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Navigating Controversial Topics in Required Diversity Courses

Ryan A. Miller
University of North Carolina at Charlotte
ryanmiller@uncc.edu

Laura Struve
The Ohio State University

Morgan Murray
University of North Carolina at Charlotte

Alex Tompkins
University of North Carolina at Charlotte

Abstract: Required undergraduate diversity courses often expose students to topics and worldviews which may push them out of their comfort zones and prompt dissonance and even resistance. This paper reports on interviews with 68 faculty members across 16 humanities and social science disciplines at five predominantly white institutions in the Southern United States, detailing how they navigated discussion of controversial topics in required diversity courses. Most instructors aimed to expose students to critical social issues yet were concerned that resistance could disturb the learning process. We identified 20 unique strategies for handling controversial topics in class that included proactively establishing community and safety and normalizing conflict, and reactively acknowledging and surfacing multiple perspectives, as well as connecting content to students' lived experiences. Some instructors also reported a lack of controversy or conflict in their classrooms, which they variously attributed to student characteristics or their own disinclination to promote heated discussion—which, we argue, calls into question the breadth and criteria of many institutionally defined diversity course requirements. We conclude the paper with implications for faculty, educational developers, administrators, and institutions.

Keywords: diversity course, controversial topics, student resistance, faculty, pedagogy

Diversity courses have increasingly become a common element of U.S. undergraduate curricula. In fact, 60% of the membership of the Association of American Colleges and Universities report having a required diversity course as part of a general education program (Hart Research Associates, 2016). While some colleges craft a single course or course sequence that faculty across the institution teach, most institutions use a distribution model to create a broad requirement that can be satisfied by an array of courses across humanities and social science disciplines (Bowman, 2012; Goodstein, 1994; Hart Research Associates, 2016; Humphreys, 1997). Diversity course requirements date back to the 1970s (Fitzgerald & Lauter, 1995) and have evolved in their scope and content, yet many requirements still focus on some combination of “1) cultures and their interconnections; 2) power, prejudice and the sources of inequality; 3) participatory engagement in service and community issues; 4) the social construction of identity, including one's own; and 5) negotiating difference, especially difficult difference” (Schneider, 1997, p. 52). Given these foci, it is not surprising that controversial topics which ignite heated discussions often arise in diversity courses (Humphreys, 1997; Perry et al., 2009).

Scholars have begun to explore how instructors design diversity courses, introduce material that can elicit emotional responses for some students, and navigate microaggressions and incivility in
Researchers have also documented the benefits to students’ learning in required diversity courses, with outcomes including increased understanding of white privilege (Case, 2007), reduction of racial bias or prejudice (Chang, 2002; Denson, 2009), and awareness of structural oppression (Case, 2007). However, within a broad, diffused diversity course requirement — the type of requirement most common on campuses — course content and pedagogy will vary (Humphreys, 1997; Nelson Laird & Engberg, 2011; Owens, 2005). Institutions may claim the presence of courses focused on diversity and bundled into a requirement will yield positive outcomes among students, but closer attention is warranted to the ways that difficult conversations about contested topics may play out in diversity courses (Nelson Laird & Engberg, 2011). For instance, one course in a requirement may be a survey course taught as a large lecture with minimal opportunities for active student learning and engagement, while another may be a small intergroup dialogue where the focus is squarely on active learning and discussion. Thus, it is expected that the way instructors introduce controversial topics and facilitate discussion will vary.

Given this background, this paper addresses one research question: How do faculty members navigate discussions of controversial topics within required diversity courses? In this qualitative study, we drew upon interviews with 68 course instructors across 16 humanities and social science disciplines at five predominantly white institutions to better understand how they addressed these discussions in their classrooms. The purpose of this study was to identify the approaches and strategies used by required diversity course instructors. While we ultimately identified 20 strategies instructors used, we also found that a minority of instructors did not engage in discussion of controversial topics within the classroom, which may call into question the outcomes diversity courses are thought to foster.

Relevant Literature

In this section, we briefly review research relative to the context of diversity courses and the teaching of controversial topics. Diversity courses are required on many college campuses because they benefit students’ development (Bowman, 2009). Bowman (2009) found that students who took at least one diversity course during their college career experienced gains in their cognitive development as their exposure to this content provided them an interest in ideas and the topic. Students taking diversity courses became more aware of their white privilege and were less likely to deny blatant racism exists (Cole et al., 2011). Diversity courses often impact students differently based on their racial and socioeconomic backgrounds, with white students experiencing the most growth cognitively after taking a diversity course as these courses are often designed as introductory courses to engage white students (Bowman, 2009).

Diversity courses have the potential to bring out emotions and heated discussion requiring instructors to manage and facilitate challenging dialogue (Roberts & Smith, 2002). Despite the positive benefits to student development, some students, particularly white men, often resist these courses and the course instructors, particularly when the courses are taught by people of color the faculty of color that teach them (Vianden, 2018). Learning about power, privilege, and oppression were topics often resisted by white men as they often associated these topics with being shamed by diversity course instructors (Vianden, 2018). This resistance is often a burden for faculty members of color who disproportionately teach diversity courses (Perry et al., 2009). Mayhew and Grunwald (2006) found that race was a strong determinant for whether faculty would choose to incorporate diversity-related content into their courses. Faculty of color, women-identified faculty, and LGBTQ faculty members were more likely to connect their courses to diverse content than white men faculty members, who often felt they didn’t have adequate expertise to incorporate diversity-related content into their courses (Mayhew & Grunwald, 2006). Faculty that participated in diversity workshops often felt more
comfortable with incorporating and teaching diversity-related content and felt that these types of
workshops and training should be mandatory experiences for faculty members (Mayhew & Grunwald,
2006).

By their nature, diversity courses often include discussion of controversial topics. A
controversial issue is one that might deal with questions regarding different values, cultures, and beliefs
(Sudha, 2018). These issues are often complex and do not have clear answers due to the strong beliefs
that people hold surrounding these issues. To increase overall preparation, and quality of conversation,
additional preparation must be provided for faculty members for them to effectively broach difficult
topics, and successfully lead conversations that could be considered controversial (Zimmerman &
Robertson, 2018). Navigating controversial topics and difficult conversations can be sites of tension
for both students and instructors. The ways in which instructors choose to enter these conversations
or in some cases, are forced into them, vary, as do their reactions. What is important to note first is
“authentic conversations...are critical” (Murray-Johnson, 2019, p. 4) for students learning as well as a
pedagogical basis for moments of tension; “both conflict and harmony (or collaboration) are normal
in our society and in our collegiate classrooms” (Pasque et al., 2013, p.13). While these conversations
can potentially promote deeper engagement and learning, there has been a gap in literature that
expressly addresses instructors’ strategies to mediate and address critical conversations. Emerging
literature demonstrates the emotional labor and other emotional responses the instructors manage are
taxing and sometimes can be anxiety-producing, especially for faculty of color (Miller et al., 2019;
Perry et al., 2009; Sue et al., 2011; Schueths et al., 2013).

