ADDRESSING LOW HEALTH LITERACY WITH ADOLESCENT EDUCATION

AN EVIDENCE BASED PRACTICE SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAIʻI AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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ABSTRACT

This evidence based practice project was triggered by low national health literacy and the associated high prevalence of chronic disease. The project aimed to improve adolescent health literacy and potentially mitigate negative health outcomes associated with low literacy by implementing health literacy curriculum into an existing 9th grade health education course. The project site was Education Laboratory School, a Hawai‘i Public Charter School. Health literacy competency is not currently a core requirement at Hawai‘i Department of Education schools. Adolescent health literacy competency was evaluated post-intervention utilizing two validated screening tools – the Newest Vital Sign and the Health Literacy Assessment Scale for Adolescents. Qualitative feedback in the form of surveys and interviews was also collected from both educators and students post implementation of the new curriculum. Key findings included student demonstration of health literacy, student demonstration of motivation to become health literate, and educator appreciation of expert opinion in content development.

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Introduction

The DNP evidence-based (EB) project stemmed from two main knowledge focused triggers: chronic disease prevalence and low levels of health literacy. The Centers for Disease Control (CDC) (2017) identified that chronic diseases are the cause of 70% of nationwide deaths annually, and treating people with chronic diseases accounts for 86% of the United States (US) health care costs. Most chronic diseases and their complications are preventable through lifestyle choices, however, many individuals lack proficiency in health literacy to make health promotion choices. According to The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy (US Department of Education [DOE], 2006), only 12% of 19,000 adults surveyed demonstrated proficiency in health literacy.

In 2004, the Institute of Medicine (IOM) and the Agency for Healthcare Research and Quality (AHRQ) found low health literacy levels were associated with higher prevalence of chronic disease, lower utilization of preventive medicine, poor adherence to recommended treatment plans (e.g., medications), and negative psychological effects. The National Action Plan to Improve Health Literacy (NAPIHL) (US Department of Health and Human Services [DHHS], Office of Disease Prevention and Health Promotion, 2010) reported low literacy directly impacts health expenditure, with one study citing low literacy levels resulting in health costs of between $106-$226 billion dollars annually. In addition, when considering the future costs accrued due to negative health outcomes associated with low literacy, the actual cost of low literacy could be closer to between $1.6-3.6 trillion.

Description of Problem/Need

Chronic Disease Prevalence

Hawai‘i's population, similar to overall national populations, is affected by chronic

diseases. Obesity affects 15-30% of Hawai‘i’s population, with the largest affected age group between 35-44 years old. See Figure 1, 2, and 3 for the CDC’s statistics on the crude prevalence of obesity, crude prevalence of diabetes, and rate of coronary heart disease in Hawai‘i, respectively.

Health Literacy

Health literacy is “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Nielson-Bohlman, Panzer, & Kinzig, 2004, p. 20).

Current Health Literacy Curriculum

The State of Hawai‘i has identified Core Concepts in the content are of Health, outlined in Appendix A, but has not identified health literacy specific curriculum. In 2016, the CDC published the National Standards for Health Literacy Curriculum, which are outlined in Table 4. The Hawai‘i State DOE and identified project site, University Laboratory School (ULS), has not adopted these standards (see Appendix B for the current ULS 9th grade Health Education syllabus).

Literature Review

Search Method

A literature search focusing on health literacy was conducted using PubMed, the Educational Resources Information Centre (ERIC), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). The search terms included health literacy, health competency, adolescents, school-age, curriculum, interventions, and screening. Search terms were combined through Boolean operators (AND/OR) and truncations to alter sensitivity of searches. Searches were not limited to any time frame or research design. A review of resource

lists from various articles were completed to find additional resources. The DNP project's content expert also provided additional resources. The search yielded 1057 publications, which were reviewed for relevance. Publications with adult populations only, not relevant to health literacy, not relevant to adolescent curriculum, or were too specific about health literacy associations to a disease or outcome were eliminated. After review of the remaining items for relevance, 23 publications were critiqued using Mosby's Quality of Evidence rating system (Gandall-Yamamoto, 2017). Figure 4 demonstrates Mosby's Quality of Evidence rating system, and Table 5 presents the rating of the quality of evidence for the 23 publications used as the basis for the development of the project.

Defining Health Literacy

Health literacy is the knowledge and competency needed in order for an individual to make healthcare decisions (Sorenson et al., 2012). Traditionally, health literacy has focused on individual knowledge and competence; however, further research has demonstrated health literacy can be expanded to include how individuals interact with the broader health system. A systematic review of 19 publications aiming to define health literacy demonstrated a more comprehensive definition of health literacy, which states:

> Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and make decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course" (Sorenson et al., 2012, p. 3).

To attain health literacy, individuals must not only be competent in knowledge but also attain the ability to appraise and apply knowledge in situations that demand health related decision making

across the spectrum of their health, including accessing healthcare, health promotion and disease prevention (Sorenson et al., 2012).

Adolescent Health Literacy

Most health literacy studies are conducted with an adult population; however, health literacy screening and interventions in adolescents is important because it can shape future health behaviors as they mature (Massey, Prelip, Calimlim, Quiter, & Glik, 2011). Adolescent perspectives on health literacy differ from adults and are dependent on age (Broder et al., 2017). Systematic review of 30 publications specific to adolescent health literacy demonstrated three core clusters: 1) cognitive, 2) behavioral or operational, and 3) affective and conative. These are outlined in Tables 3, 4, and 5, respectively (Broder et al., 2017).

Health Literacy Recommendations

Recommendations about curricula to educate students about health literacy have been developed (National Health Education Standards: Health Literacy, 2016; State of Hawai‘i Content & Performance Standards III Database, content area: Health, 2005). These recommendations are presented in Appendix A and Table 4, respectively. As of current, the State of Hawai‘i Health Content & Performance Standards III are based on the National Health Education Standards from 2007, and therefore current curriculum is not based on the most updated guidelines (State of Hawai‘i ACCN, 2005). In the primary care setting, the American Academy of Family Physicians (AAFP) recommends addressing health literacy in clinical practice for individuals across the lifespan; however, recommendations are based on expert opinion, consensus, disease-oriented evidence, and/or usual practices only (Hersch, Salzman, & Snyderman. 2015). These recommendations are outlined in Figure 5.

Health Literacy and Outcomes

On a population level, it is understood that low health literacy is correlated with poor health outcomes, higher prevalence of chronic disease, and higher healthcare expenditure (US DHHS, 2010). Outcomes of health literacy can be related to health system utilization (e.g., access to care, access to insurance and healthcare costs); personal/individual healthcare (e.g., adherence to recommendations, lifestyle, and medication use); or health outcomes (e.g., chronic diseases, health status and mortality" (Hersch et al., 2015).

Health Literacy Screening Tools

Most screening tools have been validated with adults and not adolescents despite adolescents being at an important age to build lifelong skills (Manganello, DeVellis, Davis, & Schottler-Thal, 2015). The Rapid Estimate of Adolescent Literacy in Medicine (REALM-Teens) (Davis et al., 2006), Newest Vital Sign (NVS) (Warsh, Chari, Badaczewski, Hossain, & Sharif, 2014), Health Literacy Assessment Scale for Adolescents (HAS-A) (Manganello et al., 2015), and Health Literacy Measure for Adolescents (HELMA) (Ghanbari, Ramezankhani, Montazeri & Mehrabi, 2016) have all been validated for screening health literacy in adolescent populations.

Health Literacy Interventions

Interventions for low literacy are inconsistent and limited (Hersch et al., 2015). The AAFP recommends addressing patient literacy by ensuring that verbal, written, and visual education and communication are easy to understand by the patient. This includes ensuring using non-medical language, speaking slowly, using teach back and repeat back methods of education, utilization of 5^{th}-6^{th} grade reading materials, bullet points, simple pictures, models, and use of videos (Hersch et al., 2015). Additionally, AAFP recommends engaging patients across the lifespan in self-management of health conditions, and empowering individuals to participate in their care using techniques such as asking questions, confirming understanding,

creating goals, and soliciting feedback.

