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ENCOURAGING AWARENESS AND EMPATHY FOR DIVERSITY THROUGH EXPERIENTIAL PRACTICED SIMULATIONS

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This paper describes an experiential, simulation-based learning activity designed to encourage graduate education students' development of empathy for and awareness of diverse student populations. In order to allow students to take the "role of the other," they were placed into different situations where they had to complete a simple activity with some simulated element experienced by a different audience. Those differences included visual impairments, auditory impairments, dyslexia, and serving as English learners. The empathy activity was situated in a course that centered around designing multimedia for learning and included the instruction of the design thinking process and designing for universal audiences as well. Upon completion of the simulated experience, students reflected with the group about their thoughts, feelings, struggles, and the implications of their experience on the future of their designs in instructional technology and teacher education. Throughout this design case, we discovered that taking thoughtful design measures into consideration can help instruct challenging and difficult abstract concepts such as empathy.

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INTRODUCTION

We designed a simulation-based activity intended to increase empathy in university graduate education students who were either in-service teachers or were studying to become instructional technologists or designers. Empathy is difficult to instruct but is a necessary part of teaching and the instructional design process. Understanding diversity is essential to successful design and teaching, and this empathy activity was created to encourage students' affective understanding of diverse populations. Diverse populations, in terms of race and ethnicity; gender, identity, and sexuality; religious affiliations; socio-economic statuses; abilities and disabilities; language learning; immigration status; and many others are changing exponentially throughout the world. Individuals are often slow to adapt to how these changes impact their situations, lives, and experiences. Students of all ages should be offered diversity education opportunities to help them prepare for the future.

We subscribe to the perspective stated by Li and colleagues (2015) that empathy activities should be authentic, relevant, and engaging. Including those opportunities in interdisciplinary courses at all levels can draw students' attention and awareness to their own prejudices and biases and help develop their empathy for others (Li et al., 2015). The accompanying knowledge, skills, and attitudes/beliefs (KSABs) of this type of learning can benefit all individuals by allowing them to gain competencies in understanding cultural differences, communication habits, learning challenges, and divergent values and norms of people different from themselves.

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Empathy activities should be designed to increase internal self-reflective processes, such that the individuals engaging in the activities have the opportunity to "walk in someone else's shoes" through a virtual, simulated experiential opportunity. Our goal is for our students to become culturally aware of other people and their differences and to also become more cognizant of their own biases through the development of empathy and perspective-taking. This takes active, engaged participation and practice recognizing their role and the roles of others. These practices can make students more thoughtful and aware of individual differences and how those differences can be positive and beneficial when collaborating, communicating, and connecting with others unlike ourselves.

Our solution was to develop a simulation-based empathy activity to encourage our students to see that there are knowledge components of each of these differences in individuals, as well as skills (such as communication and collaboration) needed to navigate interactions to connect with people who were very unlike ourselves. However, we ultimately wanted our students to change, alter, or develop more positive attitudes towards people who are different from themselves and become aware of their own biases.

We decided to have students explore and practice these KSABs in a safe, structured simulation. In order to support students in building empathy, they were placed into different situations where they had to complete a simple activity surrounding an arbitrary topic (farming) with some simulated element experienced by a different audience. Those differences included visual impairments, auditory impairments, dyslexia, and serving as English learners (ELs).

In order to be thoughtful, ethical, and respectful of the simulated differences and difficulties the students would explore, an expert in the field of special education contributed to the design of this empathy activity. An expert in the field of English learning (EL) was also consulted but did not join the design team. Students were asked to visit a website and complete the following tasks: read a passage, watch a video, answer questions, and draw a picture about the topic with one of those challenges in place. Upon completion, students reflected with the group about their thoughts, feelings, struggles, and the implications of their experience on the future of their designs in their instructional technology and teacher education training.

Importance of the Design

We feel that sharing the development of this design process is important, as empathy is a central attitude needed for proper diversity, equity, inclusion, and belonging (DEIB) work. DEIB work encompasses many seen and unseen intersecting identities that may not have been listed here. Identifying and addressing individuality, differences, and intersectionalities related to the human experience can encourage learners to accept and understand perspectives unlike their own. Building these into the curriculum and courses can positively impact learners and future designers (Vallera et al., 2019; Vallera & Lewis, 2019).

As a community, designers can benefit from our design process by understanding how to teach empathy repertoires. Teaching empathy can be challenging, as it is unique to each individual, and it is important for designers to develop a toolkit for empathy building, particularly within cultures that are increasingly dedicated to civil rights change. Further, encouraging others such as students to be more aware of and empathetic toward such differences can impact their performance in their future workplace, their interactions with others, and the relationships they will build throughout their lifetimes.

THE DESIGN CONTEXT

We understand the importance of helping students in higher education, who may later teach or design instruction, understand the importance of humility and perspective-taking. We wanted to encourage cultural humility and have our students be aware of their own place, their own differences, their own intersectionalities, and become more aware of what they do not know about others. Our challenge was to find out how to teach these things. Teaching competence and cultural humility are huge undertakings and were not the goals of our design, as we were aiming instead for recognition and awareness. We turned our focus to empathy development.

We began by asking the question, "How can we teach empathy?" Since there is no universal definition of empathy, we did not know exactly how to go about teaching an abstract attitude in an appropriate way that provides both a successful and assessable experience. We did know, however, that several researchers and designers before us had tried and been successful in different applications (see Lu et al., 2011; Warren, 2018; Whitford & Emerson, 2019). Our desired objectives were relatively simple and straightforward. We used research in psychology, education, and the learning sciences to guide our decision-making throughout this design experience.

Ultimately, we wanted our students to become more empathetic of their audiences and more thoughtful designers. To do that, we wanted to give them an authentic, simulated, experiential learning opportunity that other students might experience so that they could internalize some of those feelings themselves.