Griffin and Ouellett (2007) state many faculty members’ initial reactions to conflict is to “shut
down any disagreement, ignore the emotional and affective tone in a class, and keep a tight focus on
intellectual and informational content” (p. 105). This may also be because most university educators
are unprepared for addressing these difficult conversations in the classroom and avoid or end the
conversations entirely (Pasque et al., 2013; Vacarr, 2001). While these strategies may seemingly shut
down contention in the classroom, research shows ignoring incivilities can have lasting negative
consequences on the classroom climate, students’ perceptions of their own academic development,
and can cause more damage than no response or a fully formed response (Hirschy & Braxton, 2004;
Souza, 2016).

There are studies that have posited frameworks and pedagogical approaches to help equip
instructors as they navigate these topics. Some of those include frameworks to manage their own
emotions and tensions during discussions of microaggressions (Sue et al., 2011), politics (Miller &
Pouraskari, 2019), using interactive or experiential workshops (Harlap, 2014), and much of it addresses
race (Murray-Johnson, 2019 Quaye, 2012; Pasque et al., 2013; Ray, 2010). Disciplines have also
developed their own “signature pedagogies,” or the characteristic ways in which professional fields
socialize future practitioners, especially as it relates to teaching and learning development (Shulman,
2005, p. 52). Wall (2013) suggests using a balanced learning model that includes creating safety in the
classroom and using small group learning, community visits, in-class activities, and reflection.
Incorporating readings and activities that produce cognitive dissonance for students is another strategy
instructors can use to push students in their understanding of diversity courses (McFalls & Cobb-
Roberts, 2001).

Theoretical Frameworks

We used and adapted a combination of two frameworks on conceptualizing student resistance and
instructors’ strategies for handling racial conflict in the classroom.
Conceptualizing Student Resistance

Winkler and Rybnikova (2019) conducted a systematic literature review of 134 studies between 1999 and 2018 to determine how student resistance is conceptualized. Resistance is not characterized as fundamentally negative or positive but is instead conceptualized differently depending on one’s paradigm. Winkler and Rybnikova organized literature around student resistance into three paradigmatic perspectives: 1) functional-instrumentalist, 2) critical-emancipatory and 3) critical-functionalist. The authors asserted these perspectives “can also serve as a self-reflexive tool to help university teachers [become] aware of underlying assumptions regarding student resistance, its multi-layered reasons and unavoidable links to the aims of higher education as well as society” (p. 531).

A functional-instrumentalist understanding of student resistance largely views student resistance as a negative behavior that interferes with course learning goals and is ultimately destructive to the classroom learning environment. Reasons for student resistance in a functional-instrumentalist classroom largely rest upon perceptions of the instructor and their influence on the class climate and student relationships. In this paradigm, authors posit students are responsible for the resistance, due to student characteristics such as negative attitudes, lack of experience of understanding as it relates to course content, cognitive development, age, or gender.

In direct opposition to the functional-instrumentalist perspective, in the critical-emancipatory paradigm, “resistance is considered as an emancipatory practice in the classroom” and “resistance is theorized as teachers’ and students’ mutual capacity to reflect and change social conditions” (Winkler & Rybnikova, 2019, p. 527). Reasons for student resistance are reflections of unequal power imbalances between students and instructor.

The critical-functionalist perspective simultaneously holds aspects of the critical-emancipatory and functional-instrumentalist perspectives at once. In this paradigm, the instructor’s goal is to encourage students to critically engage in issues of social justice, surface alternative viewpoints, and resist traditional conceptions of worldviews. However, the way in which the instructor interprets acts of resistance aligns with the critical-functionalist perspective: resistance is prohibitory to students’ learning and reflection. Reasons for students’ resistance relate to the broader learning goals of introducing students to issues of oppression and inequality; students may resist these topics because they may feel pressured to do so by the instructor or if topics challenge their preconceived worldviews. It should be noted that Winkler and Rybnikova’s (2019) framework does not distinguish between resistance from privileged or minoritized groups; resistance from any group may be interpreted differently depending on the instructor’s paradigm, which we attempt to analyze in this paper.

Pedagogical Approaches to Racial Conflict

To examine specific examples of how instructors approached discussion of controversial topics in their classes, we also used Pasque and colleagues’ (2013) pedagogical approaches to student racial conflict in the classroom. Pasque et al. (2013) interviewed 66 faculty members recognized for teaching excellence across disciplines and racial and gender identities, finding that faculty strategies for addressing race included:

- avoid conflict through attempts to control the classroom environment; to minimize such conflict; to divert or distract students’ attention from conflict; to react to the conflict in a way that attempts to incorporate tensions for further learning; and to proactively design course activities to normalize and surface conflict in ways that enhance students learning about race and racial interactions (p. 1).
Faculty engaged with a spectrum of possible strategies for addressing racial conflict, ranging from avoidance and minimization to reactive and proactive activities for leveraging discussions of race. While many of the examples of controversial topics that instructors shared in the present study were not focused directly on racial conflict, we use the Pasque et al. (2013) pedagogical approaches as a starting point for our analysis, as many of the strategies discussed may also apply to other topics that generate conflict within classrooms. Though diversity courses have been shown, in many instances, to prompt student learning, engagement, and perspective taking, there has been little discussion in the scholarly literature of the specific strategies instructors have used to promote this engagement; there is a further need to outline these strategies beyond engagement with racial conflict.

Methods

This paper is based on findings from a qualitative multiple case study (Merriam, 2001; Yin, 2014) employing a constructivist approach (Charmaz, 2014), as we attempted to understand instructors’ perspectives and meaning making of their approaches to addressing controversy in diversity courses. Constructivism posits that there are multiple, subjective realities that individuals experience and construct; constructivist researchers “enter the phenomenon, gain multiple views of it, and locate it in its web of connections and constraints” (Charmaz, 2014, p. 342). Specifically, we frame this case study as instrumental, given our interest in generating practical rather than theoretical findings, and because of our interest “to go beyond the case” (Stake, 2006, p. 8) to generate transferable insights. That is, this analysis attempts to generate findings that can be used as instruments in other contexts beyond the specific cases where we collected data; we are primarily interested in this potential transferability rather than focusing on the unique characteristics of the institutions and instructors we have chosen.