Conceptual Model

The ACE Star Model (Stevens, 2004), which focuses on a systematic approach to integrating evidence into practice, was utilized to facilitate this EB practice project. The ACE Star Model focuses on five steps outlined in, which are: 1) Discovery Research; 2) Evidence Summary; 3) Translation into Guidelines; 4) Practice Integration; and 5) Process, Outcome, Evaluation. The ACE Star Model steps served as a platform for systematic approach to quality improvement across two disciplines: healthcare with secondary education. The expertise of nursing and education was utilized throughout the entire project, with emphasis of healthcare knowledge in steps 1 and 2, and emphasis of secondary education knowledge in steps 3 and 4. Both disciplines played a crucial role in project development and completion.

PICO

Does the integration of health literacy curriculum (I) in adolescent's (P) current 9th grade health curriculum at University Laboratory School (ULS) (C) improve health literacy and competency (O) within one academic semester (T)?

Purpose & Goals/Aims

Purpose Statement

This Doctor of Nursing Practice (DNP) project aimed to implement health literacy curriculum for an adolescent population with the goal of improving adolescent health literacy and potentially mitigating negative outcomes associated with adult low literacy levels as the adolescents mature into adulthood.

Setting

The project was conducted at University Laboratory School (ULS) based on Honolulu, Hawai‘i. The ULS is identified by the Hawai‘i State DOE as a Public Charter School. ULS enrolls students from kindergarten through grade 12. The school aims to enroll a diverse, cross-section of students who reflect the ethnicity, socio-economic status, and school achievement levels of Hawai‘i. ULS is affiliated with the Curriculum Research & Development Group (CRDG) in the University of Hawai‘i (UH) College of Education (COE), and is the only school in Hawai‘i focused on research, development, and educational improvement strategies. Although ULS is funded through the DOE, they are not mandated to follow the Hawai‘i Content and Performance Standards, and therefore aim to follow the National Health Education Standards.

Objectives

This DNP project had six objectives which were: Objective 1: Utilize existing literature and evidence, synthesize literature to improve knowledge and develop health literacy curriculum during year one of DNP project, with aim of becoming content expert in the area of adolescent health literacy competency and adolescent health literacy curriculum. Objective 2: Implement and assist the health educator with health literacy curriculum to 50% of current 9th grade students at University Laboratory School during one academic semester. Objective 3: Evaluate student health literacy competency utilizing NVS and HAS-A at completion of health education course, with goal of 80% competency among the students who participate. Objective 4: Evaluate students' perceptions of the importance of health literacy and overall delivery of health literacy curriculum, utilizing Likert type scales, questionnaires, open-ended questions. Objective 5: Evaluate the educator's perception of knowledge and confidence in the delivery of health literacy

curriculum. Objective 6: Evaluate the project, synthesize findings, and make recommendations for changes and sustainability.

Methods/Procedures

Project Design

The project utilized an EB practice (EBP) design. This design utilizes current scientific literature to inform healthcare decisions, and therefore relies heavily on partnerships among scientific findings, clinical expertise, and the needs of individuals and/or populations (McKibbon, 1998). The EBP design helped to determine adolescents' competency in health literacy post implementation of an EB adolescent health literacy curriculum.

Human Subject Considerations

An EBP project typically does not require Institutional Review Board (IRB); however, because this project involved minors under the age of 18, an IRB review was requested from and approved by the University of Hawai`i at Mānoa (UHM) IRB prior to starting this EB project. Consent from parents and assent from all participating students was obtained as required by the UHM IRB.

Sampling Plan

Convenience sampling was utilized, and participants were selected because they were enrolled in a mandatory health education course in the Fall 2018. Twenty-eight 9th grade students and one health educator participated in the project. Final data collection was completed for 26 students because two students were absent on the date of data collection.

Chronological Progression of Procedures

The DNP project was implemented on August 31, 2018 and was completed on December

14, 2018. A Gantt chart provides a detailed overview of the project's timeline (see Appendix C).

Data Collection

To identify the benefit of health literacy curriculum, two validated health literacy competency tools were administered post-intervention during the last week of the academic semester in December 2018 – the NVS and HAS-A (see Appendix D and E, respectively for examples). The NVS is composed of six questions based on an ice cream label. The HAS-A is composed of 15 subjective questions, in the domains of communication, confusion, and functional literacy specific to an individual's health and healthcare experience. In addition, students and educators were evaluated using qualitative surveys to provide feedback on the overall flow of the project. See Appendix F and G for educators' and students' surveys, respectively.

Results

Newest Vital Sign

The NVS consists of 6 questions to assess health literacy and is based on a nutrition label. Respondents to the questions select a number ranging from 0 to 6, with higher numbers indicating a better understanding of the stated item or concept. Overall, results from the NVS scores indicated that most students demonstrated adequate health literacy. Of the 26 students who were tested, 23 demonstrated a score of 4 or higher, which is interpreted as "almost always indicates adequate literacy." The students' mean NVS score was 5.12 with a standard deviation of 1.28. See Table 6 for complete results.

Health Literacy Assessment Scale for Adolescents

The HAS-A evaluates health literacy in three domains: Communication, Confusion, and Functional Health Literacy. The HAS-A quantifies student's answers, which is subsequently summed. The total of each domain determines whether a student is in the high or low health literacy range. Communication scores range from 0-20, with high health literacy being 15-20; Confusion scores range from 0-14, with high health literacy being 0-7; and Functional Health Literacy scores range from 0-24, with high health literacy being a score of 0-11. Based on class average, the students demonstrated high health literacy in the domains of Confusion (mean score: 6.23) and Functional Health Literacy (mean score: 9.32). The students demonstrated low health literacy in the Communication domain (mean score: 14.23). It should be noted that the standard deviation for the HAS-A was much higher compared to the NVS for all three domains with a standard deviation of 2.53, 2.97, and 4.64 for Communication, Confusion, and Functional Health Literacy, respectively.

In terms of individual student performance, the majority of students demonstrated high health literacy in the Confusion domain (i.e., 15 of the 26 students [58%]) and the Functional Health Literacy domain (i.e., 19 of the 26 students [73%]. However, only 11 of the 26 students (42%) demonstrated high health literacy in the Communication domain. See complete HAS-A results in Table 7.

Student Feedback

The DNP student and the content expert developed a short questionnaire as a means to have students who participated the opportunity to provide feedback. The questionnaire consisted of six statements regarding health, health literacy, and the health literacy curriculum. Students selected an answer for each statement from one of five options provided that used a Likert scale

with the range of responses from “Strongly Agree (1),” to “Strongly Disagree (5)”. The mean score for each statement was less than 2.5 (range = 1.39 to 2.46) indicating that the students’ felt that the curriculum was important to them and that they intended to apply the information in terms of their health habits. Table 1 provides the statements and average scores for each one; more detailed results are provided in Table 8 in the appendices.

Table 1

Student Feedback

	Health literacy curriculum is important to me.	Health literacy curriculum is beneficial to my success.	Health literacy curriculum was delivered in a way that I could understand.	I would recommend what I learned to friends or family.	I will use what I learned to practice good health habits in the future.	My health is important to me.
Mean Score:	2	2.15	2.31	2.46	1.77	1.39

Educator Feedback

The DNP student and the content expert developed a short questionnaire as a means to have the educator who participated the opportunity to provide feedback. The questionnaire consisted of six statements regarding the importance of health literacy, the implementation of health literacy, the value of healthcare professional input. The educator selected an answer for each statement from one of five options provided that used a Likert scale with the range of responses from “Strongly Agree (1),” to “Strongly Disagree (5)”. Educator responses demonstrated that health literacy curriculum is important and will be utilized in future health

education courses. Table 2 provides the educator responses.