Design Team

I first became interested and invested in empathy, diversity awareness, and instruction when I was a sociology instructor about a decade ago. I was teaching at a community college

that had an incredibly strong program geared towards students who were deaf or hearing impaired. I was thrilled and fortunate to have had the opportunity to be one of the instructors for these students. I thought that my ability to speak slowly, to include detailed notes external to my lectures, and to provide multimedia resources for my students was going to make me a well-rounded faculty member aware of students' diverse needs. I found out very quickly there was so much more than just adding additional resources and materials.

I was teaching a lesson on leadership and group characteristics using Dr. Seuss's story about *The Sneetches*. I found a video on YouTube and was thrilled that I could demonstrate these concepts using media. What I did not realize was that YouTube did not have reliable closed captioning at the time, and transcripts were unavailable. (I did own the book but did not bring it to class.) I watched as my student turned his attention from the video to his interpreter and back to the video completely confused. The interpreter was trying so hard to sign "sneetches" and other imaginary words that meant absolutely nothing to my student. My activity was a complete failure. And like the Sneetches, I learned a hard lesson that day; we as educators have to be more thoughtful and empathetic of our students' needs.

As my research changed and my focus moved from sociology to education and instructional design, I began to notice the lack of development of empathy and tolerance skills in education. Throughout my training in instructional and learning design, I learned to adapt and differentiate materials, activities, assessments, and delivery. I made it a priority that my research and teaching include all individuals' strengths and differences while recognizing students' diverse intersectionalities. I learned from these audiences several important lessons about how materials and activities must be accessible to those with differing abilities, as well as relevant to their lives, useful in their futures, and representative of their intersecting identities. Representation and messaging are impactful to learners in the design of their learning environments, materials, and curricula; it truly matters to students. However, surveys of learners in the graduate program I manage for teacher educators and practicing instructional designers and technologists indicated there was a need and desire for more work to be done to include Universal Design for Learning and developing legally compliant materials for learners with disabilities.

I asked my colleague, Noor Syed, to join me to develop materials that would meet my student's needs for learning about equity and diversity awareness through perspective-taking designed to increase empathy. Noor is a certified general and special education professor, as well as a board-certified and licensed behavior analyst. For the last 15 years, Noor has worked with individuals with intellectual and developmental disabilities from 18 months to adulthood as a classroom teacher, 1:1 therapist, supervisor, and administrator. She previously launched a clinic for children with autism spectrum disorder from early intervention through school-aged and currently directs a center dedicated to building universal support in a higher education environment for neurodivergent students. She also coordinates a master's program in behavior analysis that emphasized compassionate, empathic, and humble therapy.

Several graduate students in my instructional design and instructional technology program were also consulted throughout the development of the project prior to its implementation in order to provide us with feedback from their perspectives. Two students were not native English speakers, so their input was of particular importance. We wanted to make sure we were preparing students to take the perspective of others in a safe, appropriate, and respectful way.

DESIGN NARRATIVE

Preliminary Design Discussions

Our initial team meetings involved brainstorming the importance of building empathy within graduate coursework and included a thorough review of the applicable literature. We then discussed what definition(s) of empathy we would employ, what skills might help us build empathy in others, how we could instruct empathy as a mindset, how we could connect empathy to diversity and differences appropriately and thoughtfully, where we could build empathetic practices into students' learning, and how we would measure successes of the experience. We decided that Theresa Wiseman's (1996) definition of empathy was the most appropriate for our needs, as her research involved the teaching of empathy to students (an audience similar to our own).

I wanted to add Wiseman's components of empathy development to my courses in instructional design and technology but needed to understand how to do that meaningfully and respectfully. I decided to begin by incorporating empathy into the Multimedia Programming and Resource Development graduate courses. I selected this course because it was centered around designing multimedia for learning and included the instruction of the design thinking process and designing for universal audiences as well. Empathy was the first phase of the design thinking process model we explored (using Stanford's d.school model), so students were exposed to it beginning in the second week of the fifteen-week semester. Similarly, empathy was meaningfully connected to the specific design of projects students were building for their own audiences using the Universal Design for Learning framework.

We then had to select what individual differences to include and how we would build the experiential simulation. We chose vision, auditory, language learning, and dyslexia due both to the high prevalence of these characteristics

in schools (NCES, 2021b) and our ability to create an environment that simulates these experiences based on our expertise and focal research areas. We then explored CAST's Universal Design for Learning (UDL) as a framework for developing the simulated experience. CAST's UDL is considered the first model for inclusive design that was based on Vygotsky's work in developmental psychology and architectural universal design (OCALI, n.d.).

It is important to note that were many experiences we could have selected to explore, and we are not marginalizing or prioritizing any disabilities or differences students may experience over others. The differences we selected for this case are known to impact student learning, and we could replicate them for this activity. These differences also required our graduate learners to practice empathy when designing for inclusion in their own projects. Similarly, while we recognize the intersectionality all people experience, we did not design for intersectional identities in this case.

Design Decisions

Our review of the existing literature reaffirmed our need to use empathy as a tool for helping students with perspective-taking and the development of self-awareness toward bias. For teachers and budding instructional designers and technologists, the need for engaging in empathic practices is "at the heart of purposeful teaching, vital to personal happiness and daily attitude renewal, and essential to inspiring children to care about their own learning" (Boyer, 2010, p. 313). It is also important to their design of instruction for future audiences. This increases in importance as individuals continue to work with diverse populations in the US and throughout the world.

