Developing Sixth Graders' Cultural Competence Across the Curriculum: A Collaborative Redesign Process

Breanne K. Litts, Utah State University, breanne.litts@usu.edu
Melissa Tehee, Utah State University, melissa.tehee@usu.edu
Jennifer Jenkins, Edith Bowen Laboratory School, jennifer.jenkins@littleblue.usu.edu
Stuart Baggaley, Edith Bowen Laboratory School, Stuart.Baggaley@littleblue.usu.edu

Abstract: This paper shares our in-progress collaborative process of redesigning sixth grade curriculum to develop sixth graders' cultural competence by shifting from disciplinary-bounded knowledge to culturally-bounded knowledge. As a team of researchers, designers, and educators, we seek to connect students with diverse cultural perspectives across social studies, science, math, and language arts. The redesign focuses on curricula connected to the River Trip Field Experience, a five-day rafting trip on a river that functions as a natural border with tribal lands. Taking a design-based implementation research approach, we iteratively design, implement, and evaluate culturally-centered lessons throughout the year. In this paper, we specifically present our collaborative design and implementation decisions for one shared goal: building students' cultural awareness of others. Findings elucidate the complexities and tensions of centering culture as a critical aspect of learning in K-12 schooling.

Major issues addressed

Though many well-meaning efforts seek to expand access and broaden participation in STEM education and careers, one persistent challenge is that the majority of these efforts operate from the assumption that science is acultural resulting in deep epistemological tensions (Bang & Medin, 2010; Brayboy & Maughan, 2009). Not only does this ignore the cultural, historical, and political roots of science, but it also marginalizes Indigenous peoples, who take an ecological approach to science and recognize it as inextricable from culture (Aikenhead, 1997; Bang & Medin, 2010). Indigenous science is scientific knowledge and cultural wisdom based on thousands of years of stewarding a particular place and is often preserved through oral storytelling practices (Kawagley, 2006; Marin & Bang, 2015). As an example, TribalCrit argues that Indigenous "stories are not separate from theory; they make up theory and are, therefore, real and legitimate sources of data and ways of being" (Brayboy, 2005, p.430). From this perspective, the pragmatic separation of disciplines in K-12 schooling such as science and social studies is itself a cultural stance.

In our work, we seek to reimagine and reconsider this disciplinary-based cultural stance that inherently privileges particular ways of knowing, being, and doing. A key need in this process is to develop cultural awareness and competence of teachers and students alike in order to make explicit the cultural nature of knowledge and values. Our team of researchers, designers, and educators is collaboratively redesigning curriculum to better connect across disciplines and cultures with the aim of developing sixth graders cultural competence. Specifically, we are guided by the research question: how do we (re)design learning experiences to develop cultural competence in sixth graders? In this paper, we share our particular process of (re)designing curriculum connected to a river trip field experience to illustrate the complexities and tensions of centering culture in K-12 schooling.

Theoretical approaches

Cultural competence and psychosocial learning

While there is emphasis on training K-12 teachers to be more culturally competent and teach in a culturally responsive manner (Taylor, 2010), there is very little focused on teaching K-12 students cultural competence. Cultural competence "is the belief that people should not only appreciate and recognize other cultural groups but also be able to effectively work with them," (Sue, 1998 p. 440). The core components of cultural competence include the ability to recognize and appreciate culture (your own and others) and use knowledge and skills for effective and respectful cross-cultural interactions (Tehee, Isaacs, & Domenech Rodríguez, 2020). Students in sixth grade are beginning to explore their own identities and this is a paramount time to begin intentional identity development exploration and teaching elements of cultural competence (Spencer, 1999), including recognizing the self as a cultural being, appreciating other worldviews and ways of knowing, and other cultural competence skill development, such as psychological flexibility, perspective taking, ethnocultural empathy, and multicultural desire (Narvaez & Hill, 2010).

