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EXPLORING LEARNING OUTCOMES AMONG UNDERGRADUATE KINESIOLOGY STUDENTS IN RESPONSE TO AN INCLUSIVE PHYSICAL ACTIVITY PROMOTION MESSAGE ASSIGNMENT

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Ross & Thomas. Numerous professional bodies and curricular models in kinesiology call for the development of undergraduates' cultural competency. In short, a culturally competent professional (a) mitigates personal biases from adversely affecting others, and (b) is aware of how societal patterns marginalize people (e.g., unquestioned norms; Gill, 2007). The present study aimed to evaluate the extent to which undergraduate students demonstrated learning in response to completing an inclusive physical activity promotion message assignment, which included a focus on designing materials inclusive of people with disabilities. A scholarship of teaching and learning approach was adopted to critically evaluate and reflect on an assignment used in an undergraduate kinesiology course. This case study drew on artifacts from a convenience sample of 10 undergraduate students enrolled in an introduction to adapted physical activity course. A descriptive discourse analysis was conducted of students' reflections about what they learned from the assignment. Student responses were appraised with Fink's (2013) taxonomy of significant learning for evidence of learning across six domains: i.e., foundational knowledge, application, integration, human dimension, caring, and self-determination. Student responses were coded and verified. Consensus was reached on all discrepancies. Student reflections signaled learning across four domains: foundational knowledge (n = 9), application (n = 3), integration (n = 5), and human dimensions (n = 6). Developments in the caring or self-determination domains were not evident. The findings indicate potential for the assignment to enhance Kinesiology curricula. As teacher-researchers, we discuss the findings in relation to further development of the assignment to better promote cultural competency.

Key Words: coaching and physical education teacher education (PETE), disability, exercise science, equity, workforce training

Kinesiology, as an academic discipline, is called upon to prepare undergraduate students to be agents of positive change through the promotion of health and well-being for all (Cervantes & Clark, 2020; Gill, 2007; James, 2021). Kinesiology undergraduate majors often pursue careers in fitness and sport education or allied-health fields (Nuzzo, 2020; Thomas, 2014). Whatever the career, students will likely serve a diverse clientele, including individuals with disabilities, or will need to expand access to the services they provide on the field or in the clinic (Elshahat et al., 2021; Keadle et al., 2021; Kennedy et al., 2021). To make headway in increasing equity and accessibility of services and environments, kinesiology educators seek to develop students' cultural competency, as well as technical knowledge and skillsets. A "culturally competent professional acts to empower participants and challenge

restrictive social structures" (Gill, 2007, p. 283), and has (a) awareness of how their own values and biases impact their clients'/students'/athletes' experiences, and (b) the knowledge and skills to create inclusive atmospheres (Robey et al., 2013). In recognition of its importance, the American Kinesiology Association (AKA; Chodzko-Zajko et al., 2018) and the Society of Health and Physical Educators, America (SHAPE America, 2017) both identify cultural competency as a core element of undergraduate preparation in kinesiology and physical education.

Towards that end, the present study developed and evaluated an undergraduate course assignment targeting physical activity (PA) messages and messaging for a diverse clientele, specifically individuals with disabilities. Messages represent what is communicated (e.g., messages focused on motivating, advising, or informing), whereas messaging is the physical or technological conduit used to disseminate messages (Brawley & Latimer, 2007). End-users simultaneously interphase with messages and messaging whenever they access mediated forms of communication, such as print- or web-based PA promotion material (e.g., print brochures, webpages; Thomas 2019). Future and current professionals should be aware of the need to ensure quality promotional messages and messaging and be equipped to do so (Love et al., 2021; Smith & Thomas, 2020). On a regular basis, the public seeks and accesses PA-related promotion material in diverse ways, including through the websites of government agencies, professional organizations, private providers, non-profit organizations, and/or university-based centers (Clarke et al., 2016; Prestin et al., 2015; Vallance et al., 2008). To be effective, the design of messages and messaging (i.e., promotion material) should be culturally responsive to the diverse ways of obtaining, processing, and understanding information (Natkunam et al., 2020; Ross & Ross, 2021). Yet, large-scale evaluations of PA and health-related digital messaging have revealed materials that are largely inaccessible for diverse populations due to unsuitable required reading grade levels (Thomas et al., 2018), non-compliance with disability access standards for digital media, including issues with font style, content layout, and lack of alternative text for images (Shaw 2017; Visser et al., 2021; Disability Rights Commission, 2004), and poor or missing representation of persons with disabilities (Bruning et al. 2020; Comella et al., 2019; Mitchell et al., 2019).

Kinesiology professionals are well-positioned to promote health and well-being for all through websites and other digital media associated with fitness and health clinics, sport programming, etc. (McManus, 2022). Thus, intentional educational efforts to prepare professionals to apply techniques for health literacy promotion and recognize the value of this practice in support of health equity, is needed (May et al., 2022; Visser et al., 2021). Despite this call to action, there has been limited improvement over the past quarter century in the accessibility of health promotion materials (Cardinal & Sachs, 1992; Thomas et al., 2018; Thomas & Cardinal, 2020). Notably, improved translation of health knowledge and skill to consumers is observed when techniques for health literacy assurance are used (e.g., teach back, readable material; Kiser et al., 2011; Sheridan et al., 2011), warranting further efforts to improve the effectiveness of health communication disseminated by diverse professionals (Smith et al., 2022; Smith et al., in press). Failure to address this gap impedes realization of the Healthy People 2030 goal to increase the health literacy of the population (Health Communication/Health Information Technology Research Objective 1; US Department of Health and Human Services [USDHHS], n.d.). Thus, more explicit educational efforts to prepare emerging professionals to be proficient in digital, text-based health communication is needed.