The IRB-approved study examined five predominantly white higher education institutions with stand-alone diversity course requirements in the Southeastern United States. Criteria for selecting institutions included bachelor’s degree-granting institutions with at least one stand-alone diversity course requirement. Criteria also included accessibility of the research sites (e.g., IRB approval, ability of the researchers to collect data in person). This paper focuses on a subset of data from a larger study and examines how faculty across the five institutions described their experiences navigating discussion of controversial topics in the context of teaching required diversity courses. In this paper, we examine themes common across instructors at all five institutions, as we found instructor strategies did not vary greatly across institutions.

This study primarily draws upon semi-structured, one-on-one interviews with faculty members teaching required undergraduate diversity courses. We purposely recruited information-rich participants embedded within each research site by personally contacting all faculty members via email who taught courses satisfying diversity requirements. Participants were information-rich because of our research purpose and questions focusing on the instructors of required diversity courses. Once we identified research sites, our sampling criterion focused solely on whether instructors taught courses that were part of an institutionally defined diversity requirement; we assumed that some, even minimal, discussion of controversial topics would occur in any such course. We did not create definitions of diversity or another layer of sampling to determine the presence or extent of discussion of controversial topics that occurred in class, but instead interviewed all volunteers who met the criteria (i.e., those who taught courses within the institutionally defined diversity requirement) at the institutions. The five institutions included public (3) and private (2) institutions, with enrollment ranging from 2,500 to 35,000. Admission rates ranged from 20% to 70%. All were predominantly white institutions, with the percentage of white students on each campus ranging from 55% to 75%. In total, 68 faculty members across the five institutions were interviewed. On average, interviews lasted 1 hour and 15 minutes each. The majority (56%) of participants were in non-tenure track
appointments, and most of the instructors (59%) taught required diversity courses within social science disciplines (e.g., anthropology, political science, sociology), while the remaining instructors (41%) taught within the humanities (e.g., cultural studies, English, philosophy); in total, 16 unique disciplines were represented. Most participants were white (including 25 white women and 17 white men), along with 15 women of color and 11 men of color. To promote participant candor and protect confidentiality, we use pseudonyms rather than real names of institutions and participants.

Specific questions from the interview protocol that often prompted discussion of student resistance, controversial topics, and conflict in the classroom included: “What do you do to establish an environment conducive to dialogue and disagreement?” “How have you handled instances of student resistance, or a particularly heated moment?” “What types of pedagogical techniques or teaching methods do you tend to employ?” We began data analysis by reading all interview transcripts and identifying the excerpts that addressed those topics of interest given our research purpose and question (i.e., discussion of controversial topics).

Once relevant transcript excerpts were identified, we engaged in several rounds of coding and analysis to identify the instructors’ perspectives and strategies revealed through their examples. We began analysis with a subset of 15 of 68 participants’ interview excerpts and used open coding to create initial categorizations and to classify how instructors navigated discussion of controversial topics, identifying codes such as silence, multiple viewpoints, normalizing, equal time, and debriefing. These codes informed our initial codebook. Subsequently, we applied concepts derived from the theoretical frameworks to all remaining transcript excerpts. Based on all excerpts, we identified how instructors appeared to conceptualize student resistance (Winkler & Rybnikova, 2019), our first theoretical framework. Next, we grouped excerpts into five broad strategies for addressing racial conflict identified in Pasque et al. (2013), including no conflict, avoidance, diversion, reactive, and proactive. Then, we built upon these strategies by inductively recoding the examples within each of these categories, leading to 20 specific codes that more specifically addressed how instructors navigated discussion of controversial topics in their classrooms. (We noted that, while a few instructor examples of class discussions addressed race and racial conflict, the majority did not; in findings, we list the varied topics instructors introduced.)

We engaged in several strategies to promote trustworthiness of the study (Jones et al., 2014), including (1) member checking: all study participants were given their transcript and the opportunity to revise or add to their comments; (2) team coding of data (i.e., all transcript excerpts were coded by at least two team members) and reaching consensus on all codes, themes, and examples presented; (3) theoretical triangulation by using multiple theoretical perspectives to guide our analysis; (4) researcher triangulation by engaging in a research team approach to highlight divergent interpretations; and (5) researcher reflection on our own positionalities in relation to the topics under study to understand our perspectives and guard against misinterpretations or oversights in analyzing data. We engaged in individual written reflection as well as group discussion during research team meetings. Briefly, we share some salient points regarding researcher positionalities:

I (first author) am an assistant professor of higher education and approached this study informed by my formative training in intergroup dialogue techniques (Gurin et al., 2013) and with a disposition toward believing that introducing controversy and conflict into the classroom can be productive. I now recognize that, while valuable, sometimes these approaches can reinforce dominant modes of emotional expression (e.g., minimize anger or sadness), and these “rules” have largely affirmed aspects of my socialization as a person with a variety of privileges (identifying as white, cisgender, man, Christian, middle class, able-bodied).

I (second author) work as an educational developer in higher education: I support instructors in their pedagogical practices and teach in the college of education. I was often uncomfortable (and at times, still can be) facilitating controversial conversations. I believe my various social identities and
background (white, cisgender, woman, middle class, daughter of educators) inform my perceived ability in those spaces, and I am committed to furthering my practice to support others who teach and my own teaching.

I (third author) work in residence life and came to this study with the experience of facilitating dialogue and leading discussions and training on diversity and inclusion. As a Black female educator, I am aware that in my work with students I have been confronted with some of the challenges faculty in this study expressed. And as a current doctoral student, I am aware of how some of these challenges continue to show up in my classroom experiences.

I (fourth author) serve as a case manager in Title IX within higher education. Throughout my time in higher education, I have connected with faculty members navigating complex compliance concerns related to student interaction and disclosures in the classroom. In facilitating these conversations, I have had the privilege of assisting faculty with managing the need to teach complex and controversial topics while maintaining an open and supportive learning environment.

**Findings**

**Conceptualizing Student Resistance**

In order to capture the broader, interactive relationship of student resistance in the classroom, we applied the three approaches of student resistance posited by Winkler and Rybnikova (2019): critical-functionalist, functionalist-instrumentalist, and critical-emancipatory.

**Critical-Functionalist**

Most of the excerpts (44) from instructors were representative of a critical-functionalist perspective: instructors aimed to expose students to critical social issues yet were concerned how resistance was disturbing the student-instructor relationship, class climate and ultimately, the learning process. In this category, many of the instructors couched navigating student resistance under the premise of maintaining a level of respectability in the classroom. Disagreements were acceptable, if they were kept civil. Eleanor, who taught history, said they allowed it “as long as it’s not being disrespectful, to where people are getting really kind of angry or saying something hurtful” they went on to recall an incident when students were disagreeing about gay marriage. She remembered:

> It kinda got like, ‘Okay, we're kinda arguing with each other.’ So, I was like, shut it down...I tried to present on both sides and then let's kind of move onto a different topic, because we need to keep it respectful.