Table 2

Educator Feedback

	Health literacy curriculum is important for student's lifelong success.	Input of a healthcare professional is beneficial to curriculum development.	Health literacy curriculum integrates well in a health education course.	Students are receptive to health literacy curriculum.	I will continue to use this curriculum in the future.	I will recommend incorporating health literacy curriculum to other educators.
Score:	1	1	1	2	1	2

National Standards

To fulfill Objective 2 of this DNP project, existing health education curriculum was mapped to the National Health Education Standards (see Table 4), and subject matter that was not being covered in the Standards was targeted as those areas that would be developed for the ULS students' health curriculum. At the completion of the project, the implemented curriculum was mapped to the National Health Education Standards, and was found to have content that addressed all the of the domains.

Discussion

Project results suggest that after the completion of a health education course that has embedded health literacy components that meet the National Health Education Standards, most 9th grade students demonstrated health literacy based on the results of the NVS assessment upon

completion of the course. Additionally, most students demonstrated high health literacy in the Functional Health Literacy and Confusion domains of the HAS-A. However, one component of the validated health literacy assessments suggests. However, most students have low health literacy is in the domain of Communication based on the HAS-A results. The HAS-A is a self-response assessment; therefore, it is difficult to decipher whether the students lack the ability to effectively communicate their health needs, or, rather, they lack the confidence in their abilities to communicate their health needs. Based on these findings, future projects could focus on the implementation of additional interpersonal communication skills content in the curriculum with an assessment of interpersonal communication utilizing an objective validated tool.

Feedback from these 9th grade students indicated that all of them valued their health and felt that the health literacy curriculum was important, so much so that they saw the benefit of their families having this type of education. The students also provided responses that indicated that they intended practice good health habits in the future and that becoming more educated in health could be beneficial to their future success. Future projects or research may further evaluate students' health values, which could then suggest the most effective tools and antecedents to addressing and improving health literacy in minors.

The educator's feedback demonstrated strong agreement that health literacy is important for a student's success and that having a healthcare professional's input is beneficial to the development of this type of curriculum. In addition, the educator also indicated that health literacy curriculum integrates well in a health education course, and will continue to use the curriculum in the future. Further projects may want to consider consulting health care professionals when developing updated Core Concept Standards and/or curriculum content and content delivery focusing on health and health literacy at all levels of the educational system.

Limitations

The project was impacted by various expected and unexpected limitations. First and foremost, the project design is one of EB based quality improvement focusing on a particular population, so the application of findings to other populations is not valid. However, the design can be re-appropriated to develop additional health literacy programs at the school, district, and/or DOE level. The use of convenience sampling can result in bias and, in this particular project, having the project focus on making changes in content of a required course, may have impacted the responses of both the students and educator who participated. Recommendation for future projects in various settings, specifically diversifying variables in districts, gender, socioeconomic status, family status, etc. may help evaluate effectiveness of the implementation of health literacy curriculum.

A major unforeseen limitation was the loss of baseline health literacy assessments. Students completed the HAS-A and NVS at the beginning of the semester prior to the implementation of the new curriculum, however, before data could be analyzed the information was lost during a transition to the project's leadership at the school. Future projects should include pre- and post-health literacy assessments in order to further evaluate: 1) baseline health literacy without formal education in courses; and 2) the impact of the integration of health literacy curriculum as part of required health courses in school-aged children. In addition, implementation of new traumatic brain injury curriculum in the health course occurred during the same semester, which may have affected the health literacy level of the students who participated in the project. Ideally, future projects that introduce new curricula such as health literacy and TBI could consider the sequencing of when to introduce the new content as well as how to assess the impact of the individual curriculum and, possibly, the cumulative impact of

multiple curriculum changes on students' comprehension, retention and application of the course content.

Doctor of Nursing Practice Essentials

This EB project met the American Association of Colleges of Nursing (AACN) Doctor of Nursing Practice Essentials as outlined in Table 3 below.

Table 3

DNP Essentials and DNP Student's Activities/Products

DNP Essential	DNP Student's Activities/Products
Essential I: Scientific Underpinnings for Practice	• Completion of courses N642, N730, N750, N746, N761, N768, Law 532, N776 • Additional activities related to this Essential include current Board Certification as an AGPCNP-BC, and Hawai'i State Licensure as a APRN-Rx
Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking	• Completion of courses N642, N730, N750, N746, N761, N768, LAW 532, N776 • Additional activities related to this Essential include completion of EB Project
Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice	• Completion of courses N730, N746, N761, N776 • Additional activities related to this Essential include completion of EB Project
Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	• Completion of courses N750, N761, N642
Essential V: Health Care Policy for Advocacy in Health Care	• Completion of courses N750, LAW 532, PACE 652 • Additional activities related to this Essential include completion of EB Project, specifically with recommendations to Educators, School

	Administration, and the Hawai‘i State Department of Education
Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes	• Completion of course LAW 532, PACE 652 • Additional activities related to this Essential include completion of EB Project, in the setting of interprofessional collaboration between secondary school educators and administrators
Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health	• Completion of courses N642, N730, N750, N746, N761, N768, Law 532, N776 • Additional activities related to this Essential include completion of EB Project, specifically with recommendations to Educators, School Administration, and the Hawai‘i State Department of Education
Essential VIII: Advanced Nursing Practice	• Completion of courses N642, N730, N750, N746, N761, N768, Law 532, N776 • Current Board Certification as an AGPCNP-BC, and Hawai‘i State Licensure as a APRN-Rx • Practicing Nurse Practitioner at the Department of Veteran Affairs

Conclusion

In conclusion, the development of health literacy curriculum by a health care professional was well received by health educators, and students who received the health literacy content indicated that they valued their health and having knowledge about health literacy. On the average, students demonstrated adequate health literacy via the NVS and in the domains of Confusion and Functional Health Literacy in the HAS-A at the completion of a health education course that integrated health literacy curriculum. However, based on the results of the HAS-A Communication domain, future projects should consider focusing on addressing interpersonal

communication and how adolescents learn to interact with their healthcare providers and the healthcare system. Recommendations to the State of Hawai‘i DOE based on the results of this project include: 1) updating Health Core Concepts to include specific health literacy components; 2) increased utilization of healthcare professionals in the development of health and health literacy curriculum; and 3) develop, implement and assess the impact of future projects with a similar design to gain more information about the current status of the level of adolescents' health literacy in Hawai‘i, and the feasibility and benefits of implementing health literacy curriculum in required health courses.

References

Altin, S. V., Finke, I., Kautz-Freimuth, S., & Stock, S. (2014). The evolution of health literacy assessment tools: A systematic review. *BMC Public Health*, *14*(1). https://doi.org/10.1186/1471-2458-14-1207

Bröder, J., Okan, O., Bauer, U., Bruland, D., Schlupp, S., Bollweg, T. M., … Pinheiro, P. (2017). Health literacy in childhood and youth: A systematic review of definitions and models. *BMC Public Health*, *17*(1). https://doi.org/10.1186/s12889-017-4267-y

Centers for Disease Control and Prevention, (2016, August 18). National health education standards. Retrieved November 13, 2017, from https://www.cdc.gov/healthyschools/sher/standards/index.htm

Centers for Disease Control and Prevention , (2017, May 22). *Chronic disease prevention and health promotion.* Retrieved from https://www.cdc.gov/chronicdisease/index.htm

Centers for Disease Control and Prevention, (2017, September 8). *U.S. chronic disease indicators (CDI)*. Retrieved from https://chronicdata.cdc.gov/Chronic-Disease-Indicators/U-S-Chronic-Disease-Indicators-CDI-/g4ie-h725

Charter Schools. (n.d.). Retrieved from http://www.hawaiipublicschools.org/TeachingAndLearning/EducationInnovation/CharterSchools/Pages/home.aspx

Gandall-Yamamoto, P. (2017). *Lecture on Literature Grading Systems.* Personal Collection of P. Gandall-Yamamoto, University of Hawaii, Honolulu, Hawaii.

