians can use is to ask patients "what questions do you have?' rather than "do you have any questions?" (Coleman, Hudson, & Pederson, 2017). The former prompt builds a more collaborative patient-physician relationship and enhances the likelihood that the conversation will reveal misconceptions from patients. The latter prompt limits the conversation between the physician and patient because the patient can simply reply with a "yes" or "no" answer and not reveal any misunderstandings.

3.1.4 Use medical interpreters and translators for patients who do not understand the language*

Physicians need to fully embrace the use of medical interpreters and translators during interactions with patients who are limited in their language proficiency. Persons with limited English proficiency are "unable to communicate effectively in English because their primary language is not English, and they do not have fluency in the English language" (USDHHS, 2001b). More than 15 languages are frequently encountered in 20 percent of American hospitals (USDHHS, 2013). Some helpful tips when translating health information effectively (Macario & Boyte, 2008) or using an interpreter are available from Parnell (2015, pp. 141-142). Physicians also need practice accessing and practicing with interpreters and translators who can assist hearing impaired (USDHHS, 2017) and/or vision impaired patients with the

use of Braille and/or sign language, respectively. Some medical schools are now offering formal instruction of how to work with medical interpreters and/or patients with limited English proficiency (Himmelstein, Wright, & Wiederman, 2018).

3.1.5 Be an active listener

Active listening is a communication skill developed by psychologist Carl Rogers. Active listening involves giving unparalleled attention to the speaker (Robertson, 2005). Knights (1985) defined attention as "placing all of your attention and awareness at the disposal of another person, listening with interest and appreciating without interruption". McWhinney (2004) emphasized that "The greatest single problem in clinical interviewing is the failure to let the patients tell *their* story".

Active listening is not easy, because it requires concentration and attention to all the minute details that patients convey. Active listening requires the listener to rid themselves of all distractions and personal concerns in order to engage in the communication exchange. Physicians should listen with their ears and also listen with their eyes, heart, mind and imagination. Physicians should listen not only to the words of the other person, but also the messages buried in the words.

Physicians must learn to pay attention to their patients' tone of voice and to observe eye contact and body language when they speak. According to Rudolph (cited in Osborn, 2008), active listening can help physicians to identify cognitive or performance gaps in their patients. Listening for what the patient did not say, including what was missing, will help to reveal comprehension gaps. Rudolph (cited in Osborn, 2008) states that "clinicians owe patients at least one more sentence rather than simply ending with 'Okay, thank you'".

3.1.6. Respond with empathy when breaking bad news

Papen (2009) outlined the view of health literacy as a social practice that is embedded in social relationships. Papen (2009) demonstrated that health care environments are 'textually-mediated' social worlds which require patients to discuss and deal with information in cognitive-emotional ways. The medical humanities and literacy studies have promoted the value of reading for "knowing, understanding, and empathizing with the lived experiences of others" especially when young (O' Connor, 2021, p. 779). When physicians show empathy and compassion toward their patients, patients become more relaxed, comfortable, and empowered which helps them to open up to share their thoughts and feelings. Clinical empathy improves patient outcomes and increases patient satisfaction (Derksen, Bensing, Lagro-Janssen, 2013) and decreases burnout and fatigue for the physician (Hojat, 2016).

Riess and Kraft-Todd (2014) promote an E.M.P.A.T.H.Y. framework when educating physicians on how to develop empathy. E stands for eye contact that is culturally appropriate for the patient; M stands for the muscles of facial expressions that mirror the patient's facial expressions; P stands for posture that is open and engaging at eye level to the patient; A stands for affect that is expressed with verbal and nonverbal cues but also uses questions to confirm how the patient is feeling; T stands for tone and volume of voice

to convey caring and concern for the patient; H stands for hearing the whole person including their underlying story; and Y stands for "your" mindful response to the words and emotions that are received from the patient.

Breaking bad news to patients is "necessary in medical practice and requires training" in the use of relational communication (Burg, Daetwyler, de Oliveira Filho, Del Castanhel, & Grosseman, 2019). When delivering bad news to patients, physicians should respond to the emotional status of patients using verbal and nonverbal skills from a sociocultural perspective (Rat, Ricci, Guillemin, Ricatte, Pongy, Vieux, Spitz, & Muller, 2018).

Shen, Ostroff, Hamann, Haque, Banerjee, McFarland, Molena and Bylund (2019) found that physicians were least likely to give a high empathic response when patients shared high levels of anxiety and negative emotions during lung cancer consultations. Physicians who allow patients to explain what they already know about their health condition in their own words will gain a sense of ownership and empowerment in the situation. A physician checklist for use in a clinical examination includes patient reception, sharing of illness information, response to emotions, and establishment of a plan and follow-up (Burg, Daetwyler, de Oliveira Filho, Del Castanhel, & Grosseman, 2019, p. 37).

3.1.7 Use "Chunks and Checks" method

Physicians usually convey a lot of information and explain more than one concept when they speak to patients. This makes it extremely difficult for patients to understand and retain information. Processes and procedures should be broken down into smaller and more manageable bits (or chunks) of information rather than giving information all out at once. Between each "chunk" of information, physicians should use methods like "teach back" to evaluate if the patient understood the prior information before moving on and sharing more information. The 'chunks and checks' method allows patients to ask questions about what they did not understand as the conversation progresses, rather than waiting until the end of the appointment.

3.2 Pedagogical Theme 2: Skill-Based Pedagogical Strategies to Improve Written Communication in Health Literacy Education

Physicians should use a combination of oral and written communication channels to discuss health and medical conditions with patients. Written communication serves to validate and review what was explained through oral communication during physician-patient conversations. Oral language and written language should be integrated to boost and amplify patient understanding (comprehension), which can lead to improved health outcomes. The added bonus of written language is that is can be taken to a new location and reviewed by the patient later, thus serving as a review from the medical appointment.

This section will describe three skill-based instructional strategies to improve written communication in health literacy education. As previously described in Table 2, these skill-based instructional strategies are

to be taught by faculty as declarative knowledge (i.e., to know) and procedural knowledge (i.e., to do), then physicians will refine these skills with patients as a form of contextual knowledge (i.e., to know and do in certain contexts) during their professional practice encounters. Two of the three written communication suggestions are summarized below with an asterisk based on research by Coleman, Hudson, and Pederson (2017).

3.2.1 Write in plain language.

Plain language emphasizes writing that is clear, concise, efficient, and free flowing for the patient. The Center for Plain Language (2019) suggests that "a document, web site, or other information is in plain language if the target audience can read it, understand it, act on it and even teach it". According to the Center for Health Care Strategies, Inc. (2013), plain and clear language approaches assumes that the patient has minimal background knowledge on the topic so the written messages needs to be simple with fewer words and shorter sentences. Numbers and percentages should not require extra calculations by the patient or the provider. Layouts and design of effective print materials should include lots of white space, a large and familiar font, left-justified margins, and upper and lower case lettering rather than words in all capital letters.