**Functional-Instrumentalist**

About a fifth of the instructors (13) adopted a focus associated with the functionalist-instrumentalist perspective, where they focused their energies on immediate teaching goals and largely saw student resistance as negative and to be avoided. Luis, who taught music, expressed a pragmatic and definitive view of how he believed resistance should be handled in class, as well as whether it should exist at all in a field like music:

> [A controversial subject] exists, it’s here...I don’t try to fix it. But I don’t try to ignore it, either. Again, this is a music class, it’s not a sociology class. Students can interrupt me and ask
questions, but it is not a discussion class. To put it bluntly, I talk, you listen, maybe we learn something along the way.

**Critical-Emancipatory**

The critical-emancipatory category represented the least number of excerpts (eight) from instructors, which may also be expected, considering this typology of student resistance is more elusive to instructors and students. Those whose classes aligned with this perspective spoke of intentional steps they took to cultivate a class in which resistance was a purposive component of the class. For example, Jeanne, who taught education at Regional College, described her decision making she considered when engaging in contentious course issues:

I think it can get overheated...Watching somebody and trying to decide how far you can push them on something or allow another student to push them on something. That’s in part why doing something like this is really helpful, this check sheet at the beginning. You can kind of see how students respond to it. If kids are hesitant to answer these questions. They’re going to be really hesitant in class around harder questions, about belief systems. That kind of helps me know a little bit around which kids to push a little bit and which kids I need to be a little more careful about pushing so I don’t cause the tears to burst, which is what happened the other day. I pushed somebody I maybe shouldn’t have pushed.

**Instructor Strategies for Addressing Conflict and Controversy**

In Table 1, we present an overview of the strategies instructors identified for introducing and addressing controversial topics in required diversity courses, including definitions of each strategy and exemplar participant quotes. Some of the controversial topics named by faculty included criminal justice, electoral politics, gun control, immigration, marriage equality, prostitution, race (and the Black Lives Matter movement specifically), sexual assault/rape, sexuality, and socioeconomic status. Aligned with five categories presented in Pasque et al. (2013), we identified 20 unique instructor strategies for introducing and addressing controversial topics.

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<th>Strategy: Definition (Frequency)</th>
<th>Illustrative participant quote</th>
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<td><strong>Lack of conflict</strong></td>
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<td><strong>Abstract or non-controversial</strong></td>
<td>“The issues are pretty much … black and white. ... The diversity, if there is any diversity in there, I would say it would be the diversity of students’ perceptions as to whether they come down on the yes, no or sometimes they admit that they really don't know enough about the topic to really have an informed opinion. But other than that diversity, I wouldn't see where the diversity of opinion comes from.” (Dev, tenured education faculty, white man)</td>
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<td><strong>Class size/format:</strong></td>
<td>“No, not really. … There wasn't too much debate.... I wish there was more ... I guess heated, or more active kind of back and forth between the students. Maybe I gave them too much time. Because, in the first two or three minutes, I hear a lot of chatter, which I like. ... But then, after five minutes it dies down, and you just hear people talking about what they did last weekend.” (Cesar, non-tenure track part-time anthropology faculty, Latinx man)</td>
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<td>Instructor avoidance (planned approach): Instructors avoid heated topics in class to remain in their comfort zone – instructor plans not to bring up heated topics (6)</td>
<td>“By and large, what I am doing, I don't make specific political comments and I think my students ... my hope is that they'll be able to read what we're doing into the current political climate, but I think that if I bring it in, it will turn them off. My goal is to not lose anyone, so I'm kind of constantly thinking how will this content lose someone? I'm not terribly direct in anything.” (Norah, non-tenure track music faculty, white woman)</td>
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<td>Student characteristics: Student background characteristics (e.g., traditional college age, lack of life experience middle class norms) limit conversation (7)</td>
<td>“[Students] don’t have life experiences. … Our students are almost uniformly 18, 22, never did anything but go to school all their lives. So, they don’t have really the background of experience to say hey, I know something different because of blah, blah, blah.” (James, tenured history faculty, African American man)</td>
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<td>Student silence: Silence or non-participation of students limits or stops conversation; instructor is reluctant to “cold call” and risk being seen as tokenizing students (4)</td>
<td>“So, I find that some topics are frustrating in that it is hard to get students to engage in the conversation about them. And I think the one that appears to me to be the most difficult is the conversation about race, nobody really wants to have that conversation in the United States, or at least they do not want to have in the open, in a mixed-race classroom.” (Joe, tenured anthropology faculty, white man)</td>
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<td>Avoidance strategies</td>
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<td>Name and clarify: Identify and restate contributions from multiple members of the class (3)</td>
<td>“I wouldn't call it an argument. ... It was just like a clear difference of opinion. Honestly, those two students were not listening to each other. I said, ‘Honestly, stop what you're doing. You're actually talking about two different things. You're not even on the same page. You need to sort of check yourself and then come back to this.'” (Vicky, non-tenure track rhetoric faculty, white woman)</td>
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<td>Instructor avoidance (in the moment, spontaneous): Instructors avoid heated topics in class to remain in their comfort zone – instructor avoids heated topics in the moment (6)</td>
<td>“They seem somewhat reluctant there [to discuss politics]. … I like to create a certain amount of controversy in the class but not to the point to where students feel uncomfortable. And maybe that's being chicken on my part.” (Damien, non-tenure track part-time political science faculty, white man)</td>
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<td>Distinction beliefs from facts (authoritative): Rely on discipline/field-specific standards for accepted facts, then separate facts from beliefs; using facts to shut down the conversation (exerting authority) (4)</td>
<td>“I take it as a fact that appropriation is a thing. I'm cool with there being a spectrum of beliefs and what is acceptable on that spectrum, but it is a thing. It does exist. You can't say that it does not exist. ... There are certain things that are facts that they have to acknowledge, and I will try to use whatever limited authority I have in the classroom to put forth like this is a fact, but then once we get to that place, you can have your perspective.” (Norah, non-tenure track music faculty, white woman)</td>
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<td>Reactive strategies</td>
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<td>Acknowledge multiple viewpoints: Seek opportunities to recognize multiple viewpoints on a topic or issue; de-center instructor viewpoint (17)</td>
<td>“I ultimately ended up using [a web app] for anonymous feedback. … So, I used it to show people typing on the computer anonymous feedback that is displayed on the screen that we all see in response to certain questions.” (Elena, tenure-track cultural studies faculty, Latinx woman)</td>
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<td>Ensure equal time for “both” sides: Allow disagreement to play out as long as both (or multiple) sides of an issue are voiced (5)</td>
<td>“I try to articulate a range of points of view about political issues in which race is involved and I try to be respectful to all points of view that I present, not that I agree with them but I try to give it my best shot and I try to do that and I ask the students to do that and by assigning different points of view to the panel discussions and then the discussions that follow. I think there really is a range of viewpoints that comes out in the discussion, so I think it’s a healthy way to do it.” (Bill, non-tenure track political science faculty, white man)</td>
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<td>Surface alternative viewpoints: Actively create opportunities for</td>
<td>“My primary goal is creating diversity and tolerance, without necessarily stomping on someone's religious ideas in an insensitive way. I do struggle...”</td>
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alternative viewpoints to be voiced (12) with finding that kind of balance ... it's just that unsure and me wanting to be sensitive to everybody and not force an agenda on someone, but have their eyes opened to other possibilities out there and understanding other people's experiences.” (Eleanor, non-tenure track history faculty, white woman)