Researchers have also investigated the impact of using empathy practices to improve cultural sensitivity, while also decreasing implicit bias (Lu et al., 2011; Whitford & Emerson, 2019). For example, Lu and colleagues (2011) assessed the effects of an experiential instructional model which integrated mindfulness techniques into teaching empathic and culturally sensitive communication skills to social work students. Exercises included observed breathing and posture awareness. Results indicated that participants "being present" (Lu et al., 2011, p. 98) were able to connect with partners at a heightened capacity. Similarly, Whitford and Emerson (2019) had participants in an experimental group read through ten passages about racism experienced by their peers, while a control group read an article regarding technology integration into science lessons. The study attempted to address concerns regarding discriminatory discipline practices towards culturally and linguistically diverse students and address implicit biases in White female pre-service teachers towards Black individuals. Both groups were subsequently asked to write about how the passages made them feel, and the results indicated a decrease in bias in both groups.

These studies encouraged us to dive into the instruction of empathy more deeply, and we hoped to find a way of impacting our students in the ways previous researchers had. These studies also helped us when deciding how to design our activity for diverse audiences. We will discuss this further in the next section.

Defining empathy

We selected Wiseman's (1996) summarized definition of empathy because it was the most succinct and was designed to instruct students much like our own. Further, we found this definition, based on our experiences as an instructional design technologist and special educator, to be relatively universal in nature. Wiseman (1996) discussed the need for the teaching of empathy but noted the confusion involved in understanding whether it is a trait or a state. According to Wiseman (1996), it is both, and "People have a disposition to be empathic, but whether they are or not depends on situational factors" (p. 1165). Wiseman (1996) also included the following four elements, which align closely with our focus on perspective-taking:

- See the world as others see it;
- Non-judgmental;
- Understanding another's feelings;
- Communicate the understanding (p. 1165).

It is important that perspective-taking, or taking the role of the other, is utilized when developing empathy. All four of these elements encourage individuals to take the perspective of others in order to better understand how they are thinking and feeling without leading with their own single-minded biases. To develop empathy, we created a simulation-based empathy activity, which will be discussed in depth in subsequent sections.

According to Warren (2018), empathy development is helpful for teachers to improve their culturally responsive pedagogical practices. Becoming more empathetic to students' backgrounds may allow teachers to more effectively communicate and respond to culturally diverse youth. Warren (2018) argues in favor of "responding flexibly" (p. 179) as a class of behaviors versus the ability to achieve cultural humility; in other words, empathic moment-to-moment responses across diverse populations is a repertoire of skills instead of one skill that can be obtained. Taking the perspective of another can improve the development of empathy by "anchoring" it in interactions with others (Warren, 2018). Being able to understand another's experiences can decrease personal bias and better prepare individuals to work with diverse audiences. We decided to replicate common challenges students face so our "average" students could experience an activity from that perspective. Therefore, we designed the empathy activity in which tasks were created

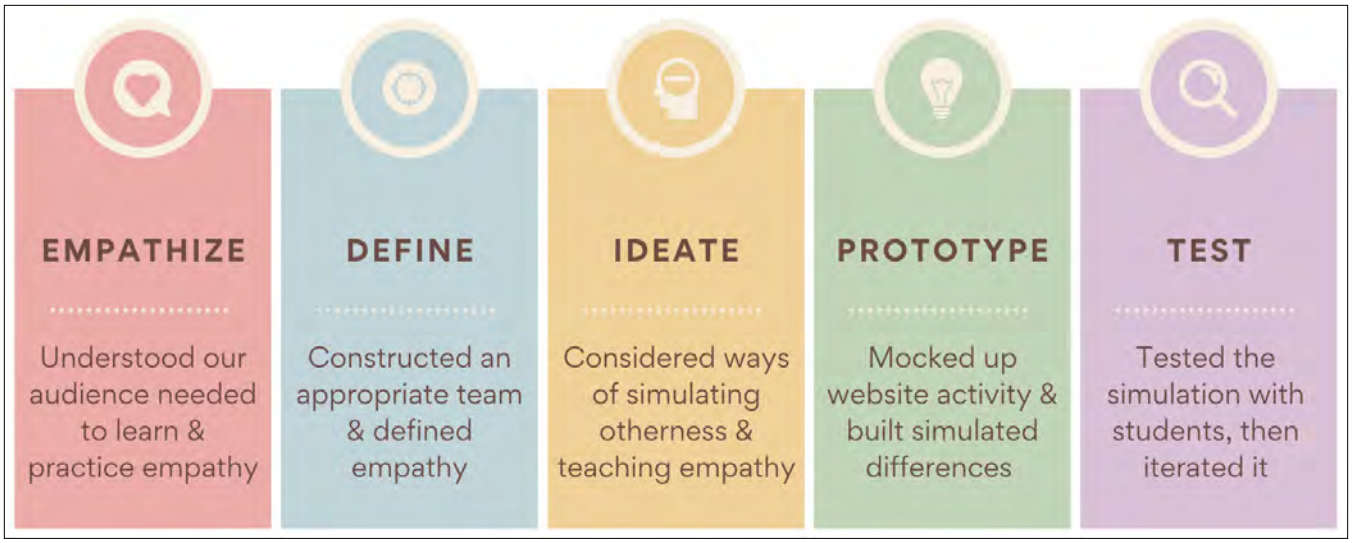

FIGURE 1. Our design process model.

that would mirror the way individuals with disabilities or differences may access their environment.

Design thinking as a tool

As a human-centered designer, I want my instructional materials to not only meet the needs of my audience but also appeal to them and engage them to want to discover more. I must consider: students' needs and wants, what they already know, what they will do, how information should be presented, and what it all should look like. I often utilize design thinking (or iterative design) and backward design (or Understanding by Design) models to focus on human-centered needs and lead with: "What do I want my students to know, be able to do, and think/feel by the end of this lesson/unit/module/course?" These first steps focus heavily on being empathetic to the audience's needs. I also build with integration in mind—integration of both content/subject areas, as well as integration of knowledge, skills, and attitude/beliefs embedded in the learning. This felt like an appropriate pathway to developing students' empathy as well.