Physicians should use print and electronic materials with their patients that are "multilingual, culturally appropriate and easy-to-read" (Almader-Douglas, 2013) and written in different languages (Aronis, Edgar, Lin, Parreiras Martins, Paasche-Orlow, & Magnani, 2017; Wallace & Lennon, 2004). Readability instruments such as the Flesch-Kincaid Grade Level Scale, the Fry Readability Formula, or the PROSE/IKIRSH Document Readability Formula (Center for Health Care Strategies, Inc, 2013) can be used to assess the reading level of patient education materials. Written materials with an acceptable readability level score between the sixth and seventh grade levels (Hutchinson, Baird, & Garg, 2016) can reduce the cognitive load and literacy demands on adult patients so they will be able to comprehend and recall the information at a later time (Hoffmann & Worrall, 2004), leading to improved medical decision making (Chen, Li, Liang, & Tsai, 2018). Physicians can underline and emphasize key skills, steps, and strategies in the printed material for their patients to practice at home between appointments. Medical and health professions students should also learn to consider the cognitive function and health literacy of patients and try to ease the burden of self-care tasks to achieve desirable health outcomes (Wolf, Curtis, Wilson, Revelle, Waite, Smith, Weintraub, Borosh, Rapp, Park, Deary, & Baker, 2012).

3.2.2 Evaluate written educational materials for plain language elements then review them with patients to ensure they fully understand them.*

Physicians can reduce pressures on patients who are already struggling with health conditions by using documents written in plain language. Use of the Patient Education Materials Assessment Tool (PEMAT) can be helpful for evaluating written information before discussing with it with patients. For example, plain language elements for webpages (Lee, 2020, p. 59) using the PEMAT include four guidelines: 1)

reader focus, 2) organization, 3) writing, and 4) formatting. The “reader focus” topic should have an introduction that informs the patients what they are about to read. The “organization” topic should put the most important message at the beginning of the material. The “writing” topic should use simple sentences with correct punctuation and grammar, eliminate unnecessary words, use personal pronouns, and explain any technical terms that cannot be written as lay terms. The final topic entitled “design and formatting” focuses on consistent appearance of material throughout, the use of clear and uncluttered images that are related to the content, a limited use of italics, underlining, and bold print, and use of a clean font with a large text size that is visually easy to read (Shoemaker, Wolf, & Brach, 2014).

Physicians should try as much as possible to offer support to patients who have low language proficiency levels and low health literacy. Clinicians should critically review their medical forms and paperwork to ensure patients do not experience undue anxiety and stress when completing the paperwork. Paperwork should be improved and then piloted with the target population whenever a written document demonstrates these design errors and mistakes: small print with low font size, lack of white space, insufficient contrast between the print and paper color, lack of left justification of the margins, overuse of indents and bullets, and content written in columns (Parnell, 2015, pp.182-190).

The Clear Communication Index from the U.S. Centers for Disease Control and Prevention can also be used to assess written health information for audiences ranging from patients to health professionals (Alpert, Desens, Krist, Aycock, & Kreps, 2017). The Index consists of 24 items with four items unscored and open ended, but the remaining 20 items are scored and address the core message, behavioral recommendations, numbers, and risk related to the health condition or disease. The Index complies with the Plain Writing Act of 2010 (Public Law 111-274) and can be used to develop written materials using clear communication principles. The Index can also help to guide the revision of materials in an objective way using intercoder reliability.

3.2.3 Use pictures or visual aids* to aid patient understanding

The use of visual aids is a strategy for enhancing written communication. Visual aids should make content more easily understood and make it easier for patients to act on instructions (Lee, 2020, p. 78). Visual aids “have the ability to transcend language and numeracy barriers” and broaden patient populations with “diverse cultural, language, and educational backgrounds” thus “correcting for poor language proficiency” (Pratt & Searles, 2017, p. 497, p. 500).

Physicians can use pictures in the form of photographs, illustrations, and images to help patients understand their health diagnoses and treatment plans. As the name “visual aid” suggests, visuals are to “aid” the patient to understand by supporting and complementing verbal discussions with written information. For example, when explaining how to apply topical medication to the skin, illustrations with captions can help patients to follow sequential step-by-step instructions. Physicians can share available print materials with their patients during office visits and also draw pictures for their patients when

explaining a new process or medical procedure (Weiss, 2007). Overall, patients will have increased message understanding and recall of information when visuals are combined with text (Houts, Doak, Doak, & Loscalzo, 2006). Health professionals who use multimodal communication patterns enhance information processing (e.g., verbal, gestural, kinesthetic, and aural) for their patients by increasing attention to the task and helping them to make inferences from the information (Houts, Doak, Doak, & Loscalzo, 2006).

The Patient Education Materials Assessment Tool (PEMAT) gives physicians and health professionals helpful guidelines in assessing patient education materials. The PEMAT can be used to assess visual aids in printed and audiovisual materials (Shoemaker, Wolf, & Brach, 2014; Lee, 2020, p. 58). PEMAT guidelines suggest that visual aids need to be clear and uncluttered with simple titles or captions. Visual aids are written information that should be relevant to the topic and reinforce rather than distract from the content. The illustrative charts, graphs, tables, or diagrams should explain to patients how to act on the health information or medical instructions. Each action should be broken down into manageable, explicit steps so it is easy to understand in order to help patients to take action for their health. These two criteria of being understandable and actionable are based on recommendations from the National Action Plan to Improve Health Literacy (Shoemaker, Wolf, & Brach, 2014).

4. Assessment for Advancing Health Literacy Education

"In the CIA-HLE Framework, assessment is the third component of the triadic model that includes curriculum and instruction. Assessment is a way to measure whether certain goals, objectives, or performance indicators have been met in the educational context. This section will include two themes about assessment. The first theme includes formative assessments of skill-based oral and written communication to build functional and interactive health literacy whereas the second theme includes summative assessments of health literacy competencies. In short, the two types of assessments that are useful in advancing health literacy education are formative and summative. Formative assessment is a process conducted during instruction and is an assessment *for* learning (Connolly, 2020). Formative assessments help to determine how medical students are moving through coursework and through practice-based scenarios and are intended to be an ongoing measurement of progress. Faculty will use observations to determine how medical and health professions students are learning and provide feedback along the way. Formative assessments are a continuous way to measure student performance and guide faculty instruction".

Another type of assessment is called summative assessment. Summative assessment is often called "assessment *of* learning" (Connolly, 2020), because it measures the acquisition of content and performance indicators at the end of a skills-based unit. This type of assessment uses rubrics with a criteria for learning and a set of goals or objectives to be met. Sometimes summative assessments are

called high-stakes tests or professional licensing exams. Dixson and Worrell (2016) describe different types of summative assessments with one being a performance assessment in which the educator makes direct observations of students during learning situations in which they are practicing and applying skills that were previously taught. McTighe and Ferrara (1998) consider performance-based assessments as one of the best forms of summative assessments because they require a demonstration of knowledge learned instead of a simple memorization of facts.