**Introduce current events (reactive):** Inject relevant current events into the conversation to encourage participation – introduce events in response to students or in the moment (not planned) (3)

“I found a great article that explained the whole Black Lives Matter movement and why you, as a person who is not African American, or Black, should not say 'Well, all lives matter,' and that you're missing the point. And I put that up on the screen and we read through it together. Again, you could kind of see people go 'oh, oh.’” (Nancy, non-tenure track rhetoric faculty, white woman)

**Distinguish beliefs from facts (advances conversation):** Rely on discipline/field-specific standards for accepted facts, then separate facts from beliefs; Emphasize analysis and evaluation of facts rather than attempts to change beliefs; affirm that evaluation is not dependent upon orthodoxy; facts advance conversation rather shuts it down (4)

“I just kind of reiterate that a few times in the beginning of the semester, that that's the goal of the class, is to generate debate, but respectful debate, and so we can all have our different ideas, and as long as you have your evidence, or you do, then we just respect each other as we agree to disagree and that's totally fine. So, you know, I think them knowing that that's part of the class allows them to think in ways that they can ask questions that aren't just sort of narrowly associated with whatever lesson theme for the day.” (Flora, administrator teaching cultural studies, white woman)

**Substantiate facts with resources:** Introduce additional resources (articles, books, multimedia) to deepen the conversation (5)

“I read them things that other people have written, and I think are particularly affecting or poignant and that I think will grab their interest. And I try to be very, very contemporary with that stuff. So, I'm almost always reading from something that's been written in the last few months, even.” (Alice, non-tenure track English faculty, white woman)

**Connect to students' lived experiences (reactive):** Attempt to connect course connect or controversy to students' lived experiences - In the moment or in response to students (11)

“I just try to avoid like very controversial topics and I try not to be very nationalist in class because I'm talking about my own culture, so it is kind of natural tendency that you are praising your own culture and making people feel uncomfortable, so I'm trying not to do that and I'm trying to like play naïve in class telling students I'm not very familiar with other cultures, but if someone has more knowledge so I will be willing to hear from you.” (Stephanie, non-tenure track foreign languages faculty, Asian American woman)

**Proactive strategies**

**Normalize conflict:** Create expectation that disagreement will occur and develop strategies to work through disagreement (11)

“I just burn it all down, and people come out with real answers. There’s nothing sugar coated. I don’t want the sugar-coated response, I want the real deal. And in most instances, that’s what they give me. … I’ll allow them to talk about Trump and Hillary, and of course that generated a lot of discussion. Heated discussion. But everything was within the limits of a heated discussion without getting raucous, or angry, or teary. Or if it approaches that, I’ll say well, let’s take a moment to breathe. And just everybody settle down.” (Mary, non-tenure track history faculty, African American woman)

**Introduce current events (proactive):** Inject relevant current events into the conversation to encourage participation – plan ahead to introduce current events (4)

“I addressed it head on. When we started talking about things, it kind of lined up perfectly. I teach the political geography part towards the end of the semester, and it was right around the election and during the election. We talked about it. I had several discussion days where we just kind of opened it up. … You’re free to express how you feel. Respect others’ position, but we’re going to talk about it.” (Leo, non-tenure track geography faculty, Latinx/white man)

**Connect to students' lived experiences (proactive):**

“They had to redesign a piece of currency. So, take the dollar bill and change out the symbols and things like that according to their values. One
Attempt to connect course connect or controversy to students’ lived experiences – as a planned/ intentional strategy, mapped out in advance (3)

Vulnerability promotes dialogue: Sharing personal experiences with the topic, particularly difficulties or failures, to promote engagement and discussion (5)

Establish community and safety: Intentionally creating an open learning environment where contributions from all members of the class are expected and encouraged (16)

Lack of Conflict

Though we expected required diversity courses would include frequent discussion of controversial topics, many faculty discussed a lack of heated conversation within their classrooms. Some faculty members discussed that topics in their classes did not lend themselves to heated discussions as they did not connect to social issues. Other faculty members described the class size or the format of the class making it difficult to engage students in challenging conversations. Faculty also expressed negative views about student identities and backgrounds; for instance, that students lacked life experience, were coddled, or were trained to abide by polite middle-class norms to avoid discussion of sensitive issues. For example, Aurora, a tenured faculty member at State University, described students in her classroom in this way: “Usually students nowadays, they don’t allow themselves to get heated from each other very often.” Faculty members also frequently got confronted with student silence when trying to engage their classes in discussions on issues. For example, Cheryl, a non-tenure track, part-time faculty member at State University, shared: “Yeah, nobody ever says anything about ... They can roll their eyes if they think we’re overemphasizing diversity, they play along. They know if they just shut up, they’ll get through a couple months, and then they can go back to being whatever.”

Avoidance Strategies

Several participants disclosed that they intentionally avoided in-depth discussion of controversial topics in class. For instance, Max, a tenured faculty member at State University, said: “I’m not sure I want a heated discussion … Yeah, I don’t think I would want anything too animated or too volatile.” Indeed, the reflection of one participant, Glen, highlighted that surface level conversations might only serve to reinforce students’ existing viewpoints:

The political aspect of the course really did get under people’s skin, and they almost saw it as an opportunity to reinforce preconceived notions about things rather than a moment of learning something new. There were long faces. The nonverbal cues all showed that people
were either just fuming inside or that they were just simply tune it out because they didn't want to hear it.

In addition, some faculty employed a strategy of naming and clarifying that resulted in regaining control of the classroom and minimizing conflict. For instance, Vicky told two students voicing a disagreement, “Honestly, stop what you’re doing. You’re actually talking about two different things. You’re not even on the same page. You need to sort of check yourself and then come back to this.”