Design thinking is a human-centered design process that focuses first on understanding the audience's needs prior to identifying a wicked problem and designing an appropriate solution (Brown, 2009). While regularly used by entrepreneurs, engineers, designers, and technology developers, design thinking fits nicely into education, so we felt it aligned with our needs nicely. Lessons we have created using design thinking strategies encourage learners to investigate wicked problems they deem interesting and necessary rather than those predefined by instructors (Vallera & Sadat, 2020). Design thinking for learning can "serve as a method of personalizing instruction geared toward individuals' specific needs and desires… [by encouraging] educators to build learning in a learner-centered, empathetic manner" (Vallera & Sadat, 2020, p. 84). We discuss how we focused our design on learners' needs in the next section.

We decided to use empathy and Stanford's d.school design thinking process to identify topics, tools, learning strategies, and teaching methods our audiences would be motivated by to encourage their participation and active ownership of their learning. The d.school model outlines design to include: empathy, definition, ideation, prototyping, and testing. We hoped that using and teaching design thinking strategies could better improve individuals' empathy and awareness of diverse audiences' needs and using experiential, authentic opportunities could model the use of empathy and the design thinking process. The design thinking model also helped us shape our design. See Figure 1 for our design process model aligned to the design thinking model.

Including universal design for learning and appropriate inclusions

Asking our graduate students to explore a simulation-based activity from a different perspective or disability, including vision, auditory, language learning, and dyslexia, encouraged them to experience the needs of another and gain a global understanding of the necessary corresponding learning supports. According to the literature and research reviewed in designing this activity (e.g., Warren, 2018; Wiseman, 1996), experiential learning opportunities are critical to building empathy. We believed it was incredibly important to give graduate students an understanding of different situations and disabilities. In the fall of 2018, there were 5 million ELs in US public schools, or roughly 10.2% of the student population (National Center for Education Statistics [NCES], 2021a). Similarly, disabilities affect 7.3 million school-aged students in the United States, or roughly 14% of the population (NCES, 2021b). Dyslexia is one of the most common learning disabilities, accounting for 80-90% of individuals and "affects

20% of the population" (The Yale Center for Dyslexia and Creativity, 2017). Given these data, we deduced that many of our graduate students would work with at least one student who was classified with a disability or as an EL. Further, we believed that developing empathy for diverse situations and disabilities is best practice for all students in our graduate program and would help them become stronger designers overall. Students with a disability are widely becoming recognized as a diverse population, and educators are being increasingly urged to consider a social model of disability in which the environment is adapted to support different learning styles (Berghs et al., 2019; Harkins et al., 2022).

Experiential and simulation-based learning

Similarly, we understand that simulating activities and events can be incredibly helpful in allowing students to participate in a safe space or place, and then react to the experience the way they may have in the real world, allowing them to self-correct or learn from the experience. According to Kolb (2015), experiential learning "stresses the role of formal education in lifelong learning and the development of individuals to their full potential as citizens, family members, and human beings" (p. 4). Experiential learning, if done thoughtfully and appropriately, can be a key tool for helping students gain empathy for others as well (Arthur & Achenbach, 2002). By providing students with authentic, experiential opportunities and encouraging their reflection, they process the learning through both affective (attitudes/beliefs) and cognitive (knowledge) domains to make learning more meaningful.

We also discovered that experiential learning was an essential tool in diversity work (O'Mara, 2007). Using experiential learning to develop empathy, perspective-taking, and awareness is said to help individuals gain an understanding of others' needs, differences, and viewpoints to address any of their own personal biases (O'Mara, 2007). Experiential learning is an effective strategy for diversity training in that it: (a) encourages students to learn about others through both cognitive and affective domains, (b) encourages the development of self-awareness in authentic situations, and (c) allows individuals to explore similarities and differences in a safe space (Arthur & Achenbach, 2002). Authentic and realistic simulations can provide individuals with low-risk, experiential learning opportunities that provide them with KSABs to be more knowledgeable and thoughtful contributors.

Simulation-based learning techniques were then employed in the design process of the activity. We used the definition of simulation-based learning as an "approximation of practice, [that] allows limitations of learning in real-life situations to be overcome, and can be an effective approach to develop complex skills" (Chernikova et al., 2020, p. 502). Simulations and simulation-based learning are often used to replicate real-world events, giving the participants the opportunity to develop critical thinking, problem-solving, and practical skills they will need in real-life situations. In teaching and learning activities, simulations can be used to support the learning activities more meaningfully. By incorporating simulations into the curriculum, students may achieve the competencies needed to be successful. This strategy has the potential to foster learning and teaching activities that benefit students and increase specific skills and knowledge in the participants.

DESIGN PROCESS

This simulation-based learning activity was designed to give graduate students in an instructional design and teacher education program an experiential opportunity to become aware of and gain empathy for diverse student populations. It was designed using the design thinking process. An empathetic learner analysis was conducted to determine where students struggled when designing projects for diverse audiences. First, students were observed in several courses to determine how well they were incorporating CAST's Universal Design for Learning framework and creating ADA-compliant materials. Additionally, students in the instructional design and instructional technology teacher education program were surveyed to learn more about the skills they wished to develop and many indicated those aligned to compliant design and UDL best practices. These analyses determined that students did not have a great deal of empathy training or experience that could help them take the perspective of their audiences.

From there, the team began designing, prototyping, and testing several activities with the students as to how they encourage empathy development. The activities included exploring individuals' empathy boxes, empathy mapping challenges, interviewing and ethnographic observation practices, and this experiential empathy simulation. Each activity was created to encourage students to consider the perspective of another while thinking through the elements of the design process. The experiential empathy simulation is described here.

Over the course of two academic years, this simulation-based activity was disseminated to students in four separate Multimedia Programming and Resource Development classes—passing through the iteration process following student feedback following each class. Students were asked to complete a simple task while placed in a simulated role of an individual unlike themselves.