Although there are current efforts to design professional learning opportunities for teachers to build cultural competence (Taylor, 2010), there are few examples of examining the direct impact of these approaches on youth themselves. Some groups such as the Great Lakes Equity Center (2012), which provides educational resources and learning opportunities, and conducts research related to equity, civil rights, and systemic school reform, aim to include and support youths' voices in the process of identifying and changing systemic injustices and inequalities. These noble efforts offer substantial insights for system-level and teacher-level change but do not directly examine the impact this work has on youth. Thus, we will contribute to this existing work by adopting a learner-level perspective and investigating how to develop youths' cultural competence.

Indigenous knowledge systems, science, and storywork

Though we take up an interdisciplinary, cross-cultural approach to understanding the connections between disciplines and cultures, our work is largely informed by Indigenous knowledge systems, epistemologically rooted in science and storywork (Battiste, 2002; Brayboy, 2005; Watson-Verran & Turnbull, 1995). Indigenous science is a "culture-dependent collective rational perceiving of reality" (Ogawa, 1995, p. 588) often shared within communities through narrative experience and oral histories (Archibald, 2008; Kawagley, 2006). Indigenous stories frequently include stories of origination and shared community experiences, and should be viewed as the equivalent of western theory and practices (Brayboy, 2005). Storywork is the act of bringing Indigenous storytelling experiences into educational contexts (Archibald, 2008). Hence, science is an inherently social process shaped by history, language, and culture. Science is also fundamentally contextual. Focusing on local phenomena and authentic tasks while teaching science, or using place-based scientific methods, has been used to engage students with science learning and support equity (Barajas-López & Bang, 2018).

In the United States, however, science learning experiences often privilege westernized perspectives, which disregards other forms of science and denies that Eurocentric notions of science are also cultural (Aikenhead & Ogawa, 2007). Moreover, students are often encouraged to perform one form of science over the other. Instead of making students choose between western science and Indigenous science methods, we propose a "multiscience" perspective (Ogawa, 1995) that not only acknowledges and encourages students to utilize multiple scientific knowledge systems in a complementary way (Brayboy & Maughan, 2009), but also provides students with tools for navigating across diverse knowledge systems (Bang & Medin, 2010).

Methodological approach

Our research-practice partnership (RPP; Coburn & Penuel, 2016) of ten Indigenous and non-Indgenous scholars and designers and four K-12 educators and administrators is driven by a shared goal to connect disciplines through centering culture with the broad aim to develop sixth graders cultural competence. In this paper, we share our collaborative design process of redesigning the key sixth grade river trip field experience. In alignment with our RPP approach, we employ a design-based implementation research methodology (DBIR; Fishman, Penuel, Allen, Cheng, & Sabelli, 2013). Essentially, this means that our RPP operates in iterative cycles to collaboratively work toward our overarching shared goal. Practically, we iteratively design, implement, and evaluate culturally-centered lessons throughout the year.

Edith Bowen Laboratory School and San Juan River Trip

Edith Bowen Laboratory School (EBLS) is a K-6 elementary public charter and Title I-Targeted Assistance school located in Logan, Utah. The school offers unique place- and community-based learning often through field experiences. The *River Trip Field Experience* (hereafter "River Trip") is a five-day trip with three days and two nights on the San Juan river in the Southwestern United States. The river serves as a natural border with tribal lands. Professional river guides supervise sixth graders along with four faculty members from EBLS. Students explore Ancestral Puebloan ruins and pictographs immersed in the ancient civilization aspect of the social studies curriculum and astronomical and ecosystem components of the science curriculum. Multiple math connections and a strong writing component are also embedded within the experience.

Data collection and analysis

We have documented our collaborative design process by recording planning meetings and classroom implementations, capturing and reflecting on key decisions, and gathering student perspectives and work to evaluate impact. These data are in the form of audio and video recordings, written field notes, design artifacts, and student assignments such as journals and digital stories. In alignment with DBIR, data collection and analyses are recursive and longitudinal. In this paper, we present one case to illustrate our iterative, collaborative design process. Our K-12 partners chose the River Trip, because it borders tribal lands and they had not explicitly acknowledged or contextualized the significance of this in prior trips. We co-constructed the River Trip case

(Stake, 1995) for two purposes: *intrinsic*, to understand the case itself, and *instrumental*, to use the case to understand something else. As such, we aim to understand the cultural context and integration opportunities of the specific case and to serve the instrumental goal of designing experiences to develop cultural competence in sixth graders. The functional boundaries of the case are the month before, during, and after the field experience (August 2019-October 2019). After several meetings, our RPP team identified core practices, like building cultural awareness, we wanted students to learn through pre-, during-, and post-trip experiences. Thus, we further bound the case by our key design decisions related to a shared sub-goal of building students' cultural awareness of others.