**Diversion and Reactive Strategies**

Faculty teaching required diversity courses developed several strategies to actively engage students as they learned about and worked through controversial topics. Key instructional methods aligned with the reactive category included naming difficult topics and normalizing conflict and disagreement about these topics. Faculty also focused on acknowledging and surfacing multiple viewpoints on controversial topics. When conflict surfaced, faculty often highly prioritized making space for “both sides” (what some referred to as the “marketplace of ideas” or “range of viewpoints”) or multiple sides of an issue and felt that tactic was sufficient. One faculty member, Elena, mentioned using technology—an anonymous polling tool—to display the range of perspectives present in class. Faculty also brought in outside resources to substantiate topics that came up in class; Nancy described sharing an article about the Black Lives Matter movement. Participants also described relying heavily on course content and accepted norms within a field or discipline to clarify and separate fact from student beliefs. This tactic—distinguishing belief from facts—was evidenced for two distinct purposes: either advancing the conversation by clarifying the facts (a reactive strategy) or shutting down by the conversation by authoritatively asserting the facts (a diversion strategy). Faculty, however, rarely stated explicitly that their strategies were informed by consideration of their own identities and positionalities, or those of their students.

**Proactive Strategies**

Some instructors embraced proactive strategies to intentionally surface controversy and engage students in passionate conversations about these topics. These instructors often laid the groundwork for their approaches at the beginning of the semester by establishing community and safety and normalizing conflict. Instructors also designed learning activities to connect with students’ lived experiences and they infused current events as fodder for conversation and engagement. For instance, Vicky described a “money manifesto” assignment where students wrote about their relationships to money and were asked to redesign a piece of currency, informed by their values and identities. Vicky also admitted her own “money mistakes” to the class. To that point, instructors modeled vulnerability and shared their own weaknesses, thus encouraging students to take risks in class discussions. Neal’s example of sharing his “chronic debilitating stage fright” with students was in part designed to put his students at ease before they were asked to prepare presentations; he encouraged students to meet one on one with them to identify strategies to successfully speak publicly.

**Discussion**

This study offers the perspectives of 68 faculty members for addressing controversial topics within required diversity courses at five colleges and universities in the southern United States, exploring both their paradigmatic approaches to handling controversy as well as their specific strategies for engaging (or not engaging) in such discussions in the classroom. From a paradigmatic perspective, we
found that instructors primarily operated from a critical-functionalist perspective (Winkler & Rybnikova, 2019), in which they embraced the study of critical social issues yet established and upheld stringent guidelines for class discussions. Alternatively, in a critical-emancipatory lens, resistance is framed “as both an inevitable part of the learning process and the very objective of the learning” (Winkler & Rybnikova, 2019, p. 530) and classrooms can be sites for “establishing dialogue between the students and the teacher, and between the social structures in the classroom and conditions of the broader society” (p. 530). While a few instructors in our study find inherent value in moments of student resistance, the majority did not appear to embrace a critical-emancipatory paradigm. Instructors also rarely discussed using conceptual frameworks or drawing on signature pedagogies from their disciplines (Shulman, 2005), perhaps indicating gaps in disciplinary pedagogies—or their use.

The study offers two key contributions, which we explore below: identification of 20 strategies for addressing controversial topics in required diversity courses and exploration of the lack of discussion of controversial topics that some instructors reported, which may raise broader questions about institutionally defined diversity requirements.

**Strategies for Facilitating Discussion of Controversial Topics**

First, we have applied frameworks addressing approaches and strategies for handling controversial discussions in the classroom resulting in the identification of 20 unique strategies instructors used, including and beyond racial conflict which previous research has explored (Pasque et al., 2013). These strategies emerged from a group of instructors teaching across humanities and social science disciplines within institutionally required diversity courses at five predominantly white institutions of higher education. The topics highlighted in instructors’ strategies reveal that relatively little controversy within required diversity courses focused directly on topics one might expect to see covered in such a course (e.g., race, gender, sexual orientation). Pasque et al. (2013) stated: “When handled well, classroom conflict can create the dissonance essential for significant learning, permit new and different voices to be heard ... and provide students with models for creative engagement and problem solving (p. 13-14).” Certainly, handling conflict can be an intimidating and elusive feat for instructors. hooks (1994) stated, “If we fear mistakes, doing things wrongly, constantly evaluating ourselves, we will never make the academy a culturally diverse place where scholars and the curricula address every dimension of that difference” (p. 33). In essence, instructors who embrace these contentious moments as opportunities for self-reflexive praxis and thus, student learning, thereby open themselves and their student for deep engagement.

When faculty encountered controversy in the classroom, many in this study relied on techniques to counterbalance opposing viewpoints and equilibrate the classroom environment. Oulton et al. (2004) stated that although “balance” (p. 416) may be an instructional goal in these contentious moments, it is elusive:

> Even if the teacher thinks that they have presented matters as fairly as possible, others with different worldviews may still judge the presentation to be biased. An alternative ... is to be open about the fact that balance can never be fully achieved but counter this by developing in pupils a critical awareness of bias and make this one of the central learning objectives of the work. (p. 416)

This echoes Harlap’s (2014) finding that when faculty encounter “hot moments” in the classroom, they tend to rely on instructional strategies like classroom management techniques, rather than addressing larger, structural issues that undergird the moment. Others actively avoided topics or took...
“neutral” stances in these discussions. Kubota (2014) stated neutrality itself has “political value...when teachers, as role models, perform this position, it might problematically suggest that refraining from taking any position on a difficult issue is a virtue in a democratic society” (p. 234). In a context like diversity courses, it seems antithetical to course goals for students not to form an opinion.

Lack of Discussion of Controversial Topics

The second key contribution of this study emerges from the lack of discussion of controversial topics that some instructors reported. This is potentially concerning if diversity course requirements are to achieve their stated purposes; while some courses may have content relevant to diversity, there are often calls for active learning, introspection, and facilitated discussion to also be part of such courses to maximize student learning (Humphreys, 1997; Nelson Laird & Engberg, 2011). This raises questions about the purposes, boundaries, and efficacy of institutionally defined diversity requirements.

Though we expected required diversity courses would include such discussion of controversial topics, many faculty discussed a lack of heated conversation within their classrooms. Thus, we also identified the barriers some faculty expressed toward having these discussions in class, some of which were attributed to students (instructor perceptions that students did not want to or could not engage in such discussions), institutional and structural factors (large class sizes seen as not conducive for discussions), subject matter (abstract or historical content seen as not lending itself to disagreement), or the instructors themselves (unwillingness, lack of preparation, or personal discomfort with engaging in controversial topics).

From a functionalist-instrumentalist perspective, instructors may view student characteristics as prohibitive to substantially engaging, either in their attitudes or behaviors and detract from course learning goals (Winkler & Rybnikova, 2019). In our study, several instructors decisively shut down or avoided student resistance; they stated their courses were not sites in which these conversations should occur. In a critical-functionalist understanding of student resistance, the course content itself serves as the means by which students’ worldviews are broadened. However, when student resistance occurs, instructors see this as prohibitory to achieving course goals, not as opportunities for deeper learning. Most of our participants were represented in the critical-functionalist frame and as Winkler and Rybnikova (2019) note, those aligned with this frame are in a “contradictory stance” (p. 530): instructors’ goals are to address issues regarding social inequality; yet they meet student resistance as barriers to students’ learning and something mostly to be avoided. Our findings echo this tension many instructors encounter as well.