Ghaddar, S. F., Valerio, M. A., Garcia, C. M., & Hansen, L. (2011). Adolescent health literacy: The importance of credible sources for online health information. *Journal of School Health, 82*(1), 28-36. doi:10.1111/j.1746-1561.2011.00664.x

Davis, T. C., Wolf, M. S., Arnold, C. L., Byrd, R. S., Long, S. W., Springer, T., . . . Bocchini, J. A. (2006). Development and validation of the rapid estimate of adolescent literacy in medicine (REALM-Teen): A tool to screen adolescents for below-grade reading in health care settings. *Pediatrics, 118*(6), 1707-14. doi:10.1542/peds.2006-1139

Ghanbari, S., Ramezankhani, A., Montazeri, A., & Mehrabi, Y. (2016). Health literacy measure for adolescents (HELMA): Development and psychometric properties. *PLoS ONE*, *11*(2). https://doi.org/10.1371/journal.pone.0149202

Healthy People 2020. (n.d.) *Healthy People 2020.* Retrieved https://www.healthypeople.gov/

Hersch, L., Salzman, B., & Snyderman, D. (2015). Health literacy in primary care practice. *American Family Physician, 92*(2), 118-124.

Jain, A. V., & Bickham, D. (2014). Adolescent health literacy and the internet. *Current Opinion in Pediatrics, 26*(4), 435-439. doi:10.1097/mop.0000000000000119

Lam, L. T., & Yang, L. (2014). Is low health literacy associated with overweight and obesity in adolescents: an epidemiology study in a 12–16 years old population, Nanning, China, 2012. *Archives of Public Health*, *72*(1), 1-8. https://doi.org/10.1186/2049-3258-72-11

Lucidi, F., Mallia, L., Alivernini, F., Chirico, A., Manganelli, S., Galli, F., … Zelli, A. (2017). The effectiveness of a new school-based media literacy intervention on adolescents' doping attitudes and supplements use. *Frontiers in Psychology*, *8*(749), 1-9. https://doi.org/10.3389/fpsyg.2017.00749

Manganello, J. A., DeVellis, R. F., Davis, T. C., & Schottler-Thal, C. (2015). Development of the health literacy assessment scale for adolescents (HAS-A). *Journal of Communication in Healthcare, 8*(3), 172–184. https://doi.org/10.1179/1753807615Y.0000000016

Massey, P. M., Prelip, M., Calimlim, B. M., Quiter, E. S., & Glik, D. C. (2012). Contextualizing an expanded definition of health literacy among adolescents in the health care setting. *Health Education Research*, *27*(6), 961–974. https://doi.org/10.1093/her/cys054

Nielsen-Bohlman, L., Panzer, A. M., & Kinzig, D. A. (Eds.). (2004). Health literacy: A prescription to end confusion. Washington, D.C.: National Academies Press.

Powers, B. J., Trinh, J. V., & Bosworth, H. B. (2010). Can This Patient Read and Understand Written Health Information? *JAMA, 304*(1), 76. doi:10.1001/jama.2010.896

Primack, B. A., Douglas, E. L., Land, S. R., Miller, E., & Fine, M. J. (2014). Comparison of media literacy and usual education to prevent tobacco use: a cluster randomized trial. *The Journal of School Health*, *84*(2), 106–115. https://doi.org/10.1111/josh.12130

Ronto, R., Ball, L., Pendergast, D., & Harris, N. (2016). Adolescents perspectives on food literacy and its impact on their dietary behaviours. Appetite, 107, 549-557. doi:10.1016/j.appet.2016.09.006

Sahota, P., Rudolf, M. C. J., Dixey, R., Hill, A. J., Barth, J. H., & Cade, J. (2001). Randomised controlled trial of primary school based intervention to reduce risk factors for obesity. *British Medical Journal, 323*(7320), 1029.

Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, *12*(1). https://doi.org/10.1186/1471-2458-12-80

Stevens, K. R. (2004). *ACE Star framework of EBP: Knowledge transformation*. Retrieved from www.acestar.uthscsa.edu.

United States Department of Education, National Center for Education Statistics. (2006). *The*

health literacy of America's adults: Results from the 2003 national assessment of adult aiteracy (pp. 1-50). Retrieved from https://nces.ed.gov/pubs2006/2006483.pdf.

USA, Hawai'i State Department of Education. (2005). *Hawai'i content & performance standards III database*. Honolulu, HI. Retrieved from http://165.248.107.74/hcpsv3/.

USA, Hawai'i State Department of Education. (2011). *State of Hawaii Authorized Courses and Code Numbers*. Hawaii.

USA, Hawai'i State Department of Education, Strive HI Performance System. (2017). *University laboratory*. Honolulu, HI. Retrieved from http://www.hawaiipublicschools.org/Reports/StriveHIUniversityLaboratory17.pdf.

Warsh, J., Chari, R., Badaczewski, A., Hossain, J., & Sharif, I. (2013). Can the newest vital sign be used to assess health literacy in children and adolescents? *Clinical Pediatrics, 53*(2), 141-144. doi:10.1177/0009922813504025

United States Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2010). *National action plan to improve health literacy.* Retrieved from https://health.gov/communication/hlactionplan/pdf/Health_Literacy_Action_Plan.pdf

Appendix A

Content Area: Health
Grade/Course: 9-12 / ACCN: No ACCN

Strand	
Standard 1: CORE CONCEPTS: Understand concepts related to health promotion and disease prevention	

Topic	Mental and Emotional Health		
Benchmark HE.9-12.1.1	Compare the relationships among mental, emotional, social, and physical health in adulthood		
Sample Performance Assessment (SPA)	The student: Analyzes relationships among mental, emotional, social, and physical health in adulthood (e.g., the link between physical activity and elevated mood, the relationship between social isolation and depression).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Compare, in great detail, the relationships among mental, emotional, social, and physical health in adulthood	Compare, in detail, the relationships among mental, emotional, social, and physical health in adulthood	Compare, in some detail, the relationships among mental, emotional, social, and physical health in adulthood	Compare, in minimal detail, the relationships among mental, emotional, social, and physical health in adulthood

Topic	Promoting Safety and Preventing Violence and Unintentional Injury		
Benchmark HE.9-12.1.2	Know how to use appropriate strategies to avoid, reduce, and report threatening situations		
Sample Performance Assessment (SPA)	The student: Makes a plan to demonstrate appropriate strategies to avoid, reduce, and report threatening situations (e.g., physical, emotional, or sexual abuse; sexual harassment; violence).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Consistently demonstrate appropriate strategies to avoid, reduce, and report threatening situations	Usually demonstrate appropriate strategies to avoid, reduce, and report threatening situations	Sometimes demonstrate appropriate strategies to avoid, reduce, and report threatening situations	Rarely demonstrate appropriate strategies to avoid, reduce, and report threatening situations

Topic	Personal Health and Wellness		
Benchmark HE.9-12.1.3	Identify personal health behaviors and other factors that impact body system functions		
Sample Performance Assessment (SPA)	The student: Names personal behaviors and other factors (e.g., smoking, alcohol use, fad diets, genetics, disease) that affect body system functions.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Identify personal health behaviors and other factors that impact body system functions, accurately and with a complete description	Identify personal health behaviors and other factors that impact body system functions, with some minor inaccuracies or omissions in descriptions	Identify personal health behaviors and other factors that impact body system functions, with significant inaccuracies or incomplete descriptions	Identify personal health behaviors and other factors that impact body system functions, with no description