Activity Description

While the intention of this project was to undertake the challenging nature of developing awareness of and empathy for diverse audiences by providing simulated experiential opportunities, the activity itself was quite simple. All students

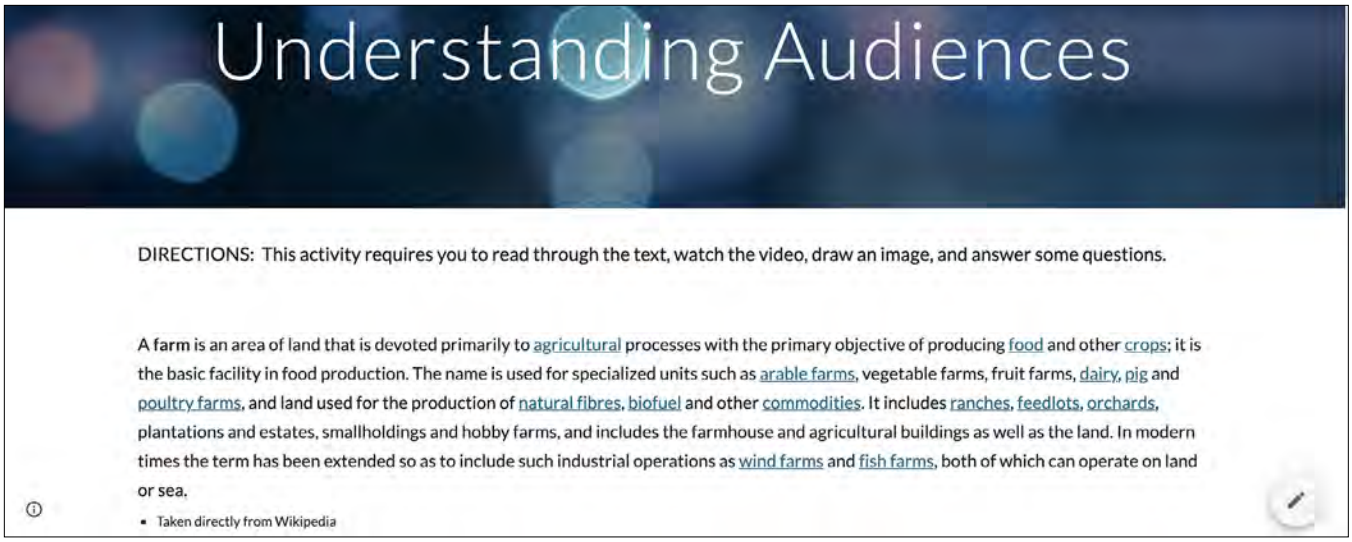

FIGURE 2. Website activity with instructions and Wikipedia information.

were tasked with completing a simple challenge—read through an interactive website about agriculture, watch an embedded video about a trip to a farm, answer questions embedded in a Google Form about the reading and video, and then hand-draw a picture. The goal of the activity was not to encourage learning about agriculture, but instead to have students experience a project from a perspective different than their own. Students were told at the start that the activity would not impact their course grades in any way.

Defining and draft one

The activity was built in Google Sites and included simple instructions on the steps needed to complete the project (see Figure 2). Google Sites was selected for the development because of its ease of use and development using a simple template structure. Additionally, students had access to the Google Suite of tools through the University's email system and information could be kept private. Background content knowledge about agriculture and farming gathered directly from Wikipedia was provided to open the lesson.

We embedded a three-minute Creative Commons licensed YouTube video about a teacher's farm visit on the website. We selected the video purposely because the audio was difficult to hear. A musical soundtrack overwhelmed the audio, and talking was muffled by sounds of music, wind, and animals. The video also contained accurate closed captions that students could turn on if they chose.

We built a Google Form that asked students to answer three general questions about farming and agriculture that they learned about in the text and video. Again, we chose Google Forms because students could access it privately using their University email account and their responses were protected. Finally, students were instructed to retrieve paper and colored pencils from the classroom and draw their favorite farm animals and describe the sounds they made.

Ideating and prototyping the design of the "other" experiences

To allow students to take the "role of the other," each was placed in a different situation where they had to complete the same simple activity described with some simulated element experienced by a different audience. Those differences included visual impairments, auditory impairments, dyslexia, and serving as non-native language learners. Again, the team included experts in the field of special education and English learning for a thoughtful, ethical, and respectful design of the simulated differences and difficulties the students would explore.

In order to simulate a visual impairment, plastic, strap-on safety we coated goggles with a layer of petroleum jelly on the inside. Students were able to see out of the goggles, but the clarity of the text and images was drastically distorted. We placed goggles at computer stations, and students participated in the activity while wearing them. If students already wore glasses, they could place the goggles over top of their glasses or take their own glasses off.

We then gave other students medium-grade noise-canceling headphones to simulate the auditory impairment. The quality of the headphones was important, as high-quality options cancel out too much noise, while low-quality headphones do not cancel out much at all. As with the goggles, headphones were placed near computer stations and students had to participate in the activity while wearing them.

In order to have students understand what it may feel like to work in a language other than their own, we built the website and instructions in Spanish as well and had students

FIGURE 3. Website activity with instructions and Wikipedia information written in Spanish.