Taken together, evidence of instructor avoidance of controversial topics, as well as many topics not being explicitly linked to structural issues of equity and diversity, should cause concern for the overall project of required diversity courses, at least at some institutions. Interestingly, some instructors lamented the lack of heated discussion in their classrooms, yet simultaneously reported the stringent guidelines for class discussion they enacted, aligned with critical-functionalist and functional-instrumentalist perspectives (Winkler & Rybnikova, 2019). Even faculty who do intentionally promote disagreement and spirited discussions in the classroom may over-rely on simplistic strategies such as surfacing “both sides” of an argument, when merely voicing or making space for multiple viewpoints may not be sufficient for deep learning and student engagement, much less for nuanced understandings of diversity issues. Simply put, diversity course requirements may not be fulfilling the purposes that their advocates imagine, and these topics and contexts warrant further investigation. Future studies could explore how and why instructors enact these strategies, where they learned them, and what consequences and alternatives exist. If diversity courses are espoused as sites to introduce and explore critical social issues and for students to engage in spirited discussion of these issues, this
study points to potential gaps between the ideals behind diversity course requirements and how they are taught in practice.

**Limitations**

We note several limitations of this investigation. First, our study relied upon faculty retrospective self-report; while this fit our constructivist approach and allowed us to answer our research question about how faculty claimed to address controversy in the classroom, other methods (observation, student evaluations) and perspectives (namely, student perspectives) could add additional complexity to our examination of this phenomenon.

In addition, diversity course requirements at the five institutions under study were broad and a variety of courses met criteria, leading to instructors’ strategies voiced in this study about dealing with a range of controversial topics and issues. This variability, and the fact that some courses classified within institutional diversity requirements may not, in fact, address controversial topics is accounted for within the “lack of conflict” findings category, which includes factors such as abstract topics, class size and format, student silence, and instructor avoidance. One limitation is that our sampling strategy was not focused on or limited to courses we knew had discussion of controversial topics; rather, we used institutional diversity requirements and assumed that some discussion of these topics would occur in every diversity course, which our findings refute. Future studies could attempt to parse which courses within a diversity requirement aim to include discussion of controversial content. Required diversity courses are typically offered by humanities and social science departments, and future investigations could focus on how controversy is addressed in other disciplines, we contend that the strategies identified in this study may be relevant to instructors across various disciplines.

**Implications and Future Research**

While this study is most directly applicable to instructors teaching required diversity courses, consideration of these strategies also holds promise for instructors of other courses and in other disciplines. University educators often feel unprepared for difficult moments in the classroom (Vaccar, 2001). It is crucial for faculty to have access to professional development opportunities and trainings to continue their teaching development throughout their careers (Humphreys, 1997). University centers for teaching and learning play a fundamental role in bridging those gaps. Harlap (2014) remarked, “praxis cannot start and end with a single workshop; yet university educators rarely reflect with colleagues on their teaching” (p. 226). Creating space for faculty to be vulnerable and open to sharing these moments with each other is crucial. Traditionally, higher education spaces for faculty, especially those who teach in diversity courses, are not compatible with an ethos of vulnerability or exposing areas for growth. Open dialogue and facilitated discussion between faculty peers needs to take place if faculty are to be equipped to lead students’ learning through difficult topics as they grapple with a broader worldview, which is what many of these diversity courses were intended to do. These implications also offer opportunities for future research on these topics from students’ points of view, and more research on diversity courses and the role of the institution in articulating learning goals as well as for supporting instructors to teach them.

This study offers several contributions to literature addressing controversial topics in the classroom and is unique in its context — required diversity courses at multiple colleges and universities — as well as uncovering that many controversial topics discussed in such courses do not relate substantially to social identities such as race and gender that one may expect to be discussed within diversity courses. The findings point to strategies that faculty, educational developers, and academic
administrators may adopt to prompt faculty to take risks in their classrooms and dive deeper in exploration of controversial topics with their students.

Faculty members’ identities are inextricably connected in the way they teach and in turn, the classroom environment in which students learn (e.g., Perry et al., 2009). Although instructors' consideration of their own identities and positionalities, or those of their students, were salient in relation to their status at the university and emotional work performed (see Miller & Struve, 2020; Miller et al., 2019), it was not nearly as prevalent in relation to course content and the research question we examined in this study. Future studies could explore the nexus between instructors’ social identities and how they address controversial topics in diversity courses. This study was also conducted in the South and these phenomena may vary by regional context.

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References


Student-Teacher Alliance Buffers Against the Impact of Moderate Math Anxiety on Course Performance among College Students

Erin N. Palmwood
University of Mary Washington

Abstract: Students with math anxiety experience low self-efficacy and high levels of distress when asked to approach math tasks and concepts, which often results in poor course performance. Despite the wealth of research on this construct, relatively little is known about how math anxiety impacts math achievement in college-aged students or what types of classroom-based processes might buffer against this harmful effect. The present study therefore examined the student-teacher alliance as a potential buffer against the detrimental effect of math anxiety on course grades in a sample of non-STEM college students enrolled in a required mathematics course. Students completed questionnaires regarding their math anxiety, overall anxiety, perception of their alliance with their course instructor, and class grade over the course of a semester. Results indicated that, although elevated math anxiety was associated with poorer course performance, this link was weakened for students who perceived themselves to have a stronger relationship with their instructor. However, this moderation effect was present for students with low to moderate, but not high, math anxiety. Findings highlight the importance of college-level math instructors attending to the student-teacher alliance as a potential anxiety mitigation strategy, particularly for students with moderate levels of math anxiety.

Key words: math, anxiety, student-teacher alliance, higher education

Math anxiety, defined as individuals’ internalized negative beliefs about their ability to understand and apply mathematical concepts, is an exceedingly common phenomenon among students of all ages (Zhang, Zhao, & Kong, 2019). This is particularly true for female-identified students and students of color, who tend to report higher levels of math anxiety than do their peers (Casanova, Vukovic, & Kieffer, 2021; Young & Young, 2016). The negative impact of math anxiety on math course performance is well-documented, with higher levels of math anxiety predicting poorer math achievement among elementary school, middle school, high school, and college students (Ashcraft & Krause, 2007; Zhang, Zhao, & Kong, 2019). While existing research has identified various strategies for alleviating this anxiety, many of these require individualized interventions that are likely impractical for the everyday classroom (e.g., mindfulness-based cognitive therapy; LaGue, Eakin, & Dykeman, 2019). The present study therefore sought to examine whether the student-teacher alliance might buffer against the harmful impact of math anxiety on course performance.