To address this curricular gap in preparing kinesiology undergraduates in health literacy promotion (Thomas et al., 2021a; Thomas et al., 2021b), we developed a lesson plan for one undergraduate introductory course on adapted PA. Broadly, our goal was to increase awareness and practical skills around accessible and disability inclusive PA promotional material (Ross et al., in press). This study focused on the inclusivity of individuals with disabilities, while recognizing that culturally competent professionals demonstrate appreciation for diversity across gender, age, race/ethnicity, religion, ability, and other intersections of identity (AKA competency #81, Chodzko-Zajko et al., 2018). Individuals with disabilities are largely underrepresented within

health-related messaging (Visser et al., 2021), including web-based sport and PA promotion (Hardin et al., 2001; Martinez-Bello, 2017) and programming (Comella et al., 2019). To effectively design disability inclusive PA materials, kinesiology professionals need to recognize this current issue of underrepresentation and its historical/cultural impact on participation and health among individuals with disabilities (AKA competency #7 & 9, Chodzko-Zajko et al., 2018).

Through this article, we critically evaluate and reflect on our development and implementation of one course assignment to promote cultural competency among kinesiology undergraduates. The lecture and activities related to our assignment aimed to prepare kinesiology pre-professionals with strategies to design disability inclusive PA promotional material using digital platforms. Principally, we designed our assignment to address this through instruction and activities focused on three issues which limit the usefulness of digital PA promotional material: readability, accessibility, and inclusivity. This research was guided by the question: could an assignment evaluating and creating PA messages inclusive to people with disabilities raise awareness among kinesiology undergraduate students of how design decisions may affect the reach and impact of digital PA promotional materials (AKA competency #7, Chodzko-Zajko et al., 2018)? We anticipated that the assignment would help students identify and question their own assumptions about people with disabilities' engagement with PA promotional material. Moreover, we anticipated the assignment would help students identify techniques to improve the accessibility and inclusivity of PA promotional material, guiding ethical decisions in future professional roles (AKA competency #8, Chodzko-Zajko et al., 2018).

Methods

A Scholarship of Teaching and Learning paradigm (SoTL; Trigwell et al., 2000; Guillory & McLaughlin, 2018) was employed to critically evaluate and reflect on the extent to which the assignment facilitated development of cultural competencies (Liston & Rahimi, 2017). We situated ourselves as teacher-researchers, engaging in reflective pedagogy (Bailey, 2012) to advance our effectiveness as educators, and make "transparent how we have made learning possible" (Trigwell, 2000, p. 156). This research was delimited to appraising the educational effectiveness of one assignment for the purpose of a course evaluation; the research was not done to generalize findings to any specific population or context. As such, this study was acknowledged by the first author's institutional review board and deemed exempt as an evaluation of standard teaching practices.

Participants and Study Setting

A convenience sample of undergraduate students enrolled in an introductory adapted PA course, for which the first author was the instructor, were included in the present case study (Atkinson, 2012). The required course serves the physical education curriculum and kinesiology as an introduction to teaching/coaching in an adapted PA environment. The study setting was a large public university located in the southeast region of the United States (CollegeData.com, n.d.). The purpose of this course is to give students developmental knowledge, an authentic teaching environment, and content knowledge for a variety of disabilities. The course was delivered in the Spring 2021 semester and 100% online, using a synchronous and remote instruction format, due to the COVID-19 crisis (Taylor et al., 2021).

Sixteen coaching education majors of sophomore and junior standing were enrolled and eligible for inclusion in the study. Six students did not complete the assignment, or they submitted incorrect documentation, resulting in an inclusion rate of 62.5%. The deidentified work submitted by the students was the primary unit of analysis for this study, which was conducted post-semester. Given the nature of the research, student consent was waived.

Assignment Description

Communication is a primary route to promote PA and a prevailing culture supportive of active living as a means to health and a quality life (Sallis et al., 2006). Given that websites and other digital media are primary routes in which adults seek health advice and to improve their health literacy (Prestin et al., 2015), our assignment focused on media-based communication. When considering media-based PA

communication, there are two parts to keep in mind: messaging and message (Brawley & Latimer, 2007). Messaging is the physical medium used to communicate a message (e.g., webpage, print flyer). The message, in comparison, is the substance of the communication (e.g., appeals, factual statements, advice; Brawley & Latimer, 2007). The suitability of media-based PA materials for a wide audience can be represented by reading grade level, compliance with disability accessibility standards, and representation of diverse communities.

The assignment was added to an introductory course on adapted PA to raise awareness of persistent issues in PA promotional material, and the ways these issues intersect with the social experience of disability, namely barriers in fully accessing PA promotion material and services provided to clients or the public (Thomas et al., 2022a; Ross et al., in press). The assignment was introduced during the third week of the semester within a unit on federal legislation and inclusion frameworks as they apply to PA participation among individuals with disabilities. The related instruction, class activities, and homework encompassed one 7-day period. To our knowledge, this was the students' first introduction to digital health promotion messaging within the program curriculum, and it was assumed students had not had prior experience with the course content.

The assignment was originally developed by the first author, an expert in adapted PA, and implemented in a course section one year prior to this study. The second author, an expert in readability and accessible PA messaging, was invited to support development of the assignment for use in future course sections. The original assignment was revised based on both authors' experiential teaching knowledge and an extensive review of the literature. An example assignment can be found in Appendix A and includes a summary of background literature used to inform the assignment lesson plan. The specific learning objectives for our course assignment, and ways they align with national standards for kinesiology undergraduate curricula, are reported in Table 1. The assignment included two components. First, for the in-class component, student groups were tasked with evaluating an example PA promotional message that could be used for a fitness organization or school's website and social media campaign. The in-class task included a lecture overview of issues and guidelines. Student groups evaluated example promotional messages using a checklist of best-practice guidelines for (a) reading grade level (Thomas et al., 2021b) (b) accessibility (Education and Outreach Working Group [EOWG], 2016; Henry & Dick, 2018), and (c) disability inclusion (Kraus & Jans, 2014). Guideline checklists used within the assignment were curated by the first author based on best-practice recommendations (see Appendix A).

Table 1

Learning Objectives and Alignments

Course level objectives	**Aligned kinesiology curriculum standards**
Assignment purpose: • Develop professional knowledge and technical skills to effectively promote physical activity through written/text-based messaging for diverse clientele/population. **Learning outcomes:** • Evaluate PA promotion messaging for accessibility and inclusion, as it relates to readability and clients with disabilities. • Create health promotion messages using guidelines for accessibility and inclusion, including	**Kinesiology core curriculum elements** (AKA[1]; Chodzko-Zajko et al., 2018) Cultural, historical and philosophical dimensions of physical activity *A kinesiology graduate will be able to* • (#7) Describe the sociocultural and historical factors that influence physical activity. • (#8) Demonstrate an appreciation of cultural diversity and make ethical decisions.

using plain language, ADA compliant formatting, and inclusive, respectful terminology.