Topic	Personal Health and Wellness

Benchmark HE.9-12.1.4	Explain the purpose of public health policies and government regulations in health		
Sample Performance Assessment (SPA)	The student: Describes the purpose of government in promoting health and preventing disease (e.g., food and drug labeling, food safety and handling, immunization programs).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Explain, in great detail, the purpose of public health policies and government regulations in health	Explain, in detail, the purpose of public health policies and government regulations in health	Explain, in some detail, the purpose of public health policies and government regulations in health	Explain, in minimal detail, the purpose of public health policies and government regulations in health
Strand			
Standard 2: ACCESSING INFORMATION: Access valid health information and health: promoting products and services			

Topic	Health Information, Products, and Services Across Topic Areas		
Benchmark HE.9-12.2.1	Compare health information provided from home, school, and community resources		
Sample Performance Assessment (SPA)	The student: Analyzes health information from a variety of current sources (e.g., CDC tobacco data versus data from tobacco companies; health information from a medical journal versus a tabloid).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Compare, in great detail, health information provided from home, school, and community resources	Compare, in detail, health information provided from home, school, and community resources	Compare, in some great detail, health information provided from home, school, and community resources	Compare, in minimal great detail, health information provided from home, school, and community resources

Topic	Health Information, Products, and Services Across Topic Areas		
Benchmark HE.9-12.2.2	Evaluate the validity of different sources of health information		
Sample Performance Assessment (SPA)	The student: Assesses a variety of health sources to determine validity and appropriateness to a given health situation (e.g., accessibility, affordability, accuracy, statistical support, data analysis).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Evaluate, in great detail, the validity of different sources of health information	Evaluate, in detail, the validity of different sources of health information	Evaluate, in some detail, the validity of different sources of health information	Evaluate, in minimal detail, the validity of different sources of health information

Topic	Health Information, Products, and Services Across Topic Areas		
Benchmark HE.9-12.2.3	Describe when and how to access health services for self and others		
Sample Performance Assessment (SPA)	The student: Identifies when and how to access health services (e.g., teen pregnancy, STD testing, mental health services).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Describe, in great detail, when and how to access health services for self and others	Describe, in detail, when and how to access health services for self and others	Describe, in some detail, when and how to access health services for self and others	Describe, in minimal detail, when and how to access health services for self and others

Strand	
Standard 3: SELF: MANAGEMENT: Practice health: enhancing behaviors and reduce health risks	

Topic	Mental and Emotional Health		
Benchmark HE.9-12.3.1	Compare a variety of personal coping and stress management strategies		
Sample Performance Assessment (SPA)	The student: Analyzes a variety of personal coping and stress management strategies to challenging personal and social situations (e.g., sharing with a friend, talking with parents or another trusted adult, practice and rehearsal, brainstorming) and evaluates the effects of different strategies.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Compare, in great detail, a variety of personal coping and stress management strategies	Compare, in detail, a variety of personal coping and stress management strategies	Compare, in some detail, a variety of personal coping and stress management strategies	Compare, in minimal detail, a variety of personal coping and stress management strategies

Topic	Personal Health and Wellness		
Benchmark HE.9-12.3.2	Compare the importance of enhancing health and safety in the community, workplace, and/or at home		
Sample Performance Assessment (SPA)	The student: Analyzes strategies that impact health and safety in the community, workplace, or at home (e.g., volunteering in the community for disaster organizations, obtaining CPR certification in the workplace, performing self-exams at home).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Compare, in great detail, the importance of enhancing health and safety in the community, workplace, and/or at home	Compare, in detail, the importance of enhancing health and safety in the community, workplace, and/or at home	Compare, in some detail, the importance of enhancing health and safety in the community, workplace, and/or at home	Compare, in minimal detail, the importance of enhancing health and safety in the community, workplace, and/or at home

Topic	Personal Health and Wellness		
Benchmark HE.9-12.3.3	Evaluate personal behaviors within the risk areas (e.g., tobacco use, alcohol and drug use, nutrition, fitness, personal safety, sexual activity)		
Sample Performance Assessment (SPA)	The student: Identifies risk areas that hold the greatest importance personally and evaluates personal behaviors and choices within these risk areas (e.g., managing stress, driving within the speed limit, abstaining from sex, getting enough calcium in diet).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Evaluate, in great detail, personal behaviors within the risk areas	Evaluate, in detail, personal behaviors within the risk areas	Evaluate, in some detail, personal behaviors within the risk areas	Evaluate, in minimal detail, personal behaviors within the risk areas

Strand	
Standard 4: ANALYZING INFLUENCES: Understand the influences of culture, family, peers, media, technology, and other factors on health	

Topic	Factors Influencing Health Across Topic Areas		
Benchmark HE.9-12.4.1	Evaluate the interrelationship of internal and external factors that influence health behaviors		
Sample Performance Assessment (SPA)	The student: Compares internal and external influences on health behaviors and describes how they may work together or against each other in a decision-making scenario (e.g., how personal values may be at odds with the values of the community).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Evaluate, in great detail, the interrelationship of internal and external factors that influence health behaviors	Evaluate, in detail, the interrelationship of internal and external factors that influence health behaviors	Evaluate, in some detail, the interrelationship of internal and external factors that influence health behaviors	Evaluate, in minimal detail, the interrelationship of internal and external factors that influence health behaviors
Strand			
Standard 5: INTERPERSONAL COMMUNICATION: Use interpersonal communication skills to enhance health			

Topic	Communication Skills Across Topic Areas		
Benchmark HE.9-12.5.1	Know how to use appropriate verbal and non-verbal communication skills that are necessary to avoid potentially harmful situations		
Sample Performance Assessment (SPA)	The student: Demonstrates appropriate verbal and non-verbal communication skills (e.g., appropriate body language, non-conflicting messages, assertiveness, respectful tone).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Consistently demonstrate appropriate verbal and non-verbal communication skills necessary to avoid potentially harmful situations	Usually demonstrate appropriate verbal and non-verbal communication skills necessary to avoid potentially harmful situations	Sometimes demonstrate appropriate verbal and non-verbal communication skills necessary to avoid potentially harmful situations	Rarely demonstrate appropriate verbal and non-verbal communication skills necessary to avoid potentially harmful situations

Topic	Promoting Safety and Preventing Violence and Unintentional Injury		
Benchmark HE.9-12.5.2	Know how to use appropriate strategies to resolve disagreements		
Sample Performance Assessment (SPA)	The student: Identifies causes of verbal or non-verbal disagreements in relationship and demonstrates appropriate strategies to resolve disagreements (e.g., staying calm, using respectful tone and body language, seeking a mediator if necessary).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Consistently demonstrate appropriate strategies to resolve disagreements	Usually demonstrate appropriate strategies to resolve disagreements	Sometimes demonstrate appropriate strategies to resolve disagreements	Rarely demonstrate appropriate strategies to resolve disagreements
Strand			
Standard 6: DECISION: MAKING AND GOAL: SETTING: Use decision: making and goal: setting skills to enhance health			

Topic	Decision-Making Across Topic Areas
Benchmark HE.9-12.6.1	Explain decision-making strategies used to make health-related decisions

Sample Performance Assessment (SPA)	The student: Describes a variety of strategies used to make health-related decisions (e.g., seeking additional information, identifying consequences of choices, reflecting on choices).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Explain, in great detail, decision-making strategies to make health-related decisions	Explain, in detail, decision-making strategies to make health-related decisions	Explain, in some detail, decision-making strategies to make health-related decisions	Explain, in minimal detail, decision-making strategies to make health-related decisions