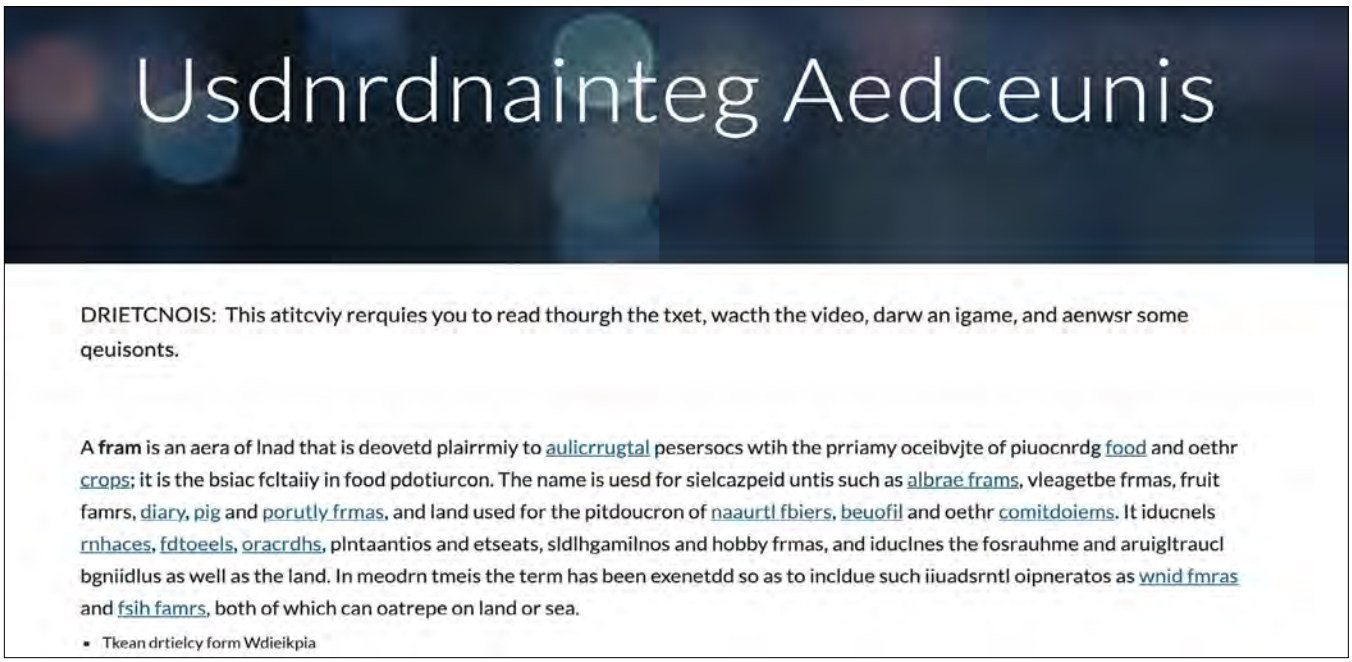

FIGURE 4. Dyslexic version of website activity with instructions and Wikipedia information.

known not to be Spanish speakers use the computers with the Spanish version of the activity. We used Google Translate to translate the materials into Spanish (see Figure 3). Neither the video nor the Google Form was altered in any way and was still presented in English.

Finally, when simulating dyslexia (see Figure 4), JavaScript code created by Victor Widell was applied to the website making it appear that the letters were jumbled and "moving around" (Ap, 2016). Widell created the code in 2016 to help individuals learn what it was like to have a form of dyslexia where letters appear jumbled on a page or computer screen. The code can easily be applied to any existing webpage to simulate what a dyslexic person sees. While there is controversy related to whether this code simulates dyslexia in its simplicity or misleads those who view it (see Cowen, 2016 for example), the goal of this project was to place students in simulated environments that challenge them to be more empathetic of other audiences. Simulations do not need to perfectly replicate real-world situations, and sometimes perfect replication is undesirable (e.g., when medical students practice operating techniques on dummies and not humans; Lateef, 2010), so the thought was that the simulation served the purpose of making students aware of a learning challenge without the expectation that they fully understand it perfectly. The dyslexia simulator jumbled

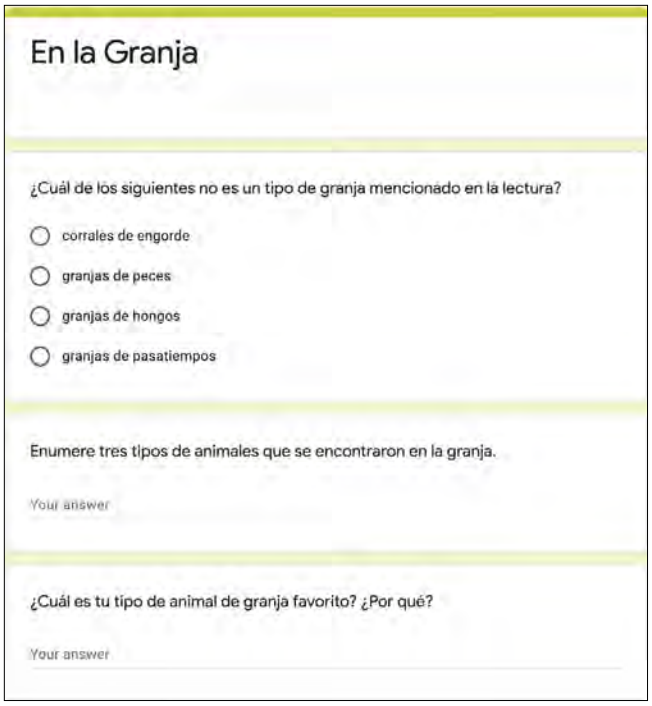

FIGURE 5. Spanish version of the Google Form.

the letters on the Google Site but did not jumble the letters in the Google Form or in the video's closed captioning.

Testing and draft two

The team evaluated the completed first draft of the activity and graduate students ran through the pilot test to provide feedback for the second version. The English learners noted the importance of having all the materials available in Spanish, so we translated the Google Form to Spanish as well (see Figure 5). Again, we used Google Translate to translate the questions from English to Spanish. Unfortunately, the video was not available in Spanish, so adding Spanish captions would not have made a difference in the experience.