Aligned course learning outcomes:

- Recognize and understand current issues related to participation of unique populations in sport.
- (#9) Critically evaluate scholarly work related to cultural, historical, and philosophical dimensions of physical activity.

SHAPE[2] America standards (2017)

- (#6a) Engage in behavior that reflects professional ethics, practice and cultural competence
    - Teaches using culturally sensitive approaches
    - Creates classroom atmosphere that is inclusive
    - Demonstrate equitable treatment for all students

Note. This assignment investigated in the present study was initially developed for delivery in the Introduction to Adapted Physical Activity course, within the Physical Education and Kinesiology Bachelor of Science Degree Program at West Virginia University (United States).
[1]AKA means, "American Kinesiology Association." [2]SHAPE means, "Society of Health and Physical Educators."

Second, for the take-home component of the assignment, students individually engaged with educational materials (e.g., videos, website articles) related to digital literacy levels in the US, federal laws around digital accessibility (e.g., Section 508 of the Rehabilitation Act of 1973, The Plain Language Act of 2010), and frameworks for designing materials inclusive of people with disabilities (e.g., "Commit to Inclusion" national campaign). Appendix A includes these supplemental resources and a full reference list provided to the students. As part of the homework component, students individually revised the example PA promotional messages to comply with best-practice guidelines shared through the assignment.

Finally, students were prompted to reflect on their learning following the completion of the homework component. Two open-ended questions were used: (a) "What did you learn from this activity? and (b) In what ways could you use the tools for effective communication introduced in this activity in your future career or personal life?" Students submitted their completed assignments, including their revised promotional message and personal reflection, the following week in class.

Theoretical Assumptions

Cultural competency is conceptualized as a set of attitudes and practices which ensures services are perceived as respectful to end-users; they ensure services are designed in ways that encourage end-users to fully engage in a program or service offered by an organization (Campinha-Bacote, 2002). Cultivating skills in cultural competency can raise awareness of assumptions or biases that are held by a person designing services or programs (Gill, 2007). Theoretically, cultural competency encourages an end-user centered approach to understand how clients or members of the public may perceive components of a service or program (Robey et al., 2013), which may affect their motivation to participate or engage. Moreover, cultural competency is fostered through reflecting on how the beliefs and values that one has as a provider may differ from those held by end-users (Campinha-Bacote, 2002), which in the case of kinesiology professionals may be clients, athletes, students, or the general public. Robey and colleagues (2013) showed, in their literature review, multiple studies where providers held large misconceptions about what patients with disabilities would attribute as their daily activities and quality of life. Such a divide between health providers and end-users could adversely affect efforts by providers to design

material and services which are responsive to patient values, life constraints, and health-related priorities (Robey et al., 2013). Concerning PA promotion, this translates into absent or limited initiative to become educated on barriers faced by end-users with disabilities, as well as an absent or limited ability to design accessible and inclusive promotion services and programs (Campinha-Bacote, 2002).

Our course assignment, evaluated in the present study, was structured to teach undergraduate kinesiology students about how cultural competency specific to persons with disabilities overlaps with skills in designing readable promotional material for the public (Thomas et al., 2022b; Ross et al., in press). Activities of the assignment not only taught students about perspectives for inclusive material design (e.g., representation; Bruning et al., 2020), but also for accessible design (e.g., perceptible content; Ross et al., in press). Accordingly, completing the course assignment was theorized to instill in students an awareness of routine (i.e., normative) practices which impede PA promotion material from being inclusive and accessible for individuals with disabilities (Ross & Ross, 2021). Moreover, it was anticipated the assignment would raise student awareness that cultural competency is a process and an ability (e.g., tasks could elicit students to reflect on their readiness to design effective PA promotional material).

Analytic Plan

Discourse analysis

A discourse analysis was performed of the semantics used by students in their written reflections on learning to determine which, if any, types of significant learning were experienced (Barnes & Caprino, 2016; McMullen, 2021). The domains from Fink's taxonomy of significant learning (2013) were used to code and discuss student reflections: i.e., (a) foundational knowledge, (b) application, (c) integration, (d) human dimension, (e) caring, and (f) self-determination. Student reflections could be coded for more than one domain (e.g., one statement corresponds with foundational knowledge and another with human dimension). As we were interested in the ways which the assignment may have elicited significant learning, if at all, we made the *apriori* decision to quantify the number of student submissions representative of each domain of significant learning (i.e., an interpretive content analytic approach was used; Armat et al., 2018; Elliot & Timulak, 2021). Cultural competency may be observed as self-knowledge, self-awareness, or transformation of one's way of knowing, or empathetic interest in how one's actions (or lack thereof) impacts people and environments (Cervantes & Clark, 2020). As Fink's taxonomy operationalizes learning beyond cognition, including ethics, integrity, aspirations, continued interest in a topic, and self-awareness (Fallahi & LaMonaca, 2009), it was deemed an appropriate framework for facilitating the discourse analysis for the course assignment in the present study (Elliot & Timulak, 2021).

Confirmability and rigor

The first author independently identified and coded statements within the student reflections for representation of significant learning. Adjacent to each code for significant learning, the first author included annotation explicating her rationale on why the statement was representative of the identified domain of significant learning. After the first author's independent coding, the second author served as a 'critical friend' (Thomas et al., 2022b); he reviewed the first author's coding and interpretations for any (dis)agreement with the first author (Lee & Yoon 2020). This delineation of reviewer roles was determined prior to data coding and analysis. As the primary instructor of the course, the first author sought a 'critical friend' to lend an outsider perspective and challenge interpretations (to reduce bias). In qualitative inquiries, 'critical friends' enhance rigor by "encourage[ing] exploration of multiple and alternative explanations and interpretations as themes [are conceptualized] in relation to the data" (Smith & McGannon, 2018, p.113; also see Brulé, 2020). Coding agreements were counted and reported as an indicator of trustworthiness (Thomas et al., 2022b).