Findings

With the sub-goal of cultural awareness anchoring our design decisions, we trace how we enacted it in the classroom, how it was taken up in the field, and how it informed decisions for ongoing curriculum design.

River trip preparation lesson: Making space for cultural awareness

In preparation for the trip, our entire RPP team completed a Native American Cultural Competence training to provide a shared foundational understanding of Indigenous ways of knowing and being. This training has heavily shaped our design and implementation decisions as demonstrated in how teachers shifted their in-field lessons with students. Together we crafted two lessons, one for science/math and one for language arts/social studies, with the aim of building sixth graders awareness of other cultures. For the language arts/social studies class, we focused on building students' awareness of the cultural, political, and historical significance of land by introducing tribal sovereignty. To make this idea tangible, we laser cut two state map puzzles: one based on county boundaries and one based on tribal land boundaries. In groups, students completed both puzzles and made observations about the differences between them. They also spent time identifying what tribal lands they are on, will travel through, and will be on during the River Trip. Each group then investigated a different American Indian community, created a presentation, and shared their findings with the class. Through these presentations, students demonstrated their growing awareness of Indigenous communities.

For the science/math class, students conducted an investigation to identify key characteristics, uses, and Native cultural significance of select plants native to the river area. Students started with a mindfulness exercise, in which they spent time exploring their assigned plant using their five senses. Next they made structured observations and hypothesized uses for their plant. In groups, they identified and researched their plant, designed a presentation, and taught the class about their particular plant. Native American members of the RPP team supplemented the student presentations by teaching the students more about the Indigenous knowledge of the sacred and cultural uses of the plants along with presenting western scientific "proofs" of these traditional uses of plants, such as medicines.

River trip field lessons: Respecting place and culture

During the River Trip, the two sixth grade teachers, Jen (Author 3) and Stu (Author 4), reported further enacting our sub-goal to build cultural awareness in their teaching. They did this through modeling respect of the particular place and culture which they were visiting. First, part of the River Trip includes visiting ancient ruins, which are sacred lands to local tribes. In our design process, Jen reached out to a former student, who self-identifies with the local tribe, and asked if there was something the student wanted current students to know before approaching the ruins. The former student wrote a short story that the current students read prior to walking around the ruins. Jen recalled that the tone of respect at the ruins was notably different from prior years. This pedagogical shift aligns with our tribal sovereignty lesson in which students recognized the significance of land to local tribes.

Second, in the process of reevaluating the lessons teachers employed on the trip, we learned that one story Stu shared with students was about a coyote. Native American members on the RPP team explained that in the local tribe's culture, coyote stories should only be shared during the winter. In response to becoming more aware of the cultural significance of seasons, Stu shifted his lesson plan to instead share a more culturally-appropriate story called, *Black Sheep, White Crow*, which challenges stereotypes and models cooperation between two animals that are perceived to have few connections. This narrative choice aligns with our overarching goal of making cultural biases visible in ways that bring students with diverse backgrounds together.

Post river trip insights

Though our efforts appeared to develop students' and teachers' cultural awareness, our debrief meetings and post-trip student interviews revealed a deeper tension. Both teacher reports and student interviews revealed a disconnect in students' understanding between ancient civilizations and recognizing American Indians as modern-day people. In response to this disconnect, we are co-designing a two-week lesson around a key current event regarding sacred

tribal lands. The lesson will connect ancient land use and current American Indian cultural uses of the same land. This lesson will also encourage perspective taking by students from key stakeholders' perspectives, including tribal leaders, ancient civilizations, farmers, corporate mining companies, and recreational land users to further build students' cultural awareness of other cultures as well as their own culture.