Topic	Decision-Making Across Topic Areas		
Benchmark HE.9-12.6.2	Evaluate health decisions that have immediate and long-term consequences on the individual, family, and community		
Sample Performance Assessment (SPA)	The student: Uses a model (e.g., decision-making tree) to evaluate the immediate and long-term consequences of a health-related decision (e.g., remaining abstinent, using non-violence to solve problems) on oneself and others.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Evaluate, in great detail, health decisions that have immediate and long-term consequences on the individual, family, and community	Evaluate, in detail, health decisions that have immediate and long-term consequences on the individual, family, and community	Evaluate, in some detail, health decisions that have immediate and long-term consequences on the individual, family, and community	Evaluate, in minimal detail, health decisions that have immediate and long-term consequences on the individual, family, and community

Topic	Decision-Making Across Topic Areas		
Benchmark HE.9-12.6.3	Know how to apply appropriate responses to risky situations		
Sample Performance Assessment (SPA)	The student: Demonstrates appropriate responses to situations involving injury or illness (e.g., not riding with drivers than drank alcohol, suggests healthy alternative to risky situations).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Consistently demonstrate appropriate responses to risky situations	Usually demonstrate appropriate responses to risky situations	Sometimes demonstrate appropriate responses to risky situations	Rarely demonstrate appropriate responses to risky situations

Topic	Goal-Setting Across Topic Areas		
Benchmark HE.9-12.6.4	Create and implement a plan for enhancing life-long goals		
Sample Performance Assessment (SPA)	The student: Uses goal setting strategies to set personal health goals (e.g., disease prevention, healthy lifestyles, and family relationships).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Create and implement a plan, in great detail, for enhancing life-long goals	Create and implement a plan, in detail, for enhancing life-long goals	Create and implement a plan, in some detail, for enhancing life-long goals	Create and implement a plan, in minimal detail, for enhancing life-long goals
Strand			
Standard 7: ADVOCACY: Advocate for personal, family, and community health			

Topic	Advocacy Across Topic Areas		
Benchmark HE.9-12.7.1	Use effective strategies to help others promote and protect their health		
Sample Performance Assessment (SPA)	The student: Uses health enhancing strategies to design and implement a product or resource to help others promote and protect their health (e.g., compiles a health resource directory for students; verifies accuracy in address, telephone, and services information; and distributes appropriately).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Consistently use strategies that effectively help others promote and protect their health	Usually use strategies that effectively help others promote and protect their health	Sometimes use strategies that effectively help others promote and protect their health	Rarely use strategies that effectively help others promote and protect their health

Topic	Advocacy Across Topic Areas		
Benchmark HE.9-12.7.2	Design a school-wide health advocacy campaign that advocates for a healthy lifestyle		
Sample Performance Assessment (SPA)	The student: Designs, in a small group, a school-wide health advocacy campaign with the following components: a health-enhancing position, evidence backing the position, a target audience, and strong tone of conviction.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Design a school-wide health advocacy campaign that effectively advocates for a healthy lifestyle, with all the components	Design a school-wide health advocacy campaign that effectively advocates for a healthy lifestyle, with most of the components	Design a school-wide health advocacy campaign that effectively advocates for a healthy lifestyle, with some of the components	Design a school-wide health advocacy campaign that advocates for a healthy lifestyle, with one of the components

Topic	Advocacy Across Topic Areas		
Benchmark HE.9-12.7.3	Evaluate the effectiveness of strategies in communicating health information		
Sample Performance Assessment (SPA)	The student: Assesses the effectiveness of a local or national health campaign (e.g., campaigns for being substance-free or eating specific types of food) by analyzing the strategies used to communicate information (e.g., slogans, bumper stickers, public service announcements).		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Evaluate, in great detail, the effectiveness of strategies in communicating health information	Evaluate, in detail, the effectiveness of strategies in communicating health information	Evaluate, in some detail, the effectiveness of strategies in communicating health information	Evaluate, in minimal detail, the effectiveness of strategies in communicating health information

Topic	Advocacy Across Topic Areas
Benchmark HE.9-12.7.4	Explain how health messages can be translated to particular audiences
Sample Performance Assessment (SPA)	The student: Describes how health information from upper level texts and journals (e.g., the risks of using alcohol, tobacco, or drugs) could be effectively communicated to a younger audience in terms of language and presentation.

Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Explain, in great detail, how health messages can be translated to particular audiences	Explain, in detail, how health messages can be translated to particular audiences	Explain, in some detail, how health messages can be translated to particular audiences	Explain, in minimal detail, how health messages can be translated to particular audiences

(State of Hawai‘i Content & Performance Standards III Database, content area: Health, 2005)

Appendix B

HEALTH

9th grade Health 2018-2019 Syllabus

Katy Bourne (Ms B)
katy_bourne@universitylaboratoryschool.org
956-3462
Office hours: Locker room 8:00am-9:45am

Aloha, I am Katy Bourne (aka Ms. B), the Health class instructor. I started coaching and teaching Physical Education and Health at ULS in 1985. I am an athlete and strongly believe a challenged mind, healthy social interactions and an active lifestyle together help shape a happy, productive and healthy person. Knowledge and understanding enable students to make informed and compassionate life choices.
Students are required to bring their computer, Health folder, and a writing tool to class daily. Information will be presented through lectures, guest speakers, research, guided discovery, handouts, current events, news sharing, individual and group presentations, discussions, questionnaires and hands on experiences.
The classroom climate should be a safe and comfortable space. Because some topics may be sensitive for certain students, students are expected to be respectful of others opinions, views, beliefs, questions and personal sharing that is not to go beyond the classroom.

Course description

Students will examine many aspects of health including physical, mental, emotional, and social health issues. The goal of this course is to expose students to current issues concerning health through inquiry-based learning. Course content is presented through a series of lectures, research, open discussions, and hands on activities.

Objectives

1. Students will study the systems and functions of the human body, and ways to promote physical, mental, emotional, social health, and explore how to apply these behaviors to their own lives.
2. Students will analyze the influence of family, peers, culture, media, environment, and other factors to shape group norms that value a healthy lifestyle.
3. Students will gain a stronger understanding of current world health issues and explore possible solutions.
4. Students will demonstrate sound nutrition and exercise options that support healthy lifestyle choices.

Course Topics

*Basic Human Anatomy
*Mental Health

*Relationships
*Making Healthy decisions
*Movement and Coordination
*Cardiovascular and Respiratory health
*Nutrition and Fitness
*Basic First aid/CPR
*Infectious Diseases
*Chemical Abuse Prevention

Grading

Students will be graded on:
*Homework assignments (10%),
*Quizzes (20%)
*Tests (30%)
*In-class participation/activities (20%)
*Group project and class presentation (20%).

Supplies:

*Pen or pencil
*School issued or personal computer.

Appendix C

Gantt Chart

Level	Task	PIC	Start Date:	Finish Date:
1	Apply for IRB	C. Nunokawa; M. Shannon	Feb 2018	Dependent on IRB
2	Observation of Current Curriculum	C. Nunokawa	1/8/18	5/24/18
3	Map Current Curriculum to National Standards	C. Nunokawa	6/11/18	6/29/18
3.1	Present Mapping to Dean of Students and Educator	C. Nunokawa, L. Cottongim, K. Bourne	July 2018	July 2018
4	Develop new curriculum in domains of National Standards that are not addressed by current curriculum	C. Nunokawa, L. Cottongim, K Bourne	July 2018	July 2018
5	DNP Proposal Presentation	C. Nunokawa	July 2018	August 2018
6	Provide education as needed to health educator regarding new curriculum	C. Nunokawa, L. Cottongim, K. Bourne	August 2018	August 2018
7	Implement new curriculum to 9th grade students enrolled in health education in Fall 2018	C. Nunokawa, L. Cottongim, K. Bourne	August 2018	December 2018
9	Assess health competency of students after receiving new curriculum	C. Nunokawa, K Bourne	December 2018	December 2018
9.1	Administer NVS and HAS-A	C. Nunokawa; K. Bourne	December 2018	December 2018
9.2	Score competency, analyze data and produce report	C. Nunokawa	December 2018	December 2018
9	Evaluate student and educator perceptions of health literacy and health literacy curriculum	C. Nunokawa	December 2018	December 2018
10	Develop final presentation paper	C. Nunokawa	December 2018	February 2018
11.1	Analyze Data	C. Nunokawa	January 2019	January 2019
11.2	Complete final DNP Paper and Presentation	C. Nunokawa	February 2019	February 2019
12	Final Defense	C. Nunokawa	March 2019	April 2019

* Dates are estimates based on Graduate Division approval of advancement to candidacy of the DNP student.