Results

The first author's preliminary review identified evidence within student reflections for significant learning in the domains of (a) foundational knowledge (8 of 10 students), (b) integration (1 of 10

students), and (c) human dimension (8 of 10 students). The second author, as a 'critical friend', agreed with 18 of 30 coded statements across the 10 student reflections (60%), and identified five additional representative statements. Disagreements primarily challenged the first authors' conceptualization of Fink's application versus integration versus human dimension domains. Through reflexive and iterative dialogue, the first and second authors contextualized Fink's domains to the assignment and reached consensus on all discrepancies. Broadly, we further contextualized the three domains in the following way: (a) application was evidenced by the student projecting how they would extend the topics or skills studied through the assignment to alternative tasks, professional roles, or settings; (b) integration was evidenced by the student projecting how their learning would help them to perform a different professional role better, to appreciate an approach, or to envision how the quality of service/care they provide would impact others; and the (c) human dimension was evidenced by the student projecting personalized goals or their 'ideal self' following a sense of achieving self-awareness or self-discovery (one driver towards learning in this dimension could be an expanded sense of empathy due to a new experience or realization) (Fink, 2013).

Consensus discussions between the authors identified a total of 35 statements within the 10 student reflections demonstrating significant learning. Employment of the 'critical friend' (second author) enriched the interpretations of the data. Overall, student reflections signaled that cultural competency was promoted across four learning domains: foundational knowledge (n = 9), human dimension (n = 6), integration (n = 5), and application (n = 3). Table 2 presents example reflection statements from students, the corresponding assigned learning domain, and consensus interpretations.

Table 2

Sample Coding of Student Reflection Statements

Representative statements from student reflections	***Fink's domain of significant learning.*** **Consensus interpretation**
"I purposely cut down on syllables and used simpler words just so it'll be easier to understand."	*Foundational Knowledge*. Student recalls key concepts related to reducing reading grade-level to improve suitability of PA promotion content for a diverse lay audience.
"In my opinion some things just need to be said in more complex ways. In the case of an inclusive sports training program offered by a fitness gym sure, but if it is a college advertising an elite level showcase camp in which scholarships will be rewarded, a more complex form of advertisement is necessary"	*Application.* Student demonstrates critical thought for how ideas learned may apply in a different context, and what factors might influence that, such as audience or marketing goals.
"I was surprised to see that millions of Americans cannot read above a 5th grade level. In the future, when addressing a large group of people, I want to make sure that I use inclusive language, and I want to make sure that the readability is not confusing in any way and is comfortable for most."	*Human Dimension:* Student was "surprised", suggesting reflective thought and consideration of self and others. Student projects ideal self in saying "I want to do this" and demonstrates an understanding of how they can interact more effectively with others.

Discussion

As teacher-researchers, we critically evaluated the extent to which an undergraduate assignment, tasking students to evaluate and revise digital PA promotional messages inclusive of people with disabilities, could develop students' cultural competency. Cultural competency includes knowledge in how the design of programs or services may affect end-user perception of such resources and their motivation to engage with them (Campinha-Bacote, 2002). The assignment extended this consideration to the very messages used to promote PA programs or services (Thomas et al., 2022a). Accordingly, the present study's research question focused on if students became aware of how the design of PA promotional messages affected their reach and impact, specifically as it relates to health literacy and disability inclusion. Using Fink's taxonomy of significant learning (2013) to analyze students' reflections about their learning, we identified ways the assignment could develop students' cultural competency.

Foundational Knowledge

The findings suggest cultural competency was primarily developed through gains in foundational knowledge. When asked what they learned, most students focused on techniques to improve readability and accessibility of digital materials. Students centered their comments on how the first message drafts were not ready for lay communication. Limitations often cited by students related to the use of jargon, polysyllable words, and long sentences. Students also expressed importance in adding alternative text descriptions to graphics and using a clear layout design. It seems the assignment's focus on accessibility helped students become cognizant of design issues which impede the ability to perceive content, primarily as it relates to experiences of individuals with visual impairments. It is possible that prior to the class, students were unaware of ways typology and spacing affects how content is read under certain conditions (e.g., intellectual/visual disability, using a screen reader software; Bureau of Internet Accessibility [BOIA], 2019).

According to Fink's taxonomy, students deemed this knowledge gap as significant. This suggests the assignment could help students recall and understand design issues which limit the reach of PA promotional messages to the disability community (Visser et al., 2021). This potential aligns with several disability-related cultural competencies at the program, university and academic field levels (see table 1). Most notability is the potential to increase students' awareness of how disability (and literacy) affect interactions with health material from the viewpoint of end-users with disabilities. The study results also align with competencies to be aware of, and support, alternate forms of communication (Robey et al., 2013).

Human Dimension

Just over half of the students' responses corresponded to the human dimension domain of Fink's taxonomy. The findings suggest the assignment could elicit students to make realizations about themselves or others (Fink, 2013). Several students specifically wrote that they were surprised most Americans often require health-related material to be written at/below an eighth-grade reading level (Han & Carayannopoulos, 2020). Meeting this cut-point would ensure adults have comfortable reading experience with text-based promotional material, as well as a lowered risk of mis-comprehending material content (Center for Disease Control and Prevention [CDC], 2022; Warde et al., 2018). One student even remarked that they had never considered how a person who is blind engages with digital content. Beyond informing the student that impaired vision (e.g., blindness) occurs along a continuum (American Foundation for the Blind, n.d.), the experience of revising the example messages helped the student understand how content is perceived/heard using assistive technology (BOIA, 2019). Moreover, statistics provided about literacy and disability potentially helped several students realize their own assumptions concerning the quality of PA promotional messages and who can(cannot) access them. Students who conveyed a personal realization often expressed appreciation for how applying the techniques they learned improved the revised message.

Learning within the human dimension domain relates to cultural competencies focused on practice settings (Robey et al., 2013). The self-awareness fostered through the assignment could encourage students to recognize how their own attitudes, values, and practices affect the ability of people with disability to access health-related information and services (Robey et al., 2013). In the present study, however, students did not devote substantial articulation to any personal biases they held towards people with disabilities, which the assignment may have brought to light (Robey et al., 2013).