Coleman, Peterson-Perry, and Bumsted (2016) conducted a pre-test to post-test evaluation of first-year medical students that was repeated over two years of training to determine the effect of health literacy principles and practices on their self-perceived knowledge and behaviors. Results found that medical students developed a more realistic appreciation of health literacy issues with greater exposure to health literacy topics during one-hour skill-building workshops. The researchers advocated for direct classroom assessment of health literacy knowledge and behaviors among medical students in the future and the need for health literacy studies across multiple institutions. Kaper, Reijneveld, van Es, de Zeeuw, Almansa, Koot, and de Winter (2020) conducted a randomized controlled trial to determine the effectiveness of a comprehensive health literacy skills training for undergraduate medical students and found that the 11-hour intervention significantly improved health literacy competencies for up to five-weeks afterwards compared to a control group. The skill assessments were conducted by video-observation but the rubrics for student assessments were not adequately discussed or provided.

Rubrics are a useful assessment tool because they communicate the desired qualities or objective measures that are expected by students during the learning process (formative assessment) or at the conclusion of the unit or course (summative assessment). Analytic rubrics provide more detailed and specific feedback in two or more categories such as content, delivery, organization, and message clarity. Holistic rubrics provide an overall picture of student skill performance with evaluative criteria summarized into subscores and/or a single letter grade.

For the purposes of conducting assessments of communication skills outlined in this paper, two holistic rubrics are provided in Table 3 and Table 4. Table 3 lists the seven oral communication skills to be evaluated on an advanced to novice continuum from 4 points to 1 point, respectively. Table 4 then lists the three written communication skills using the same scoring continuum. To maximize and codify what faculty will assess and look for during the student demonstration, behavioral cues and specific criteria can be inserted into the rubric so that the assessor will know specifically what to look for when observing each student. Alternately, a checkmark can be placed into the rubric along the scoring continuum as long as students know ahead of time what will be expected from them for an advanced, proficient, average, and novice performance of each skill. Effective monitoring of skill development depends on students' ability to elicit predictive cues in medical education, which helps them to accurately monitor their progress and optimize their self-regulated learning (de Bruin, Dunlosky, and Cavalcanti, 2017). For

additional information on how to use skill inventories in the health professions when assessing clinical practice, see Lovegrove and Hatfield (2012) and Hatfield and Lovegrove (2012).

Table 3. Analytical Rubric to Assess Skill-Based Oral Communication

Skill-Based Oral Communication		**Advanced 4 points**	**Proficient 3 points**	**Average 2 points**	**Novice 1 point**
Use plain language.					
Use Teach-Back or Show Me.					
Encourage patients to ask questions.					
Use medical interpreters and translators for patients who do not understand the language.					
Be an active listener.					
Respond with empathy when breaking bad news.					
Use “Chunks and Checks” method.					
Column Subtotals =					
Total Points =	**Out of 28 points**				

Table 4. Analytical Rubric to Assess Skill-Based Written Communication

Skill-Based Written Communication		**Advanced 4 points**	**Proficient 3 points**	**Average 2 points**	**Novice 1 point**
Write in plain language.					
Evaluate written educational materials for plain language elements then review them with patients to ensure they fully understand them.					
Use pictures or visual aids.					
Column Subtotals =					
Total Points =	**Out of 12 points**				

5. Limitations

One limitation of this paper is that a theoretical epistemology is currently missing. Curriculum development is usually grounded in an epistemology which is the study of knowledge and knowledge generation. The theoretical knowledge that best organizes curriculum development is constructivism

because it advocates for a social construction of meaning making while using collaborative approaches from multiple perspectives (Ubbes, Black, & Ausherman, 2009). Some health professions (Peters, 2000) have embraced constructivist theory and a sociocultural learning perspective which emphasizes student-centered and self-directed learning (See Øvrebø, Dyrstad, & Hansen, 2022, p. 5; Lovegrove & Hatfield, 2012). Future development of constructivist theory in the medical and health professions schools will advantage students toward inquiry-based learning, multiple perspectives, uncovering misconceptions, and scaffolding prior knowledge toward more conceptual understandings (Ubbes, Black, & Ausherman, 2009).

A second limitation of this paper is that the CIA-HLE Framework does not sufficiently address the affective domain in learning. As such with topics of health communication and health literacy, faculty need to be able to assess both verbal behaviors, which includes empathy, reassurance, and support, and nonverbal behaviors like nodding, forward lean, and mutual gaze (Beck, Daughtridge, & Sloane, 2002). Capturing motivations and emotions regulation during the learning process (Järvenoja, Järvelä, Törmänen, Näykki, Malmberg, Kurki, Mykkanen, & Isohätälä, 2018) are important in self-regulated learning. Moreover, emotions are an important part of clinical care, so placing topics of engagement (D'Arrigo, Copley, Poulsen, & Ziviani, 2020), apathy, sympathy, empathy, compassion, and solidarity (Batada, 2018), and social and emotional skills (Tomlinson & Sousa, 2020) into the medical curriculum seems critically important. Faculty teaching in health literacy education can address these topics under the conceptual umbrella of a pedagogy of care (Noddings, 2013), a relational pedagogy (Ubbes, 2008 & 2018), or a contemplative pedagogy (Batada, 2018) in order to meet the societal needs of health equity so that medical and health professionals can enter the workforce ready to address health literacy and the social determinants of health (World Health Organization, 2008; Schillinger, 2021).

6. Conclusion

This paper encouraged faculty in medical and health professions schools to use the new Curriculum, Instruction, and Assessment Framework for Health Literacy Education (CIA-HLE) based on the historical review of selected research studies and initiatives in health literacy. The CIA-HLE Framework was organized by three curriculum themes, two pedagogical themes, and two assessment themes as a way to outline content to be taught and advanced for health literacy education. To promote even more interprofessional collaboration and dialogue across the medical and health professions, a language typology and a knowledge typology were also provided as building blocks for health literacy education. By conceptualizing Health Literacy Education (HLE) as a triadic model of curriculum content, instructional strategies, and learning assessments (CIA), we hope that skill-based health literacy strategies in oral and written communication can move more fully from medical and health professions training into health care practice for the improvement of patient health outcomes.

References

Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association. (1999). Health literacy: Report of the Council on Scientific Affairs. *JAMA*, *281*, 552-557.