Project Implementation

The implementation of this project took place over two years (2017-2019) in four classes prior to the pandemic. Each of the four classes that experienced the activity had between 12 and 18 students in it and all classes took place in the same computer lab. The four different simulated experiences (auditory, visual, Spanish, and dyslexic) were spaced out around the computer lab and students were asked to randomly select a computer station. For instance, a student wearing goggles would not be seated next to another student wearing goggles. Additionally, known Spanish-speaking students were asked to move to a different station if they randomly selected a Spanish station. Students then accessed either the physical manipulative provided (goggles or headphones) or opened the altered website (in Spanish or with the dyslexic code embedded) and began the activity.

The moment students put on their manipulatives or opened the altered websites and began the activity, there were several confused glances exchanged and some nervous laughter, followed immediately by silence. Students quickly recognized the difficulties of the activity given their new challenge. Some students quietly asked their neighbors for help in getting started, while others initiated the accessibility options on their computers (e.g., turned up speakers to hear better, enlarged the screen size to see better, accessed Google translate). Others sat frozen at their machines appearing openly frustrated or defeated, but none asked for help from the instructor in all four classes.

Students spent roughly 20 minutes completing the activity before turning in the drawings as instructed. Some returned to their seats quietly, while others turned to help those that were still struggling. Several of the students that sat frozen did not complete the activity in the 20 minutes time.

AFFORDANCES AND TENSIONS

Overall Benefits

We learned several important lessons following the implementation of this activity. First, we will discuss the student's learning and feedback that we received, then we will focus on the impacts of the design on our students and us. Immediately following the activity, students in all classes took a few moments before they began participating in the discussion. Several seemed nervous as to how to discuss the simulation. However, once they began discussing their feelings about the activity, their classmates chimed in and reflected more freely. In every class, all students mentioned the activity was "relevant," "helpful," and "necessary." Several students noted that this should be "required" practice in all of their courses and their faculty members should participate as well. Several said they also would like their own students to do the activity.

Many students also commented on how "scared," "overwhelmed," and/or "intimidated" they were as soon as they began the task. Some said those first few moments (when every class fell silent), they immediately thought of how their own students must feel in similar situations—the fear they felt one student said, "helped me understand my own students better instantly." Others stated they were developing plans as to how to accomplish the task by adapting to their new status, and one student mentioned thinking of a way to "defeat the disability." The term "defeat the disability" sparked a great deal of debate among the students, which led to a deeper discussion of accommodations, the Universal Design for Learning, differentiation of instruction, and empathy for embracing differing abilities rather than defeating disabilities.

When asked specifically how they proceeded to complete the tasks, several students did not realize that they had done

things differently from their classmates. I (the instructor) mentioned how some had asked their neighbors for help, others initiated the accessibility options on their computers, and some sat frozen in their seats, yet no one had asked the instructor for help. Students in all classes discussed how they had felt alienated during the project—many were afraid to ask others for help, some were unaware of the computers' accessibility options, and none wanted to "look dumb" in front of their instructor.

Those who sat frozen said they were "immediately disengaged" and "didn't want to do the project at all." After they noticed others working, they figured they "had to do something" and began the project. The classes discussed how audiences might feel in similar situations, and what designers and teachers could do to help mitigate some of those fears, alienation, and disengagement. Empathy, tolerance, and awareness of differences and biases drove the remainder of the discussion. Students discussed how improvements in those skills and habits of mind could impact their future designs and teaching practices. Several students also noted that students could benefit from instruction in these areas in order for them to "relate better with others."

User Experience

Following the simulated activity, students worked in teams for the next few weeks to develop an augmented reality (AR) game and again reflected on their development plans, processes, and the simulated activity. Some groups noted that the simulation itself encouraged them to design AR games that included diversity and multicultural components or themes. For example, one team mentioned that empathy allowed them to "relate, share, know your audience, help to recognize different experiences, the emotional need of your audience, putting yourself into your audiences''shoes.'' Another team noted, "Every student comes from different experiences so you have to do some preparation to make them be able to express themselves."

Others mentioned that the simulation encouraged them to think about how they communicated and collaborated with their group members, as some of their classmates were English learners. For instance, in their reflection on the teamwork component of the AR project, one student noted that empathy was important "to successfully connect," while another mentioned it helped, "to help build deeper connections and to have an impact" on the collaborative portion of the project. They discussed how the activity drew their attention to empathy's importance. Still, others mentioned how the simulation encouraged them to think more about what their audience of learners might need or want in an AR game, rather than simply providing what designers think they need. For instance, one group noted, "You are thinking about their wants, needs, desires and having empathy helps to address the user experience." Students mentioned that empathetic design work could also build a better future of "Universally" compliant curricula and materials that meet learners' needs as much as educators.

Most importantly, many teams noted how being empathetic instructors and designers encouraged them to place the ownership of learning onto their students. One team mentioned that empathetic design can "empower students to succeed and it would affect the way instructors would present information." Another neatly summed it up, "Our emotions play a large part in everything we do. Every experience we have we react emotionally to it in some way whether that is consciously or unconsciously. So, if we as educators learn and apply more empathetic design in our instruction it can help students connect to the material in a meaningful way. When that happens they begin to grow, learn, and succeed more."

All students discussed how their projects were as compliant with the Americans with Disabilities Act (ADA) as they possibly could be (assuming the AR tools' capabilities and limitations).

Design Affordances

The most significant design benefit we noticed for those experiencing the empathy activity involved the in-person design of the experience, which aligned with the notion of allowing students to relate better with others. Students were all in a room together experiencing a simulation from a different perspective. They all discussed how they openly struggled but did so in the company of others also struggling. We learned that creating a safe space for simulated experiences, especially one like this where sensitivity and respect for others were paramount, is essential for successful implementation. The in-person nature of the experience also allowed students to openly discuss the situation immediately following the activity. They were able to share openly and be vulnerable while discussing sensitive topics.