Integration

Results specific to the integration domain suggests the assignment may positively shape professional identity (Trede et al., 2012). The integration domain deals with anticipating ways a current experience can inform one's future work (i.e., future role or career; Fink 2013). Beyond listing the tools which they would use in the future, this subset of students also declared the tools would ensure they were equitable in promoting PA (e.g., presenting messages inclusive of everyone, readable to all, understood by everyone). They specifically spoke of personally communicating with clients or the public, which were not limited to text-based content but inclusive of verbal communication too (e.g., when talking with clients). From a cultural competency perspective, this suggests the assignment could support students in being concerned that the material they produce are consistently accessible, acceptable, and doable (Robey et al., 2013). These results further show how the assignment could foster attitudes aligned with SHAPE Standard 6a, which is to promote inclusivity and equitable treatment through one's professional practice. Similarly, it aligns with AKA competency #8 around demonstrating appreciation for cultural diversity and making ethical decisions in practice (Chodzko-Zajko et al., 2018). These referenced standards in kinesiology align with the cultural competency to understand the values and belief systems of end-users (Robey et al., 2013), namely in what end-users would like to see prioritized in the health-related material or service that they access (Elshahat et al., 2021; Natkunam et al., 2020). Our results suggest the assignment may help students recognize digital communications are accessed by a diverse population of end-users.

Assignment Efficacy

The suggested efficacy of the present assignment could be better understood in relation to previous research. First, learners are generally unaware of health literacy barriers, regardless of their employment experience, program stage, or area of study (Saunders et al., 2019). An array of student appraisal activities seems to successfully reinforce lessons taught through didactic instruction or assigned media (Saunders et al., 2019). Many studies lack a control-group or a pre-/post-test analytic design (Saunders et al., 2019), which makes qualitative research even more important. When assessing student learning, a frequent response to open-ended questionnaires from students appears to be increased awareness (Beyer & Thomson, 2016). This includes precise ways to write in plain language at appropriate reading grade levels. Our main finding, that most responses aligned with foundational knowledge, is consistent with previous qualitative research. Second, scenario-based activities may elicit a newfound sense of professional responsibility (Chen et al., 2013), helping to explain why both the integration domain and human dimension domain were top areas of significant learning within our sample. Learners may often comment on not suspecting the health material they locate or create as barriers to health promotion. Previous studies suggest teaching multi-modal ways to promote health literacy may be helpful (Chen et al., 2013). Our activity centered on access by persons with disabilities, while other studies included tools to verbally assess health literacy or critique material with established coding forms (Chen et al., 2013). As observed in this study, didactic instruction paired with scenario-based application exercises may primarily elicit learning in three domains of Fink's taxonomy: foundational knowledge, integration, and human dimension.

Future Development

The present findings provide insight into ways the assignment could be further developed. First, zero student statements corresponded with the caring domain of Fink's taxonomy. Gill (2007) characterized

culturally competent professionals as individuals empowered to "challenge restrictive social structures" (p. 283), which requires a genuine interest in understanding or addressing larger societal issues. In our sample, students did not comment on ways to solve systemic issues surrounding inequitable access to health information. Future iterations of the assignment may seek to elucidate this issue for students or explore contributing factors proximal to themselves. We might anticipate learning in the caring domain to be demonstrated by students' concern or frustration with systemic forms of bias, or an expressed desire to advocate for change (Cardinal, 2016; James, 2021). More explicit scaffolding may stimulate reflective thinking and significant learning across this additional domain of Fink's taxonomy (Coulson & Harvey, 2013). Towards that end, we revised the post-assignment reflection prompts, and trialed them in subsequent course sections taught by the first author. The original and revised prompts are detailed in Table 3. Questions eliciting reflection in the caring domain prompt students to consider their reactions to the inaccessibility and non-inclusivity of the example message presented for the assignment, as well as the reaction or feelings of an end-user with a disability.

Table 3

Reflection Question Prompts

Original Assignment	**Fink's Domain Targeted**
What did you learn from this activity? In what ways could you use the tools for effective communication introduced in this activity in your future career or personal life?	These were not written with Fink's taxonomy in mind. The findings of the present study suggest these original prompts may elicit statements which align with several domains.
Revised Assignment	**Fink's Domain Targeted**
[Now in use]. What was your reaction (feelings, or thoughts) to this assignment?	Caring domain (may also target human dimension domain)
[Now in use]. What did you learn from this activity? In your answer, use terminology and concepts introduced in this activity and provide specific examples/observations.	Foundational knowledge (may also target human dimension domain)
[Now in use]. Think about a person with a disability who might encounter your promotional message. How would their experience differ if they were presented with your first draft compared to your revised draft of the example message?	Caring domain (may also target human dimension)
[Now in use]. In what ways might the inaccessibility and non-inclusiveness of physical activity promotion messages impact people with disabilities?	Foundational knowledge domain (may also target caring domain)
[Now in use]. In what ways could you use what you have learned in this assignment in your personal and professional life?	Integration domain (may also target application domain)

[Planned for future use]. What challenges did you have in completing your revised PA promotional messages? Explain your response.	Application domain (may also target human dimension domain)
[Planned for future use]. What strategies did you use (or could you use) to overcome the challenges presented above if encountered in the future? Explain your response.	Application domain (may also target human dimension domain)

Note: [1]The domains of Fink's taxonomy are not conceptualized as mutually exclusive or sequential, but rather represent developmental processes supporting continued and integrative learning which learners recognized as relevant to their lives (Fallahi & LaMonaca, 2009; Fink 2013).

Additional considerations for future development are the absence, or minimal presence, of student statements aligned with the self-determination and application domains, respectively. Chen et al. (2013) reported students discovered creative solutions to rewriting material at target reading levels, such as by replacing blocks of text with graphics or bullet-point lists. Future iterations of the assignment may elicit problem solving through innovative thinking. Tasking students to meet a greater array of guidelines or precise benchmarks could help (e.g., to write at two reading grade levels: 8th and 5th grade). Moreover, prompting students to seek out resources and examples on their own may empower life-long learners (i.e., self-determination). Similar effects may be achieved by tasking students to revise or create real-world material, in addition to mock material, for programs they are personally connected to (Chen et al., 2013).