Agency for Healthcare Research and Quality. (2017). *AHRQ health literacy universal precautions toolkit*. Rockville, MD. Retrieved from http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/index.html

Allen, M., Auld, E., Logan, R., Montes, J. H., & Rosen, S. (2017). Improving collaboration among health communication, health education, and health literacy. *NAM Perspectives*. Discussion Paper. Washington, DC: National Academy of Medicine. https://doi.org/10.31478/201707c

Almader-Douglas, D. (2013). *Culture in the context of health literacy update*. National Institutes of Health, Bethesda, MD: National Network of Libraries of Medicine. Retrieved from http://nnlm.gov/outreach/consumer/hlthlit.html

Alpert, J. M., Desens, L., Krist, A. H., Aycock, R. A., & Kreps, G. L. (2017). Measuring health literacy levels of a patient portal using the CDC's Clear Communication Index. *Health Promotion Practice*, *18*(1), 140-149. https://doi.org/10.1177/1524839916643703

Ancker, J. S., Grossman, L. V., & Benda, N. C. (2020). Health Literacy 2030: Is it time to redefine the term? *Journal of General Internal Medicine*, *35*(8), 2427-2430. https://doi.org/10.1007/s11606-019-05472-y

Anderson, K. M., Leister, S., & De Rego, R. (2020). The 5Ts for teach back: An operational definition for teach-back training. *HLRP: Health Literacy Research and Practice*, *4*(2), e94-e103. https://doi.org/10.3928/24748307-20200318-01

Aronis, K. N., Edgar, B., Lin, W., Parreiras Martins, M. A., Paasche-Orlow, M. K., & Magnani, J. W. (2017). Health literacy and atrial fibrillation: Relevance and future directions for patient-centred care. *European Cardiology*, *12*(1), 52-27. https://doi.org/10.15420/ecr.2017:2:2

Bass, P. F., Wilson, J. F., Griffith, C. H., & Barnett, D. R. (2002). Residents' ability to identify patients with poor literacy skills. *Academic Medicine*, *77*, 1039-1041. https://doi.org/10.1097/00001888-200210000-00021

Batada, A. (2018). Utilizing contemplative practices with undergraduate students in a community-engaged course on health disparities. *Pedagogy in Health Promotion*, *4*(1), 71-76. https://doi.org/10.1177/23733799176979

Beck, R. S., Daughtridge, R., & Sloane, P. D. (2002). Physician-patient communication in the primary care office: A systematic review. *The Journal of the American Board of Family Practice*, *15*(1), 25-38.

Bertone, C., & Volpato, F. (2009). Oral language and sign language: Possible approaches for deaf people's language development. *Cadernos de Saúde*, *2*(Especial), 51-62.

Berkman, N. D., Davis, T. C., & McCormack, L. A. (2010). Health literacy: What is it? *Journal of Health Communication*, *15*, 9-19. https://doi.org/10.1080/10810730.2010.499985

Bombeke, K., Van Roosbroeck, S., De Winter, B., Debaene, L., Schol, S., Van Hal, G., & Van Royen, P. (2011). Medical students trained in communication skills show a decline in patient-centered attitudes: An observational study comparing two cohorts during clinical clerkships. *Patient Education Counseling*, *84*(3), 310-318. https://doi.org/10.1016/j.pec.2011.03.007

Burg, L. B., Daetwyler, C. J., de Oliveira Filho, G. R., Del Castanhel, F., & Grosseman, S. (2019). What skills really improve after a flipped educational intervention to train medical students and residents to break bad news? *Journal of Education and Learning*, *8*(3), 35-43.

Center for Health Care Strategies, Inc. (2013). *Health literacy fact sheets*. Retrieved from https://www.chcs.org/resource/health-literacy-fact-sheets/

Center for Plain Language. (2019). Retrieved from https://centerforplainlanguage.org/

Chang, Y. N., Taylor, J. S., Rastle, K., & Monaghan, P. (2020). The relationships between oral language and reading instruction: Evidence from a computational model of reading. *Cognitive Psychology*, *123*. https://doi.org/10.1016/j.cogpsych.2020.101336

Chen, Y. Y., Li, C. M., Liang, J. C., & Tsai, C. C. (2018). Health information obtained from the internet and changes in medical decision making: Questionnaire development and cross-sectional survey. *Journal of Medical Internet Research*, *20*(2), e47. https://doi.org/10.2196/jmir.9370

Chew, L. D., Bradley, K. A., & Boyko, E. J. (2004). Brief questions to identify patients with inadequate health literacy. *Family Medicine*, *36*(8), 588-594.

Coleman, C. (2011). Teaching health care professionals about health literacy: A review of the literature. *Nursing Outlook*, *59*(2), 70-78. https://doi.org/10.1016/J.OUTLOOK.2010.12.004

Coleman, C. A., Hudson, S., & Maine, L. L. (2013). Health literacy practices and educational competencies for health professions: A consensus study. *Journal of Health Communication*, *18*, 82-102. https://doi.org/10.1080/10810730.2013.829538

Coleman, C. A., Peterson-Perry, S., & Bumsted, T. (2016). Long-term effects of a health literacy curriculum for medical students. *Family Medicine*, *48*(1), 49-53. https://doi.org/10.22454%2FPRiMER.2017.703541

Coleman, C., Hudson, S., & Pederson, B. (2017). Prioritized health literacy and clear communication practices for health care professionals. *HLRP: Health Literacy Research and Practice*, *1*(3), e90-e99. https://doi.org/10.3928/24748307-20170503-01

Coleman, C., Peterson-Perry, S., Sachdeva, B., Kobus, A., & Garvin, R. (2017). Long-term effects of a health literacy curriculum for family medicine residents. *Peer-Reviewed Reports in Medical*

Education Research (PRiMER). https://doi.org/10.22454/PRiMER.2017.703541

Committee on Quality of Health Care in America. (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: Institute of Medicine, National Academies Press.

Connolly, M. (2020). *Skill-based health education* (2nd ed.). Burlington, MA: Jones & Bartlett Learning.

Cooley, M. E., Moriarty, H., Berger, M.S., Selm-Orr, D., Coyle, B., & Short, T. (1995). Patient literacy and the readability of written cancer educational materials. *Oncology Nursing Forum*, *22*(9), 1345-1351.

Cosic, F., Kimmel, L., & Edwards, E. (2019). Patient comprehension of common orthopedic terminology. *HLRP: Health Literacy Research and Practice*, *3*(3), e187-e193. https://doi.org/10.3928/24748307-20190624-04

Cutilli, C. C., & Schaefer, C. T. (2011). Case studies in geriatric health literacy. *Orthopaedic Nursing*, *30*(4), 281-285.

D'Arrigo, R. G., Copley, J. A., Poulsen, A. A., & Ziviani, J. (2020). The engaged child in occupational therapy. *Canadian Journal of Occupational Therapy*, *87*(2), 127-136. https://doi.org/10.1177%2F0008417420905708

Davis, T. C., Crouch, M. A., Wills, G., Miller, S., & Abdehou, D. M. (1990). The gap between patient reading comprehension and the readability of patient education materials. *Journal of Family Practice*, *31*(5), 533-538.

Davis, T. C., Jackson, R. H., George, R. B., Long, S. W., Tally, D., Murphy, P. W., Mayeaux, E. J., & Truong, T. (1993). Reading ability in patients in substance misuse treatment centers. *International Journal of the Addictions*, *28*(6), 571-582. https://doi.org/10.3109/10826089309039648

Davis, T. C., Long, S. W., Jackson, R. H., Mayeaux, E. J, George, R. B., Murphy, P. W., & Crouch, M. A. (1992). Rapid estimate of adult literacy in medicine: A shortened screening instrument. *Family Medicine*, *25*, 391-395.