Another design affordance was designing the activity to be computer-based. Students could activate accessibility options on the computers to adapt to their situation relatively quickly. If they were unaware of those options, they could ask their neighbors, as many of them did, or watch to see what others were doing. We hope that this activity would demonstrate to participants how to build future activities that are accessible to all audiences and encourage our students to show their students ways to activate built-in accessibility options as well. Paper-based or hands-on activities could have also been as impactful but may have taken longer for students to learn to adapt to, potentially leaving some to miss the message.

Finally, the team's design reaffirmed the importance of empathy for both the design team and the students involved in the simulation, and it allowed for the iteration of the project

by receiving feedback from all participants, designers, and stakeholders. Students participating in the practice discussed the importance of the design choices and how they impacted their own future design choices. We learned a great deal from the discussions and feedback we received and how we will build more activities similarly in the future.

We also believe the inclusion of the design thinking process helped the team embrace a human-centered design mindset. We were able to better understand our audiences' needs, interests, and motivations. We also found that teaching students the design thinking process helped them develop their empathy for others while focusing first on their audiences' needs rather than their own, as they substantiated the benefits in their written reflections and projects.

Design Tensions and Challenges

While the activity worked well and the design of it was simple, several potential problems and tensions were considered prior to and following its implementation. Since encouraging awareness for differences and disabilities must be done with care and sensitivity, experts in the fields of special education and language learning were consulted to ensure no one would feel the activity was inappropriate, insensitive, or done with little respect to the groups involved. Experts reviewed and approved the website activity, the manipulatives (goggles and earphones), and the explanations for each of their inclusions. While our team agreed the activity was appropriate, others may still deem it insensitive. We took the chance, believing the experience was worth the risk. Based on the feedback we received from student participants, we feel this design tension was worth the risk and paid off. Taking a chance with a risky or sensitive topic may be mitigated and successful using a thoughtful design model that takes these risks into consideration. A thoughtful design model is one that acknowledges its learners' needs and wants, provides them with experiences that address important learning components that are necessary for their field of study and is designed comprehensively and with great thought and meaningful planning.

Additionally, in considering design tension, designing four different experiences seemed to be the right amount of diversity. Students were able to see others in the room having similar experiences so they knew they were not completely alone, but they were also seated next to others having very different experiences than their own. Too many or too few experiences could have limited the impact of the project's design. Too many experiences would have alienated students if they truly felt they were the only ones having difficulty and could have led them to shut down. Too few experiences may have replicated a "normal" classroom experience where everyone may do some things a bit differently than others.

Another tension we encountered was experienced by everyone in the world. The pandemic did not allow us to continue with this project for two years while we moved to remote instruction. Once we returned to campus, sharing goggles and headphones was no longer considered a safe practice, so the activity has not taken place since 2019. With that being said, we have not found a way to easily redesign the activity for a comparable online experience. Several virtual reality experiences exist that simulate some of the differences we explored here (for example, see EmpathED's experience of dyslexia in the classroom); however, none involve students seeing others struggle with the experience at the same time as they do—a design choice we believe was incredibly beneficial to our students. Additionally, replicating the discussion following the activity will be just as important. We hope to explore some options in the future to develop a remote version of the simulation.

Additionally, as mentioned previously, the dyslexic and Spanish versions are also not fully experiential. The dyslexic code did not jumble the letters in the Google Form, nor did it jumble the captions in the video. As of this point, we have not found a way to incorporate Widell's code into the Google Form. We discussed jumbling the letters ourselves; however, they would be static and not "moving around" like in Widell's code, and we are unsure whether that would impact the simulation's usefulness. We hope to consult with an expert in dyslexia for future revision.

Similarly, the video's captions were in English and the speaker was also describing her experience in English, which did not pose a "challenge" to the students with the Spanish version, as they were native English speakers. While not necessarily a design tension, the use of an English-speaking video pulled learners out of the immersive Spanish-only simulation, which could have impacted their overall experience. We plan to make our own farm visit video in the summer of 2022 in both English and Spanish versions so we can be respectful of copyrights and intellectual property while designing a video to meet our specific needs. Again, the audio quality will purposely be poor and will include a background soundtrack, animal sounds, and wind to serve as additional distractions. Without adjustments to those experiences, students may not get to experience completely what their students with those challenges may.

Another challenge involved the overall impact of the experience. We know that students were emotionally moved following the activity. We know that they reflected on and recalled the experience in their class designs that followed the simulation. What we do not know is how long the activity impacted their development of empathy. While this may not specifically be a design flaw with an iterative solution, it certainly leaves us wondering about the impact of such simulated experiences. When designing future simulation-based empathy activities, it will be important to

consider these unknowns and build into the cases a way to recheck or monitor students' changes.

Similarly, the activity took roughly 20 minutes for students to complete. Was this the right length of time for the experience? Would a longer experience have been more impactful? Would several shorter experiences have made a lasting difference? Unfortunately, there are no answers to these questions currently, and more exploration is needed to understand the impacts more thoroughly.

FINAL THOUGHTS

Students noted the effect the activity had on them throughout the remainder of the semester and discussed the importance of exploring others like it to help build empathy KSABs. We believe that faculty members in any program should consider implementing such activities to allow their students to take the "role of the other" to improve their skills in any subject area.

Empathy and perspective-taking are not things that can be learned without practice. Placing students in safe situations where they can solve challenges and experience feelings associated with sensitive subjects can help them grow those necessary KSABs. Allowing them to reflect on the process multiple times can also encourage them to develop habits of mind that will follow them throughout their coursework and hopefully into their work lives.

Constructing this empathy activity encouraged us to be thoughtful and planful about our simulation-based designs. We learned that taking chances on designing sensitive experiences was worth the risk based on our student's feedback. We also learned that using a thoughtful design model can help teach abstract concepts and encourage students to learn affective ideas in safe, simulated environments. We hope to take the design tensions we explored to help generate new design models that meet our learners' needs going forward.

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