Study Limitations and Future Research

There are limitations to the present study, which should guide the interpretation of its results and the direction of future research. First, the present study was delimited to one course at one university and is not generalizable to broader student populations. Moreover, there was potential for omission bias, wherein students may have experienced learning across Fink's domains in ways not reflected in their written work. We sought to address this limitation through more targeted reflection questions in subsequent iterations of the assignment (Table 3). Concerning the caring domain, we now ask students to imagine the experience that persons with disabilities might have after encountering both versions of the example promotional message (i.e., the initial draft and their revised version). Concerning the integration domain, we revised the question on future use to focus on how students could use what they have learned in their personal or professional lives, rather than which tool they would use. This change may elicit broader contemplation of ways the lessons taught are relevant to students' future endeavors, inclusive of concepts, prevalence data, tools, and techniques. Finally, we plan to add two additional prompts for reflection to a future iteration of the assignment, which focus on (a) any challenges students may have experienced with revising the PA promotional messages and (b) any strategies they used to address them. Qualitative research suggests that such prompts may capture learning within the application domain of learning (Chen et al., 2013).

Beyond expanding the reflection prompts used, future efforts could also probe for learning through interviews or the examination of additional student artifacts (McNamara & Haegele, 2021). In support of this step, we have planned additional evaluations for our assignment, including examining the extent to which the students' revised promotional messages complied (and improved adherence) with inclusivity and accessibility standards (i.e., additional measure of foundational knowledge and skill mastery were added).

A second limitation of the present study was using reflection questions on the experience of revising promotional PA messages as a proxy measure of cultural competency. Future efforts to capture students' development in specific cultural competency areas is needed. This may include the adaption of questionnaires designed to measure

precise dimensions of cultural competency (Robey et al., 2013). Such questionnaires could elicit students to contemplate personal biases towards a population group, as well as describe factors beyond disability that complicates service access and utilization (Robey et al., 2013). Moreover, evidenced learning specific to cultural competency would entail expressing an understanding of what a population segment values about PA and what they prioritize in promoting it for themselves or those they care for (Robey et al, 2013). A direct measure of cultural competency may ask students to consider the future, anticipate issues they may face, and identify ways they may mitigate these challenges. Notably, this latter measure may capture learning within the self-determination domain of Fink's taxonomy.

Finally, limited research in kinesiology appears to focus on the objectives of the present study, despite a clear need to (Bruning et al., 2020; Thomas et al., 2021b). A 2019 systematic review contained no publications within kinesiology focused journals (Saunders et al., 2019). Moreover, future research using experimental study designs with pre-post follow-up questions is needed (Saunders et al., 2019). The inclusion of our assignment along with both iterations of our reflection questions should support future experimental research (see Table 3 and Appendix A; for further example, see Kamp & Thomas, 2022).

Conclusion

As teacher-researchers, we responded to the call for reflective pedagogy (Bailey, 2012) and made transparent our process of assignment development and evaluation (Trigwell et al., 2000). Evidence for learning across four of Fink's (2013) six domains demonstrate the course assignments' potential for developing kinesiology undergraduates' cultural competency. The apparent gaps we observed in learning within the caring domain and self-determination domain, as well as the minimal learning evidenced within the integration and application domains, inform ways to further develop assignments like the one investigated in the present study.

Footnotes

We use the term competency in reference to the specific core educational standards proposed by the AKA, but the reader should be aware they are called, "core elements," within the source article. Terminology in reference to these core elements may vary, such as when they are adopted as specific course learning objectives or program learning outcomes.

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* Indicates a reference which appears within the Appendix exclusively.

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Appendix A

Note: As mentioned within the Methods section, this appendix presents the lesson plan (i.e., in-class activity) and homework (i.e., outside of class activity) delivered to students; this appendix contains the full reference list provided to students, and all references presented in this appendix also appear in the Reference section of the companion article.

SUBJECT: Kinesiology

POTENTIAL COURSES: Adapted physical education/activity, Sport for exceptional athletes, Diversity and Sport, Technology applications in sport, coaching education or physical education

CONTENT LEVEL: Introductory, Undergraduate

ASSIGNMENT TITLE: Inclusive physical activity promotion message design

Lecture content for instructors

Reading grade level. The majority of US physical activity promotion material is written near, or above, the eleventh-grade reading level (Thomas et al., 2018; Thomas et al., 2021b). This is problematic given the average US adult comfortably reads at an eighth-grade reading level (Kutner et al., 2006) and over 30% of US adults have low health literacy (i.e., somewhat basic to no basic health literacy; Centers for Disease Control and Prevention [CDC], 2022). Moreover, the majority of PA promotion material are written seven reading grade levels *above* recommendations from the American Medical Association (AMA) and others. The AMA suggests health promotion material should not exceed the sixth-grade reading level for effective communication (Han & Carayannopoulos, 2020). The optimal reading grade level cut-point advised for health-related material has somewhat varied among health authorities and overtime (Han & Carayannopoulos, 2020). The authors of this article use the cut-points by Doak et al. (1996): i.e., less than sixth grade (Superior), between sixth and eighth grade (Adequate), above eighth

grade (Not Suitable). It is possible to write at/below the eighth and fifth grade reading level and maintain accuracy; moreover, it can be done in a way that would not offend adults (Cardinal & Sachs, 1992; Johnson & Stern; 2004; Tse et al., 2021). The readability gap between professionally disseminated material and end-user comfort may compound inequities in health information access for marginalized populations.

Accessibility. Digital accessibility for website and social media is defined as the extent to which all consumers can easily navigate, comprehend, and engage with information (Education and Outreach Working Group, 2016). The Web Content Accessibility Guidelines (WCAG) detail best practices to ensure web-based platforms are accessible to individuals with disabilities (a quick reference guide is available from W3C Web Accessibility Initiative at www.W3C.org). WCAG Guidelines include text font and color contrast to enhance visibility of content by individuals with low vision. Additionally, guidelines include document formatting to ensure screen reader compatibility. Screen readers are a form of assistive technology that interface with digital platforms to read aloud text or facilitate hands-free page navigation. WCAG guidelines include use of alternative text for images, which requires adding metadata to images that can be read aloud by a screen reader. Specific guidelines for social media are also available (e.g. Roselli, 2018; National Center on Health, Physical Activity and Disability [NCHPAD], n.d). A practitioner's guide to using digital accessibility and inclusion features is available from Ross et al. (in press). To create accessible physical activity promotion messages, kinesiology professionals need to make design decisions (e.g. font, color, formatting) in compliance with WCAG guidelines.