Davis, T. C., Mayeaux, E. J., Fredrickson, D., Bocchini, J. A., Jackson, R. H., & Murphy, P. W. (1994). Reading ability of parents compared with reading level of pediatric patient education materials. *Pediatrics*, *93*(3), 460-468.

de Bruin, A. B., Dunlosky, J., & Cavalcanti, R. B. (2017). Monitoring and regulation of learning in medical education: The need for predictive cues. *Medical Education*, *51*(6), 575-584.

De Gelder, B. (2006). Towards the neurobiology of emotional body language. *Nature Reviews Neuroscience*, *7*(3), 242-249.

de Souza, R. N., Butt, D., Jethani, S., & Marmo, C. (2021). Participatory research methods for investigating digital health literacy in culturally and linguistically diverse communities. *Conjunctions: Transdisciplinary Journal of Cultural Participation*, *8*(1).

https://doi.org/10.7146/TJCP.V8l1.117800

DeWalt, D. A., Broucksou, K. A., Hawk, V., Brach, C., Hink, A., Rudd, R., & Callahan, L. (2011). Developing and testing the health literacy universal precautions toolkit. *Nursing Outlook*, *59*(2), 85-94. https://doi.org/10.1016/j.outlook.2010.12.002

Derksen, F., Bensing, J, & Lagro-Janssen, A. (2013). Effectiveness of empathy in general practice: A systematic review. *British Journal of General Practice*, *63*(606), e76-e84. https://doi.org/10.3399/bjgp13X660814

Dixson, D. D., & Worrell, F. C. (2016). Formative and summative assessment in the classroom. *Theory into Practice*, *55*(2), 153-159. https://doi.org/10.1080/00405841.2016.1148989

Dubosh, N. M, Hall, M. M, Novack, V., Shafat, T., Shapiro, N. I., & Ullman, E. (2020). A multimodal curriculum with patient feedback to improve medical student communication: Pilot study. *Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health*, *21*(1). https://doi.org/10.5811/westjem.2018.11.44318

Eberhard, D. M., Simons, G. F., & Fennig, C. D. (2021). *Ethnologue: Languages of the world* (24th ed.). Dallas, TX: SIL International. Retrieved from http://www.ethnologue.com

Elwyn, G., Durand, M. A., Song, J., Aarts, J., Barr, P. J., Berger, Z., Cochran, N., Frosch, D., Galasiński, D., Gulbrandsen, P. & Han, P. K. (2017). A three-talk model for shared decision making: Multistage consultation process. *BMJ*, *359*, 4891.

Epstein, R. M., & Street, R. L. (2007). *Patient-centered communication in cancer care: Promoting healing and reducing suffering*. Bethesda, MD: National Cancer Institute. National Institutes of Health Publication, 07-6225.

Feldman, D., Gordon, P. A., White, M. J., & Weber, C. (2002). The effects of people-first language and demographic variables on beliefs, attitudes and behavioral intentions toward people with disabilities. *Journal of Applied Rehabilitation Counseling*, *33*(3), 18-25.

Fernández, E. I. (2010). Verbal and nonverbal concomitants of rapport in health care encounters: Implications for interpreters. *Journal of Specialised Translation*, *14*, 216-228.

Gazmararian, J. A., Williams, M. V., Peel, J., & Baker, D. W. (2003). Health literacy and knowledge of chronic disease. *Patient Education and Counseling*, *51*(3), 267-275.

Grolig, L. (2020). Shared storybook reading and oral language development: A bioecological perspective. *Frontiers in Psychology*, *11*, 1818. https://doi.org/10.3389/fpsyg.2020.01818

Hamilton, A., Lamey, P., Ulhaq, A., & Besi, E. (2021). Commonly used terminology in oral surgery and oral medicine: The patient's perspective. *British Dental Journal*, *230*(12), 823-830. https://doi.org/10.1038/s41415-021-3073-1

Harrington, K. F., & Valerio, M. A. (2014). A conceptual model of verbal exchange health literacy. *Patient Education and Counseling*, *94*(3), 403-410. https://doi.org/10.1016/j.pec.2013.10.024

Hatfield, D., & Lovegrove, J. (2012). The use of skills inventories to assess and grade practice: Part 2–Evaluation of assessment strategy. *Nurse Education in Practice*, *12*(3), 133-138.

Hayes, E., Dua, R., Yeung, E., & Fan, K. (2017). Patient understanding of commonly used oral medicine terminology. *British Dental Journal*, *223*, 842-845. https://doi.org /10.1038/sj.bdj.2017.991

Healthy People 2020 [Internet]. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved from https://www.cdc.gov/nchs/healthy_people/hp2020.htm

Healthy People 2030 [Internet]. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved from https://health.gov/healthypeople

Hearth-Holmes, M., Murphy, P. W., Davis, T. C., Nandy, I., Elder, C. G., Broadwell, L. H., & Wolf, R. E. (1997). Literacy in patients with a chronic disease: Systemic lupus erythematosus and the reading level of patient education materials. *Journal of Rheumatology*, *24*, 2335-2339.

Heisler, M., Bouknight, R. R., Hayward, R. A., Smith, D. M., & Kerr, E. A. (2002). The relative importance of physician communication, participatory decision-making, and patient understanding in diabetes self-management. *Journal of General Internal Medicine*, *17*, 243-252. https://doi.org/10.1046/j.1525-1497.2002.10905.x

Hernes, K., & Ott, V. (2018). Health literacy education for undergraduate health professions students: A call for action. *HLRP: Health Literacy Research and Practice*, *2*(3), e163-e165. https://doi.org/10.3928/24748307-20180726-01

Himmelstein, J., Wright, W. S., & Wiederman, M. W. (2018). U.S. medical school curricula on working with medical interpreters and/or patients with limited English proficiency. *Advances in Medical Education and Practice*, *9*, 729-733. https://doi.org/10.2147/AMEP.S176028

Hoffmann, T., & Worrall, L. (2004). Designing effective written health education materials: Considerations for health professionals. *Disability and rehabilitation, 26*(19), 1166-1173.

Hojat, M. (2016). *Empathy in health professions, education, and patient care*. Cham, Switzerland: Springer.

Hosey, G. M., Freeman, W. L., Stracqualursi, & Gohdes, D. (1990). Designing and evaluating diabetes education material for American Indians. *Journal of Diabetes Education*, *16*(5), 407-414. https://doi.org/10.1177/014572179001600514

Houts, P. S., Doak, C. C., Doak, L. G., & Loscalzo, M. J. (2006). The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *Patient Education and Counseling*, *61*(2), 173-190. https://doi.org/10.1016/J.PEC.2005.05.004

Howard, T., Jacobson, K. L., & Kripalani, S. (2013). Doctor talk: Physicians' use of clear verbal communication. *Journal of Health Communication*, *18*, 991-1001. https://doi.org/10.1080/10810730.2012.757398

Howley, L. D. (2004). Utilizing standardized patients to enhance health literacy communication skills: The development phase. *Education for Primary Care*, *15*(1), 123-124. Retrieved from https://www.mededportal.org/action/downloadSupplement?doi=10.15766%2Fmep_2374-8265.1101&file=Cases_Health_Literacy.pdf

Hutchinson, N., Baird, G. L., & Garg, M. (2016). Examining the reading level of Internet medical information for common internal medicine diagnoses. *American Journal of Medicine*, *129*, 637-639. https://doi.org/10.1016/j.amjmed.2016.01.008

Hutton, J. S., DeWitt, T., Hoffman, L., Horowitz-Kraus, T., & Klass, P. (2021). Development of an eco-bio developmental model of emergent literacy before kindergarten: A review. *JAMA Pediatrics*. https://doi.org/10.1001/jamapediatrics.2020.6709

Interprofessional Education Collaborative. (2016). *Core competencies for interprofessional collaborative practice: 2016 update*. Washington, DC: Interprofessional Education Collaborative.