Why this work matters

In this work, we share the tensions and impacts of (re)designing the sixth-grade field experience and related curricula across disciplines. Our case highlights not only how we enacted design decisions toward building cultural awareness, but also how we deepened that awareness through iterative, ongoing lessons throughout the year. By recognizing and respecting the varied cultural, historical, and political approaches to disciplines such as science and social studies, we contribute a new approach to educating all learners about diverse ways of knowing, being, and doing. Our iterative process elucidates core design decisions and pedagogical shifts necessary to build cultural competence in sixth graders. These decentering efforts of the project challenge formal school curriculum that is constructed on the basis of isolated disciplinary and cultural knowledge. By acknowledging science is not acultural and drawing on the place-centeredness of storywork (Archibald, 2008), we open up new ways in which students can connect with different cultures beyond what is possible in standard K-12 curricula.

References

Aikenhead, G. S., & Ogawa, M. (2007). Indigenous knowledge and science revisited. *Cultural Studies of Science Education*, *2*(3), 539-620. https://doi.org/10.1007/s11422-007-9067-8

Archibald, J. A. (2008). *Indigenous storywork: Educating the heart, mind, body, and spirit*. UBC press.

Bang, M., & Medin, D. (2010). Cultural processes in science education: Supporting the navigation of multiple epistemologies. *Science Education*, *94*(6), 1008-1026. https://doi.org/10.1002/sce.20392

Battiste, M. (2002). *Indigenous knowledge and pedagogy in first nations education: A literature review with recommendations*. Ottawa: Indian and Northern Affairs Canada.

Brayboy, B. M. J. (2005). Toward a Tribal Critical Race Theory in education. *Urban Review*, *37*(5), 425-446. https://doi.org/10.1007/s11256-005-0018

Brayboy, B. M. J., & Maughan, E. (2009). Indigenous knowledges and the story of the bean. *Harvard Educational Review*, *79*(1),1-21.

Coburn, C. E., & Penuel, W. R. (2016). Research–Practice Partnerships in Education: Outcomes, Dynamics, and Open Questions. *Educational Researcher*, *45*(1), 48–54. https://doi.org/10.3102/0013189X16631750

Fishman, B., Penuel, W. R., Allen, A., Cheng, B. H., & Sabelli, N. (2013). Design-based implementation research: An emerging model for transforming the relationship of research and practice. *National Society for the Study of Education Yearbook*, *112*(2), 136-156.

Great Lakes Equity Center. (2012). Equity by design: Engaging school communities in critical reflection on policy. Retrieved from https://files.eric.ed.gov/fulltext/ED561170.pdf

Kawagley, A. O. (2006). *A Yupiaq worldview: A pathway to ecology and spirit*. Waveland Press.

Marin, A., & Bang, M. (2015). Designing pedagogies for Indigenous science education: Finding our way to storywork. *Journal of American Indian Education*, *54*(2), 29-51

Narvaez, D., & Hill, P. L. (2010). The relation of multicultural experiences to moral judgment and mindsets. *Journal of Diversity in Higher Education*, *3*(1), 43–55. https://doi.org/10.1037/a0018780

Ogawa, M. (1995). Science education in a multiscience perspective. *Science Education*, *79*, 583-593.

Spencer, M. B. (1999). Social and cultural influences on school adjustment: The application of an identity-focused cultural ecological perspective. *Educational Psychologist*, 34(1), 43–57. https://doi.org/10.1207/s15326985ep3401_4

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA, US: Sage Publications, Inc.

Sue, S. (1998). In search of cultural competence in psychotherapy and counseling. *American Psychologist, 53*(4), 440–448. https://doi.org/10.1037/0003-066X.53.4.440

Taylor, R. W. (2010). The role of teacher education programs in creating culturally competent teachers: A moral imperative for ensuring the academic success of diverse student populations. *Multicultural Education*, *17*(3), 24–28.

Tehee, M., Isaacs, D., & Domenech Rodríguez, M. M. (2020). The elusive construct of cultural competence. In L. T. Benuto, F. Gonzalez, & J. Singer (Eds.), Handbook for cultural factors in behavioral health: A guide for the helping professional. New York, NY: Springer.

Watson-Verran, H., & Turnbull, D. (1995). Science and other indigenous knowledge systems. *Handbook of science and technology studies*, 115-139.