Inclusion. While accessibility is about the opportunity to obtain and understand information, inclusion is signified by promotional materials that represent and respect individuals with disabilities as valued members of the physical activity community (NCHPAD, n.d.). *The Commitment to Inclusion Guidelines* center around the representation of disability communities in content, images, and program offerings (Kraus & Jans, 2014). For physical activity promotion on social media, NCHPAD advises messages include programs or resources that highlight or focus on individuals with disabilities, periodic features of disabled athletes or content applicable to disability community members and posting photos of individuals with disabilities as active participants (NCHPAD, n.d.).

Draft Assignment

OVERVIEW

Health literacy is the skills and confidence people embody to find, understand, and act on health-promoting information (Santana et al., 2021). As a kinesiology professional, you need to communicate information about physical fitness and routine physical activity behaviors that will promote clients', athletes', or students' overall

wellbeing. In our current "digital age," this information is increasingly communicated on websites and social media platforms.

To be effective, digital physical activity messages should be culturally responsive to diverse ways people obtain, process, and understand information. Digital messages need to be **accessible** so that everyone has *opportunity to obtain and engage with the information.* The information needs to be **readable** and *easy to comprehend so that all individuals can effectively make health-decisions.* Finally, messaging needs to be **inclusive** of diverse cultures, including individuals with disabilities, so that potential clients, athletes or students feel *represented and respected by the health promotion message*.

Learning objectives: By the end of this assignment, you will be able to…

- Describe readability, accessibility, and disability inclusivity guidelines for physical activity messaging on digital platforms (e.g. websites, social media),
- Evaluate digital messaging for compliance with best-practice guidelines, and
- Create a physical activity promotion message compliant with readability, accessibility, and disability inclusivity guidelines.

Instructions

- **Part I - In-class.** We will review sample physical activity promotion messaging and best practices guidelines.
- **Part II - Take-home** (individual assignment). You will revise the example messages to meet guidelines. Then you will reflect on your learning and how you might apply these skills as a kinesiology professional.

PART I

As a group, review <u>one</u> social media example below and complete question set 1 & 2. Both are examples of physical activity promotion messages from a hypothetical program: "Active Kids!"

Facebook post:

ACTIVE KIDS!

March 20, 2021

This week our skill focus stations were reaction time, jumping and landing. We played a ton of team games and fitness activities as well. I'm amazed by their energy and effort every day doing what we do best…moving! Active Kids! campers are getting in their 60 minutes a day of aerobic physical activity to help meet the national

recommendations for 6- to 17-year-olds of at least 3-days a week of moderate to vigorous physical activity for health benefits! #stayactive #healthyliving #kidsinmotion

Twitter Post:

ActiveKids @activekids Our activekids! campers were energized by our first week of strength training @stronggym! This great opportunity for adolescents of all skill levels helped them to build muscle strength and endurance through resistance training. We rotated through 1-2 sets per exercise, 10-15 reps each, with 2-3 minutes rests between sets. #strongkids 💪we 😁 are 👏strong 👏kids!

QUESTION SET #1:

1. What is the key idea being communicated in the message?
2. Was it easy for you to identify and understand the key idea? Why or why not?
3. Would the key idea be easy to identify and relate to for someone who is not a student or professional of physical education or sport education? Why or why not?

QUESTION SET #2:

1. What **reading grade level** do you think the Facebook and Twitter post are each written at?
    a. See how close your prediction is. Use the webtool below (Adamovic, 2009).
    First, paste the text into the textbox on this webpage: https://www.online-utility.org/english/readability_test_and_improve.jsp.
    Second, click the button titled, "Process text." It is toward the page bottom.
    Third, read the results for the "SMOG" formula (it is highly valid and reliable).
2. Using the guidelines below, how would you rate the example Facebook/Twitter post on **accessibility** for people with disabilities on a scale of 1-5 (highest = 5)? Why?

Accessibility feature	Guideline description	Met / Not met
Alternative text	Adds written description of an image that can be read aloud by a	

	screen reader or assistive technology.	
High contrast	Changes text and background color (invert color to black background, white text)	
Screen reader compatibility	Use meaningful headings and page organization. Use bullet points for lists rather than just indenting. Use proper sentence structure and formatting, including always ending sentences with a full stop punctuation mark (e.g., period or exclamation mark). Use CamelCase for all hashtags, #ForExample. Avoid embedding symbols or images into text. For example, "This activity will be so 👏 much 👏 fun!😍 " is read by a screen reader as "This activity will be so clapping hand much clapping hands fun! smiling face."	

3. Using the guidelines below, how would you rate the example Facebook/Twitter post on the next page for **inclusivity** of people with disabilities on a scale of 1-5 (highest = 5)? Why?

Inclusivity feature	Guideline description	Met / Not met
One	Post features individual with disabilities and/or aspects of the disability community.	
Two	When highlighting/promoting/linking to other content, resources (content, links, images, videos, buttons, badges, etc.) are included that focus on or highlight individuals with disabilities and/or aspects of the disability community.	
Three	Images include representation of individuals with disabilities and/or aspect of the disability community	
Four	Language is respectful, strength-based, and indicates individuals with disabilities are valued members of the fitness community.	

PART II - Homework

Instructions:

- ☐ Complete assigned reading/videos.
- ☐ Re-write the Facebook or Twitter message to meet readability, accessibility and disability inclusivity guidelines.
- ☐ Respond to reflection questions on what you learned from this assignment and how you can apply it as a kinesiology professional.