Appendix D

Newest Vital Sign Toolkit

See toolkit at https://www.pfizer.com/files/health/2016_nvs_flipbook_english_final.pdf (Powers, Trinh, & Bosworth, 2010).

Appendix E

Health Literacy Assessment Scale

	Never (0)	Rarely (1)	Sometimes (2)	Usually (3)	Always (4)
How often is it easy for you to ask your doctor questions about your health?					
How often does your doctor understand what you mean when you ask him or her a question about your health?					
How often can you easily describe a health problem you have to your doctor?					
How often does your doctor seem to understand you when you answer a question he or she asks?					
How often do you understand the answers your doctor gives to your questions? (understand)					
TOTAL:					
How often do you get confused because you find different information about the same health topic? (process)					
How often do you get confused when your doctor tells you about taking a medicine?					
How often do you get confused when your doctor tells you about possible side effects from a medicine or treatment?					
How often do you get confused when your doctor tells you about test results, like results of an X-ray?					
TOTAL:					
How often do you get confused when reading instructions for medicine?					
How often do you have problems learning about an illness or health topic because of difficulty understanding the written information you get?					
How often do you think the forms you complete at your doctor's office are confusing?					
How often are you confused by health information that has a lot of numbers and statistics?					

When you talk to people other than your doctor about health issues, how often are you confused by what they tell you?					
When reading brochures or hand-outs about health issues, how often do you need someone to help you read them?					
TOTAL:					

SCORING

Domain	Scores
Scale 1: Communication	High health literacy 15–20
	Low health literacy 0–14
Scale 2: Confusion	High health literacy0–7
	Low health literacy8–16
Scale 3: Functional Health Literacy	High health literacy0–11
	Low health literacy12–24

(Manganello, DeVellis, Davis, & Schottler-Thal, 2015)

Appendix F

Educator Evaluation

	1 **Strongly Agree**	**2** **Agree**	**3** **Neutral**	**4** **Disagree**	**5** **Strongly Disagree**
Health literacy curriculum is important for student's lifelong success.					
Input of a healthcare professional is beneficial to curriculum development.					
Health literacy curriculum integrates well in a health education course.					
Students are receptive to health literacy curriculum.					
I will continue to use this curriculum in the future.					
I will recommend incorporating health literacy curriculum to other educators.					

Appendix G

Student Evaluation

	1 **Strongly Agree**	**2** **Agree**	**3** **Neutral**	**4** **Disagree**	**5** **Strongly Disagree**
Health literacy curriculum is important to me.					
Health literacy curriculum is beneficial to my success.					
Health literacy curriculum was delivered in a way that I could understand.					
I would recommend what I learned to my friends or family.					
I will use what I learned to practice good health habits in the future.					
My health is important to me.					

Tables

Table 4

National Health Education Standards

Standard	Objective
Standard 1	Students will comprehend concepts related to health promotion and disease prevention to enhance health
Standard 2	Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors
Standard 3	Students will demonstrate the ability to access valid information, products, and services to enhance health
Standard 4	Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks
Standard 5	Students will demonstrate the ability to use decision-making skills to enhance health
Standard 6	Students will demonstrate the ability to use goal-setting skills to enhance health
Standard 7	Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks
Standard 8	Students will demonstrate the ability to advocate for personal, family, and community health

Table 5

Number of publications reviewed at each Mosby's Level of Evidence

Quality of Evidence	# of Publications Reviewed
Level I	7
Level II	1
Level III	2
Level IV	0
Level V	0
Level VI	11
Level VII	2

Table 6

Results of Newest Vital Signs

Student	Newest Vital Sign Score
1	6
2	6
3	5
4	6
5	3
6	6
7	6
8	4
9	6
10	6
11	6
12	6
13	4
14	5
15	6
16	3
17	6
18	5
19	6
20	6
21	4
22	6
23	5
24	6
25	4
26	1
Mean	5.12
STDEV	1.28

Note. Grey shading indicates a low literacy score.

Interpretation
Score of 0-1 suggests high likelihood (50% or more) of limited literacy
Score of 2-3 indicates the possibility of limited literacy
Score 4-6 almost always indicates adequate literacy

Table 7

Results of HAS-A

Student	Communication	Confusion	Functional Health Literacy
1	11	6	11
2	9	5	8
3	16	10	7
4	12	9	7
5	15	7	11
6	17	2	4
7	18	5	9
8	13	8	5
9	17	4	10
10	11	6	12
11	15	8	16
12	14	9	9
13	15	11	11
14	12	8	11
15	14	7	10
16	14	4	
17	12	8	11
18	13	1	2
19	17	7	8
20	14	5	14
21	14	3	4
22	13	11	15
23	19	8	12
24	16	1	5
25	18	1	7
26	11	8	14
Mean	14.23076923	6.230769231	9.32
STDEV	2.534682502	2.97062542	4.638007235

Note. Grey shading indicates a low literacy score.

Domain	Interpretation
Communication	High health literacy 15-20
	Low Health Literacy 0-14
Confusion	High health literacy 0-7
	Low Health Literacy 8-16
Functional Health literacy	High health literacy 0-11
	Low Health Literacy 12-24

Table 8

Student Feedback

Student	Health Literacy Curriculum is important to me	Health literacy curriculum is beneficial to my success.	Health Literacy Curriculum was delivered in a way that I could understand.	I would recommend what I learned to friends or family	I will use what I learned to practice goof health habits in the future	My health is importa nt to me
1	1	2	2	2	2	1
2	2	3	2	3	2	2
3	2	2	4	1	1	1
4	2	2	3	2	2	1
5	2	2	2	2	1	1
6	2	3	2	3	1	1
7	3	3	5	5	4	1
8	2	2	3	2	2	
9	1	1	2	2	1	1
10	3	2	3	2	2	1
11	4	3	2	3	2	1
12	1	2	2	3	2	1
13	1	1	1	2	1	1
14	3	3	3	4	2	2
15	1	1	2	2	2	1
16	2	2	1	1	1	1
17	2	3	2	3	2	1
18	3	2	2	2	2	2
19	2	1	2	2	1	2
20	1	1	1	2	1	1
21	1	1	1	3	1	1
22	2	3	2	3	2	3
23	2	3	3	3	3	1
24	2	3	4	3	3	3
25	3	3	2	3	2	1
26	2	2	2	1	1	1
Mean	2	2.15	2.31	2.46	1.77	1.39
STDEV	0.7841	0.77	0.95	0.89	0.75	0.68

Response Key
1 Strongly Agree

2	Agree
3	Neutral
4	Disagree
5	Strongly Disagree

Figures

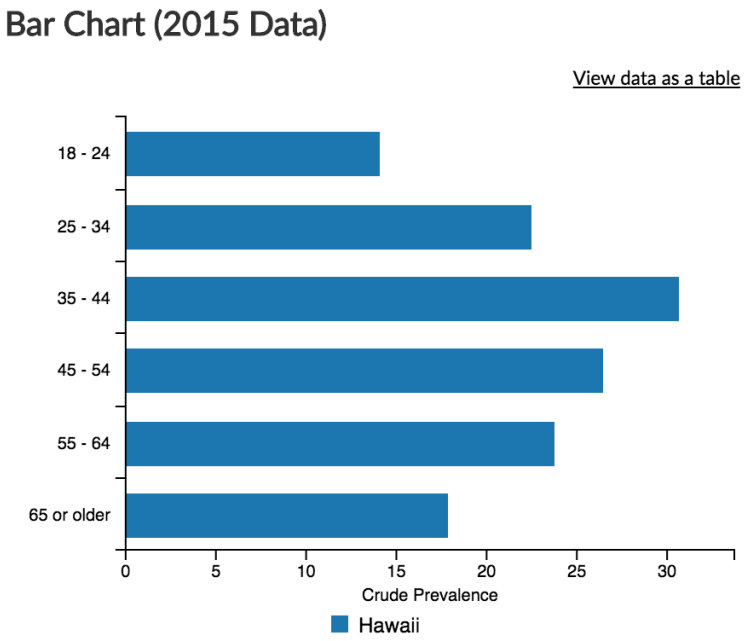

Figure 1. Crude prevalence of obesity by age in Hawai‘i (CDC, 2017).