Järvenoja, H., Järvelä, S., Törmänen, T., Näykki, P., Malmberg, J., Kurki, K., Mykkanen, A., & Isohätälä, J. (2018). Capturing motivation and emotion regulation during a learning process. *Frontline Learning Research*, *6*(3), 85-104. https://doi.org/10.14786/flr.v6i3.369

Kaper, M. S., Reijneveld, S. A., van Es, F. D., de Zeeuw, J., Almansa, J., Koot, J. A., & de Winter, A. F. (2020). Effectiveness of a comprehensive health literacy consultation skills training for undergraduate medical students: A randomized controlled trial. *International Journal of Environmental Research and Public Health*, *17*(1), 81. https://doi.org/10.3390/ijerph17010081

Karuranga, S., Sorensen, K., Coleman, C., & Mahmud, A. J. (2017). Health literacy competencies for European health care personnel. *HLRP: Health Literacy Research and Practice*, *1*(4), e247-e256. https://doi.org/10.3928/24748307-20171005-01

Katz, M. G., Jacobson, T. A., Veledar, E., & Kripalani, S. (2007). Patient literacy and question-asking behavior during the medical encounter: A mixed-methods analysis. *Journal of General Internal Medicine*, *22*, 782-786. https://doi.org/10.1007/s11606-007-0184-6

Khan, K., Ruby, B., Goldblatt, R. S., Schensul, J. J., & Reisine, S. (2014). A pilot study to assess oral health literacy by comparing a word recognition and comprehension tool. *BMC Oral Health*, *14*(1), 1-11. https://doi.org/10.1186/1472-6831-14-135

Kleinman, D. V., Horowitz, A., & Atchison, K. A. (2021). A framework to foster oral health literacy and oral/general health integration. *Frontiers in Dental Medicine*, *60*, 1-9. https://doi.org/10.3389/fdmed.2021.723021

King, A., & Hoppe, R. B. (2013). Best practice for patient-centered communication: A narrative review. *Journal of Graduate Medical Education, 5*, 385-393. https://doi.org/10.4300/JGME-D-13-00072.1

Kirsch, I., Jungeblut, A., Jenkins, L., & Kolstad, A. (2005). *Adult literacy in America: A first look at the findings of the National Adult Literacy Survey*. Washington, DC: National Center for Adult Literacy.

Klass, P., Hutton, J. S., & DeWitt, T. G. (2020). Literacy as a distinct developmental domain in children. *JAMA Pediatrics*, *174*(5), 407-408. https://doi.org/10.1001/jamapediatrics.2020.0059

Knights, S. (1985). Reflection and learning: The importance of a listener. In D. Boud, R. Keogh, & D. Walker (Eds.), *Reflection: Turning experience into learning*. New York: Nichols Publishing Company.

Kress, G., & Van Leeuwen, T. (2001). *Multimodal discourse: The modes and media of contemporary communication*. London: Edward Arnold.

Kuperman, V., Kyröläinen, A., Porretta, V., Brysbaert, M., & Yang, S. (2021). A lingering question addressed: Reading rate and most efficient listening rate are highly similar. *Journal of Experimental Psychology: Human Perception and Performance, 47*(8), 1103-1112. https//doi.org/10.1037/XHP0000932

Kushalnagar, P., Ryan, C., Smith, S., & Kushalnagar, R. (2018). Critical health literacy in American deaf college students, *Health Promotion International, 33*(5), 827-833. https://doi.org/10.1093/heapro/dax022

Kutner, E., Greenberg, Y., Jin, & Paulsen, C. (2006). *The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy*. National Center for Education Statistics, Washington, DC.

Lastrucci, V., Lorini, C., Caini, S., Florence Health Literacy Research Group, & Bonaccorsi, G. (2019). Health literacy as a mediator of the relationship between socioeconomic status and health: A cross-sectional study in a population-based sample in Florence. *PloS One, 14*(12), https://doi.org/10.1371/journal.pone.0227007

Lee, J. (2020). *Readability, quality, and content of online information for otitis media in English*. Department of Communication Disorders, Christchurch, New Zealand: University of Canterbury. Master's thesis.

Lie, D., Carter-Pokras, O., Braun, B., & Coleman, C. (2012). What do health literacy and cultural competence have in common? Calling for a collaborative health professional pedagogy. *Journal of Health Communication, 17*, 13-22. https://doi.org/10.1080/10810730.2012.712625

Lincoln, J. S. (2003). *The dream in native American and other primitive cultures*. New York: Dover Publications.

Lovegrove, J., & Hatfield, D. (2012). The use of skills inventories to assess and grade practice: Part 1: Design and implementation. *Nurse Education in Practice*, 12, 127-132. https://doi.org/10.1016/j.nepr2011.10.006

Luks, A. M., & Goldberger, Z. D. (2020). Watch your language!—Misusage and neologisms in clinical communication. *JAMA Internal Medicine*, *181*(1), 5-6. https://doi.org/10.1001/jamainternmed.2020.5679

Macario, E., & Boyte, R. M. (2008). Translating health information effectively for Latino populations. *Californian Journal of Health Promotion*, *6*(1), 128-137. https://doi.org/10.32398/cjhp.v6i1.

Makoul, G. (2001). Essential elements of communication in medical encounters: The Kalamazoo consensus statement. *Academic Medicine*, *76*(4), 390-393. https://doi.org/10.1097/00001888-200104000-00021

Marsh, M. C., Reed, S. M., Mahan, J. D., Schneider, L., Fernandes, A. K., Liao, N., Spears, I., & Lauden, S. (2021). Advanced multimodal communication curriculum for pediatric residents. *Journal of Medical Education and Curricular Development*, *8*, 1-7. https://doi.org/10.1177/23821205211035239

Massey, P. M., Kim, M. C., Dalrymple, P. W., Rogers, M. L., Hawthorne, K. H., & Manganello, J. A. (2017). Visualizing patterns and trends of 25 years of published health literacy research. *HLRP: Health Literacy Research and Practice*, *1*(4), e182-e191. https://doi.org/10.3928/24748307-20170829-01

McDonald, M., & Shenkman, L. (2018). Health literacy and health outcomes of adults in the United States: Implications for providers. *The Internet Journal of Allied Health Sciences and Practice*, *16*(4), 1-5.

McWhinney, I. R. (2004). *A textbook of family medicine*. Oxford: Oxford University Press.