READABILITY

READ. People routinely turn to the internet for physical activity health information. As an educator, you may connect students/clients with websites or printed materials to share health-promoting advice. It is critical that the information shared is accessible to a wide audience. Optimizing the *readability* of your materials ensures equitable opportunity to reap the health benefits of the information shared. *Readability* is often measured by reading grade level. Most adults in the United States comfortably read at an eighth-grade reading level.

WATCH. "2017 What dreams are made of, the Literacy Project" (6:10 minutes, The Literacy Project Foundation, 2022)

> *"The statistics on literacy underscore the critical need to address illiteracy in the United States:*
>
> - *Currently, 45 million Americans are functionally illiterate and cannot read above a fifth-grade level*
> - *50% of adults cannot read a book written at an eighth-grade level*
> - *57% of students failed the California Standards Test in English*
> - *1/3 of fourth-graders reach the proficient reading level*
> - *25% of students in California school systems are able to perform basic reading skills*
> - *85% of juvenile offenders have problems reading*
> - *3 out of 5 people in American prisons can't read*
> - *3 out of 4 people on welfare can't read*
>
> *(Sources: National Institute for Literacy, National Center for Adult Literacy, The Literacy Company, U.S. Census Bureau)"*

The U.S. has committed to improving access to health-related information with the *2010 Plain Writing Act (US Census Bureau, 2021a),* and the 2010 *National Action Plan to Improve Health Literacy* (Baur, 2010).

What does this mean for physical & health education?

Dr. Thomas and fellow researchers critically examined physical activity-related educational resources on the internet (Thomas & Cardinal, 2018). They found:

- 2.5% of resources were written at an optimal or superior (≤ 5th grade) reading level,
- 42.3% were satisfactory or adequate (6^{th} – 8^{th} grade reading level), and
- 55.2% were written at an unsatisfactory or not suitable (>8th grade) reading level

"The majority of physical activity educational resources [on the internet] are written at levels that are too complex for most U.S. adults to easily read and understand." *-Thomas & Cardinal, 2018, p.110*

Plain language summaries are written to effectively communicate information and empower the consumer to make decisions based on that information. Everyone benefits from plain language summaries, not just people with disabilities.

WATCH. Video summary of "Analyzing suitability: are adult web resources on physical activity clear and useful?" (6:16 minutes; Video transcript and captions available) By Smith & Thomas [2020, September 28]. The presenters share their research findings and give advice for professionals when developing physical activity education materials.)

Dr. Thomas (2020, February 9) shares tips for writing at an 8th grade reading level or lower:

1. As much as possible, reduce the number of polysyllable words per sentence
2. Use shorter sentences
3. Before switching topics or ideas, provide context first (e.g., explains the situation)
4. Use a direct (active) writing style
5. Limit technical words. If used, define them. In general, explain ideas.
6. Use word cues (headers and subheadings)
7. Provide graphics with caption that explains the purpose of the graphics
8. State the "take home message" at the beginning.

REVIEW. More tips and resources:

- 10 tips for writing plain language summaries from the U.S. Census Bureau (2021b)
- Choose your words carefully from PlainLanguage.gov
- 10 guidelines for writing about people with disabilities from the ADA National Network (2018)
- Free Online Readability Calculator (Online-utility.org, Adamovic, 2009)

ACCESSIBILITY & INCLUSION

READ. Digital accessibility for website and social media is defined as the extent to which all consumers can easily navigate, comprehend, and engage with information (Education and Outreach Working Group, 2016). Section 508 of the Rehabilitation Act "requires that individuals with disabilities, who are Federal employees & members of the public seeking information or services from a Federal agency, have access to and use of information and data [i.e. information and communication technology, ICT] that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency."

ICT includes:

- Computer hardware and software
- Internet and intranet websites
- Online trainings, Webinars and teleconferencing
- Multimedia such as PDFs, video, phone systems and copiers

The Web Accessibility Initiative (WAI) is an international organization working to develop Web Content Accessibility Guidelines (Henry & Dick, 2018). Their mission is to make the benefits of the Web - human communication, commerce, and opportunities to share knowledge - available to all people, whatever hardware, software, network infrastructure, native language, culture, geographic location, or physical or mental ability." The overarching principles include:

1. Information is perceivable and accessible through varied user interfaces
2. Information is operable and can be navigated through varied user interfaces
3. Information is understandable, is robust in content and has reliable interpretations through varied user interfaces.

WATCH. An example evaluation of the accessibility of digital application tools for use in physical education classrooms, "Equitable access to student curriculum: App Accessibility & Inclusion features" (39:15 minutes, video captions and transcripts available; Ross, Ross, Abrahamson, & Wyant, 2021).

REVIEW. Guidelines for accessibility and disability inclusion.

- Guidelines for Social media accessibility from Digital Accessibility, Princeton University, 2020. See also Improving your Tweet accessibility (Roselli 2018).
- Guidelines for increasing the inclusiveness of Social Media-based health communication (NCHPAD, n.d) to be more representative of people with disabilities.
    - Examples: Facebook & Twitter

HOMEWORK

REVISE. For each example message (i.e., Twitter and Facebook post), write a revised message that meets guidelines within the following categories: readability, accessibility, and disability inclusivity guidelines. Your message must:

- ☐ Convey the same meaning as the original
- ☐ Be appropriate reading grade level
- ☐ Include inclusive messaging for children with disabilities
- ☐ Include an accessible and inclusive image
- ☐ Include an accessible hashtag
- ☐ Include at least two emojis

Facebook Post: Active Kids
[insert image] Image description =
Reading grade level =

Twitter Post: @activekids
[insert image] Image description =
Reading grade level =

REFLECT. Respond to <u>each</u> of the following questions in 50 -150 words. Your response should include a position statement and supporting examples. Use terminology and concepts from this assignment and course materials. Strengthen your reflection by using specific examples of your thoughts, reactions, beliefs, perspectives and observations.

1. What was your reaction (feelings, or thoughts) to this assignment?
2. What did you learn from this activity?
3. Think about a person with a disability who might encounter your promotional message. How would their experience differ if they were presented with the first example message compared to your revised version?
4. In what ways might the <u>in</u>accessibility and <u>non-</u>inclusiveness of physical activity promotion messages impact people with disabilities?
5. In what ways could you use what you have learned in this assignment in your personal and professional life?