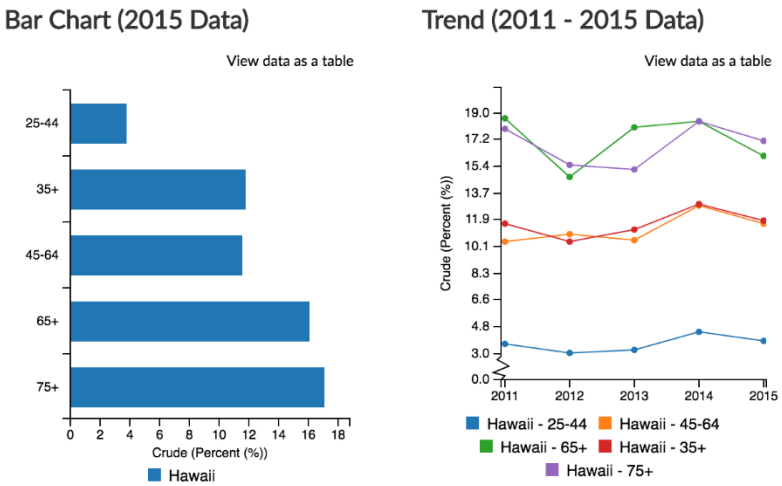

Figure 2. Crude prevalence of diabetes by age in Hawai‘i (CDC, 2017).

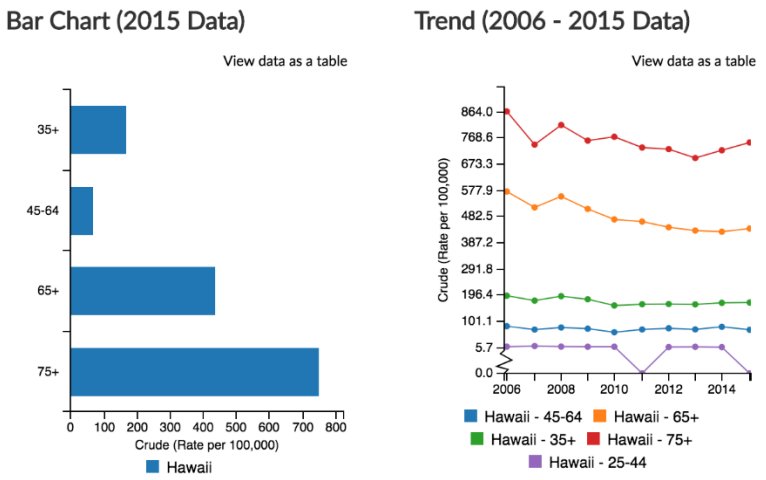

Figure 3. Rate of coronary artery disease by age in Hawai‘i (CDC, 2017).

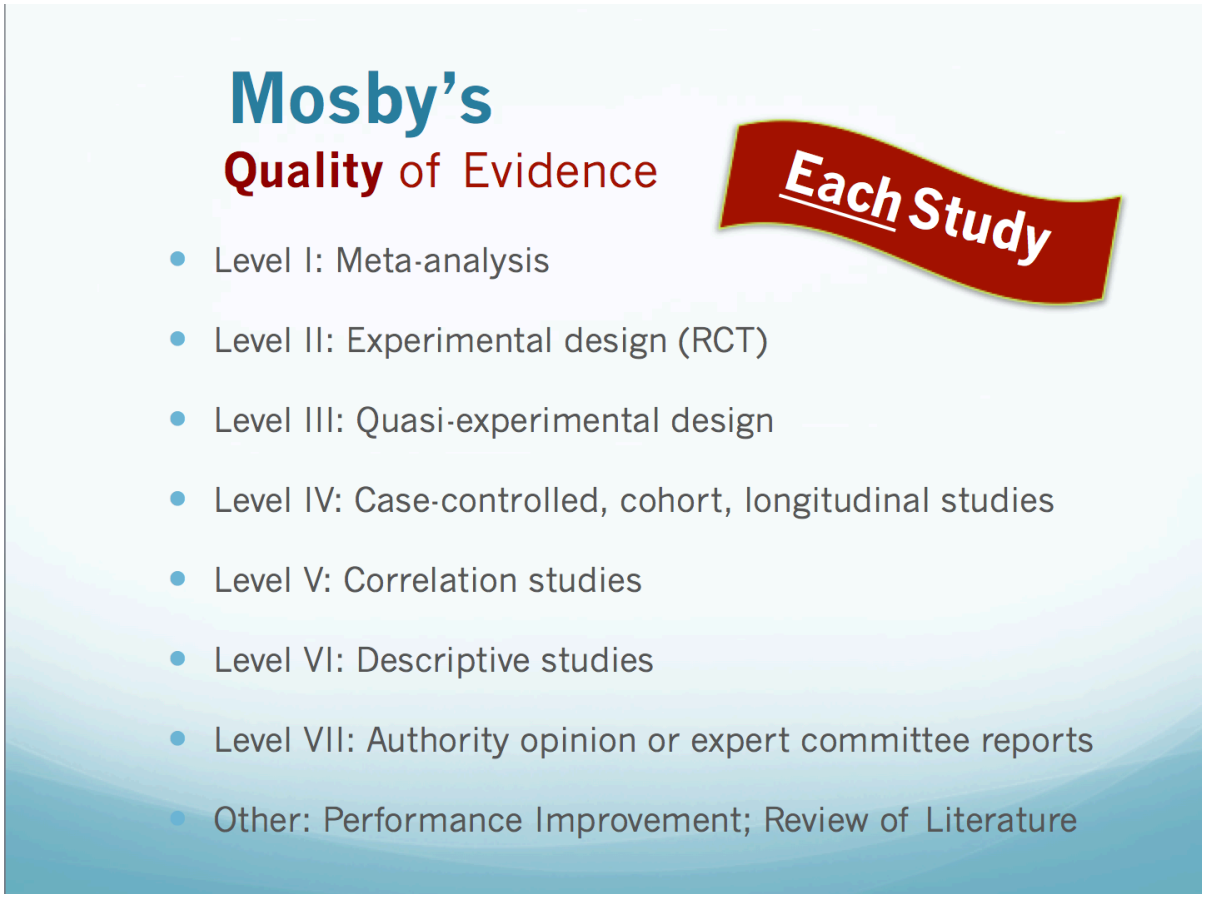

Figure 4. Mosby's Quality of Evidence (Gandall-Yamamoto, 2017).

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	*Evidence rating*	*References*
Use universal health literacy precautions with all patients, regardless of their literacy or education levels.	C	10, 30, 31
Prioritize and limit information to three key points for each visit.	C	30
Use the teach-back method to assess patient comprehension of information.	C	10, 30, 36
Simplify forms and offer assistance with form completion.	C	10, 30

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.

Figure 5. AAFP Recommendations for Health Literacy (Hersch et al., 2015).