McTighe, J., & Ferrara, S. (1998). *Assessing learning in the classroom. Student Assessment Series*. NEA Professional Library, Distribution Center, PO Box 2035, Annapolis Junction, MD 20701-2035.

Mika, V., Wood, P., Weiss, B., Trevino, L. (2007). Ask Me 3: Improving communication in a Hispanic pediatric outpatient practice. *American Journal of Health Behavior, 31*, S115-21. https://doi.org/10.5555/ajhb.2007.31.supp.S115

Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*, *65*(9), S63-7.

Mogford, E., Gould, L., & DeVoght, A. (2011). Teaching critical health literacy in the U.S. as a means to action on the social determinants of health. *Health Promotion International, 26*(1), 4-13. https://doi.org/10.1093/heapro/daq049

Morris, K. (2007). The founding of the National Medical Association. *Yale Medicine Thesis Digital Library*, *360*. http://elischolar.library.yale.edu/ymtdl/360

National Medical Association. (2020). *History of the National Medical Association*. Retrieved from https://www.nmanet.org/

Nielsen-Bohlman, L., Panzer, A. M., & Kindig, D. A. (2004). *Health literacy: A prescription to end confusion*. The Committee on Health Literacy, Board of Neuroscience and Behavioral Health, Institute of Medicine. Washington, DC: The National Academies Press.

Noddings, N. (2013). *Caring: A relational approach to ethics and moral education*. University of California Press.

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.

O'Connor, A. (2021). Reading people. *The Lancet Child & Adolescent Health*, *5*(11), 779. https://doi.org/10.1016/S2352-4642(21)00314-X

Osborne, H. (2008, January 31). *Actively listening for what patients do not say*. Retrieved from http://archive.boston.com/jobs/healthcare/oncall/articles/2008/01/31/in_other_words

Øvrebø, L. J., Dyrstad, D. N., & Hansen, B. S. (2022). Assessment methods and tools to evaluate postgraduate critical care nursing students' competence in clinical placement. An integrative review. *Nurse Education in Practice*, *58*. https://doi.org/10.1016/j.nepr.2021.103258

Papen, U. (2009). Literacy, learning and health: A social practices view of health literacy. *Literacy and Numeracy Studies*, *16*(2), 19-34. https://doi.org/10.5130/LNS.V0I0.1275

Parker, R. (2000). Health literacy: A challenge for American patients and their health care providers. *Health Promotion International*, *15*(4), 277-283.

Parnell, T. A. (2015). *Health literacy in nursing: Providing person-centered care*. New York: Springer Publishing Company.

Peters, M. (2000). Does constructivist epistemology have a place in nurse education? *Journal of Nursing Education*, *39*(4), 166-172.

Pfizer. (2021). *Universal precautions for health communication*. Retrieved from https://www.pfizer.com/health/literacy/healthcare-professionals/precautions

Plain Language Action and Information Network. (2005). *What is Plain Language?* Retrieved from https://www.plainlanguage.gov

Pleasant, A. (2014). Advancing health literacy measurement: A pathway to better health and health system performance. *Journal of Health Communication*, *19*(12), 1481-1496. https://doi.org/10.1080/10810730.2014.954083

Pratt, M., & Searles, G. E. (2017). Using visual aids to enhance physician-patient discussions and increase health literacy. *Journal of Cutaneous Medicine and Surgery*, *21*(6), 497-501.

Rat, A., Ricci, L., Guillemin, F., Ricatte, C., Pongy, M., Vieux, R., Spitz, E., & Muller, L. (2018). Development of a web-based formative self-assessment tool for physicians to practice breaking bad news (BRADNET). *JMIR Medical Education*, *4*(2), 1. https://doi.org/10.2196/mededu.95517

Ratzan, S. C., & Parker, R. M. (2000). Introduction. In C. R. Selden, M. Zorn, S. C. Ratzan, & R. M. Parker (Eds), *National Library of Medicine current bibliographies in medicine: Health literacy*. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services.

Rice, A. N., & Harris, S. C. (2021). Issues of cultural competence in mental health care. *Journal of the American Pharmacists Association*, *61*(1), e65-e68. https://doi.org/10.1016/J.JAPH.2020.10.015

Riess, H., & Kraft-Todd, G. (2014). E.M.P.A.T.H.Y.—A tool to enhance nonverbal communication between clinicians and their patients. *Academic Medicine*, *89*, 1108-1112. https://doi.org/10.1097/ACM.0000000000000287

Riga, V., & Kossioni, A. (2014). Body expression skills training in a communication course for dental students. *Education for Health*, *27*(1), 24.

Robertson, K. (2005). Active listening: More than just paying attention. *Australian Family Physician*, *34*, 1053-1055.

Rosenthal, M. S., Werner, M. J., & Dubin, N. H. (2004). The effect of a literacy training program on family medicine residents. *Family Medicine*, *36*(8), 582-587.

Rubin, D. L., Hafer, T., & Arata, K. (2000). Reading and listening to oral-based versus literate-based discourse. *Communication Education*, *49*(2), 121-133. https://doi.org/10.1080/03634520009379200

Rudd, R. E., Anderson, J. E., Oppenheimer, S., & Nath, C. (2007). Health literacy: An update of medical and public health literature. In J. P. Comings, B. Garner, & C. Smith (Eds), *Review of Adult Learning and Literacy* (7, pp. 175-203). Mahwah, NJ: Lawrence Erlbaum Associates.

Rudd, R. E., Moeykens, B. A., Colton, T. C. (1999). Health and literacy: A review of medical and public health literature. In J. P. Comings, B. Garner, & C. Smith (Eds), *Annual Review of Adult Learning and Literacy*. New York: Jossey-Bass.

Ruggeri, B., Vega, A., Liveris, M., St. George, T. E., & Hopp, J. (2021). A strategy for teaching health literacy to physician assistant students. *HLRP: Health Literacy Research and Practice*, *5*(1), e70-e77. https://doi.org/10.3928/24748307-20210201-01

Sanders, L. M., Zacur, G., Haeckel, T., & Klass, P. (2004). Number of children's books in the home: An indicator of parent health literacy. *Ambulatory Pediatrics*, *4*(5), 424-428. https://doi.org/10.1367/A04-003R.1

Saunders, C., Palesy, D., & Lewis, J. (2019). Systematic review and conceptual framework for health literacy training in health professions education. *Health Professions Education, 5*(1), 13-29. https://doi.org/10.1016/j.hpe.2018.03.003

Schyve, P. (2007). Language differences as a barrier to quality and safety in health care: The Joint Commission perspective. *Journal of General Internal Medicine, 22*(S2), 360-361. https://doi.org/10.1007/s11606-007-0365-3

Schillinger, D. (2021). Social determinants, health literacy, and disparities: Intersections and controversies. *HLRP: Health Literacy Research and Practice, 5*(3), e234-e243. https://doi.org/10.3928/24748307-20210712-01

Schwartzberg, J. G., Cowett, A., VanGeest, J., & Wolf, M. S. (2007). Communication techniques for patients with low health literacy: A survey of physicians, nurses, and pharmacists. *Journal of Health Behavior, 31*(1), S96-S104. https://doi.org/10.5555/ajhb.2007.31.supp.S96

Shen, M. J., Ostroff, J. S., Hamann, H. A., Haque, N., Banerjee, S. C., McFarland, D. C., Molena, D., & Bylund, C. L. (2019). Structured analysis of empathic opportunities and physician responses during lung cancer patient-physician consultations. *Journal of Health Communication, 00,* 1-8. https://doi.org/10.1080/10810730.2019.1665757

Shoemaker, S. J., Wolf, M. S., & Brach, C. (2014). Development of the Patient Education Materials Assessment Tool (PEMAT): A new measure of understandability and actionability for print and audiovisual patient information. *Patient Education and Counseling, 96*(3), 395-403. https://doi.org/10.1016/j.pec.2014.05.027

Simpson, M., Buckman, R., Stewart, M., Maguire, P., Lipkin, M., Novack, D., & Till, J. (1991). Doctor-patient communication: The Toronto consensus statement. *BMJ, 303*(6814), 1385-1387. https://doi.org/10.1136/bmj.303.6814.1385

Sudore, R., & Schillinger, D. (2009). Interventions to improve care for patients with limited health literacy. *Journal of Clinical Outcomes Management, 16*(1), 20-29.

Tickle-Degnen, L., & Rosenthal, R. (1990). The nature of rapport and its nonverbal correlates. *Psychological Inquiry, 1*(4), 285-293.

Tomlinson, C. A., & Sousa, D. A. (2020). The science of teaching. *Educational Leadership, 77*(8), 14-20.

Tongue, J. R., Epps, H. R., Forese, L. L. (2005). Communication skills for patient-centered care. Research-based, easily learning techniques for medical interviews that benefit orthopedic surgeons and their patients. *The Journal of Bone and Joint Surgery, 87-A,* 652-658.

Toronto, C. E., & Weatherford, B. (2015). Health literacy education in health professional schools: An integrative review. *Journal of Nursing Education, 54*(12), 669-676. https://doi.org/10.3928/01484834-20151110-02

Ubbes, V. A. (2018). Three pedagogical approaches to independent studies. *Scholarship and Practice of Undergraduate Research*, *2*(1), 60. https://doi.org/10.18833/spur/2/1/3

Ubbes, V. A., & Ausherman, J. (2018). A historical comparison of reading materials originating in the 19th & 20th centuries that contributed a language and vocabulary for functional health literacy. *The Health Educator*, *50*(2), 26-40.

Ubbes, V. A., Black, J. M., & Ausherman, J. A. (2009). Teaching for understanding in health education: The role of critical and creative thinking skills within constructivism theory. In J. M. Black, S. R. Furney, H. M. Graf, & A. E. Nolte (Eds.), *Philosophical foundations of health education*. San Francisco, CA: Jossey-Bass.

Ubbes, V. A. (2008). *Educating for health: An inquiry-based approach to preK-8 pedagogy*. Champaign, IL: Human Kinetics.

Ubbes, V. A., & Ward, R. M. (2007). Design of a conceptual model for the study of education, health, & communication: Professional preparation issues. *California Journal of Health Promotion*, *5*(1), 30-38.

U.S. Department of Health and Human Services (USDHHS). (2000). *Healthy People 2010: Understanding and improving health*. Washington, DC: U.S. Department of Health and Human Services. Retrieved from http://www.health.gov/healthypeople

U.S. Department of Health and Human Services (USDHHS). (2001). National standards for culturally and linguistically appropriate services in health care. *Executive summary*. Washington, DC: Office of Minority Health. Retrieved from https://thinkculturalhealth.hhs.gov/clas/standards?utm_medium=email&utm_source=govdelivery

U.S. Department of Health and Human Services (USDHHS). (2001b). *Limited English proficiency*. Washington, DC: Office of Civil Rights. Retrieved from https://www.hhs.gov/civil-rights/for-individuals/special-topics/limited-english-proficiency/index.html

U.S. Department of Health and Human Services (USDHHS). (2013). *National standards for culturally and linguistically appropriate services in health and health care: A blueprint for advancing and sustaining CLAS policy and practice*. Rockville, MD: Author.

U.S. Department of Health and Human Services (USDHHS). (2017). *Effective communication for persons who are deaf or hard of hearing*. Washington, DC: Office of Civil Rights. Retrieved from https://www.hhs.gov/civil-rights/for-individuals/disability/effective-communication/index.html

U.S. Census Bureau. (2021). United States Census 2020. *Profile of general demographic characteristics*. Washington, DC: U.S. Census Bureau. Retrieved from https://www.census.gov/popclock/

Van der Heide, I., Poureslami, I., Mitic, W., Shum, J., Rootman, I., & Fitzgerald, J. M. (2018). Health literacy in chronic disease management: A matter of interaction. *Journal of Clinical Epidemiology*, *102*, 134-138. https://doi.org/10.1016/j.jclinepi.2018.05.010

Vaughn, M., Jang, B. G., Sotirovska, V., & Cooper-Novack, G. (2020). Student agency in literacy: A systematic review of the literature. *Reading Psychology*, *41*(7), 712-734. https://doi.org/10.1080/02702711.2020.1783142

Veale, A. (2005). Creative methodologies in participatory research with children. In S. Green, & D. Hogan (Eds), *Researching Children's Experiences: Approaches and Methods* (pp. 253-272). London; Sage.

Wallace, L., & Lennon, E. S. (2004). American Academy of Family Physicians patient education materials: Can patients read them? *Family Medicine*, *36*(8), 571-574.

Wanzer, M. B., Booth-Butterfield, M., & Gruber, K. (2004). Perceptions of health care providers' communication: Relationships between patient-centered communication and satisfaction. *Health Care Communication*, *16*(3), 363-384. https://doi.org/10.1207/S15327027HC1603_6

Weiss, B. D. (2007). Health literacy and patient safety: Help patients understand. *Manual for clinicians* (2nd ed.). Chicago, American Medical Association Foundation and American Medical Association. Retrieved from http://www.partnershiphp.org/Providers/HealthServices/Documents/Health%20Education/CandLToolKit/2%20Manual%20for%20Clinicians.pdf

Weston, W. W. (2018). Do we pay enough attention to science in medical education? *Canadian Medical Education Journal*, *9*(3), e109-e114.

Wolf, M. S., Curtis, L. M., Wilson, E. A. H., Revelle, W., Waite, K. R., Smith, S. G.,..., Baker, D. W. (2012). Literacy, cognitive function, and health: Results of the LitCog Study. *Journal of General Internal Medicine*, *27*(10), 1300-1307. https://doi.org/10.1007/S11606-012-2079-4

World Health Organization (WHO). (2010). *Framework for action on interprofessional education and collaborative practice*. Geneva, Switzerland: WHO.

World Health Organization (WHO) and The Commission on Social Determinants of Health (CSDH). (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. *Final report of the commission on social determinants of health*. Geneva: World Health Organization. Retrieved from http://www.who.int/social_determinants/thecommission/finalreport/en/index.html