Math anxiety has well-documented effects on students' emotional functioning. In addition to its impact on self-reported feelings about math (Krinzinger, Kaufmann, & Willmes, 2009), work by Young and colleagues (2012) found that children with high math anxiety exhibit elevated levels of right amygdala activity while completing math tasks, as well as increased functional connectivity between the amygdala and the ventromedial prefrontal cortex. This suggests that these students experience significantly elevated emotional reactivity while completing math tasks and expend more cognitive energy processing these emotions in the moment – a potential mechanism by which math anxiety decreases math performance. Research has also demonstrated that the mere anticipation of math tasks results in neural changes for those with high math anxiety, such that elevated levels of anticipatory math anxiety have been associated with increased activity in brain regions that are associated with threat detection and the anticipation of pain, such as the insular cortex (Lyons & Beilock, 2012). Further, even when not anticipating an impending math task, students with high math
anxiety demonstrate elevated amygdala activity when presented with math-related visual stimuli – a pattern similar to that found in those with specific phobias (Pizzie & Kraemer, 2017).

Math anxiety also has a demonstrated impact on cognitive functioning. For instance, work by Young and colleagues (2012) demonstrated that, while completing math tasks, students with high levels of math anxiety show decreased activity in regions of the prefrontal cortex associated with mathematical reasoning, highlighting another possible mechanism by which math anxiety results in poor math achievement. Yet another potential mechanism might be reductions in memory function, with high math anxiety consistently being linked to poorer working memory capacity in behavioral and neuroimaging studies (Ashcraft & Ridley, 2005; Klados, Paraskevopolous, Pandria, & Bamidis, 2019). Existing research has also connected math anxiety to enhanced negative attentional bias to mathematical stimuli, with this bias potentially resulting in fewer cognitive resources being available to complete the math task at hand (Rubenstein, Eidlin, Wohl, & Akibli, 2015).

These cognitive and emotional consequences of math anxiety often lead to math avoidance for students (Hembree, 1990; Ma & Xu, 2004). This can include attentional avoidance, with work by Pizzie and Kraemer (2017) showing that those with high math anxiety engage in cognitive avoidance of math-related stimuli. This is true at the neural level as well, such that high math anxiety is associated with decreased activity in brain regions required for mathematical reasoning while completing math tasks (Young et al., 2012). Indeed, students often report higher levels of anxiety while anticipating, rather than completing, math tasks, suggesting that highly math-anxious students engage in a form of avoidant emotional coping during math performance (Lyons & Beilock, 2012). This avoidance extends to their coursework as well, with recent research by Daker and colleagues (2021) indicating that math anxiety can longitudinally predict students’ avoidance of science, technology, engineering, and mathematics (STEM) courses over the course of their college careers. Ultimately, these various forms of avoidance result in those with high math anxiety self-selecting out of STEM careers, especially among highly math-anxious women (Hembree, 1990; Huang, Zhang, & Hudson, 2019; Levy, Fares, & Rubenstein, 2021; Rinn, Miner, & Taylor, 2013).

The consequence of most immediate concern to students tends to be their math course performance. Given the aforementioned impact of math anxiety on students’ emotional, cognitive, and behavioral functioning, it is unsurprising that elevated math anxiety has been consistently linked to poor performance in math courses, particularly among female-identified students (Ashcraft & Krause, 2007; Van Mier, Schleepen, & Van den Berg, 2019; Zhang et al., 2019). In fact, the inverse relationship between math anxiety and math achievement holds true even when controlling for students’ levels of mathematical ability (Daker et al., 2021). It is clear how such a process may create a maladaptive cycle whereby students feel anxious about math, have difficulty completing math tasks to the best of their ability, perform poorly on those tasks, and subsequently perceive their fears regarding their math capacity validated – thereby increasing their anxiety levels.

Math anxiety and math course performance is of particular concern for students in non-STEM majors. Due, in part, to the self-selection bias previously described, students in these majors exhibit significantly higher levels of math anxiety than do their STEM major counterparts, with some suggesting that math anxiety mitigation techniques may be of particular importance for students seeking degrees in these fields (Leppma & Darrah, 2022; Malik, 2014). This is especially true of students who major in fields like psychology, which requires them to complete mathematics courses (e.g., statistics) and apply mathematical knowledge throughout many other courses (e.g., research methods, research seminars; Lester, 2016; Walker & Brakke, 2017). As these students tend to have significant difficulty completing their math-heavy courses and subsequently finishing their degrees in a timely manner, it is crucial to develop manageable classroom strategies for mitigating math anxiety among non-STEM college students.
A variety of interventions have been identified to decrease math anxiety among students. Some are focused on individuals close to these students, such as decreasing teachers’ and parents’ levels of math anxiety (Maloney, Ramirez, Gunderson, Levine, & Beilock, 2015; Murr, 2001; Uusimaki & Nason, 2004) or increasing caregiver support of students’ math efforts (Wang, Borriello, Oh, Lukowski, & Malanchini, 2021). Others suggest major structural changes to math courses, such as creating single-gender math courses (Brunson, 1983; Campbell & Evans, 1997), offering mathematics courses in an online format (Taylor & Mohr, 2001), and designing prerequisite courses specifically aimed at decreasing math anxiety (Iossi, 2007). At the student level, there is compelling evidence for the utility of psychotherapeutic interventions, such as cognitive behavioral therapy or mindfulness-based treatments, to alleviate math anxiety and promote math achievement (Asanjarni & Zarebahramabadi, 2021; LaGue et al., 2019; Samuel, Buttet, & Warner, 2022). While each of these strategies appears useful in decreasing math anxiety, none are focused on shorter-term, class-wide reductions in this anxiety.

The student-teacher alliance offers one potential avenue by which this class-wide decrease in math anxiety might occur. Existing research on elementary and middle school-aged students suggests that this alliance can increase student performance in math classes by decreasing math anxiety (Semeraro, Giofre, Coppola, Lucangeli, & Cassibba, 2020; Zhou et al., 2019), with work by Patrick and colleagues (2003) demonstrating that supportive instructors tend to promote an approach, rather than avoidance, orientation toward challenging or anxiety-provoking mathematical concepts among students. This may be similar to the ways in which the therapeutic alliance in psychotherapy can facilitate decreased avoidance and, subsequently, decreased anxiety in exposure-based treatments for specific phobias (Buchholz & Abramowitz, 2020; Liber et al., 2010). However, given that elementary and middle school students typically experience significantly more interaction with their math instructors, the extent to which these findings generalize to college students is unclear.

The present study therefore aimed to examine the student-teacher alliance as a potential moderator of the link between math anxiety and math course performance among non-STEM college students. It was hypothesized that students who felt a stronger connection to their math instructor would experience a weaker impact of math anxiety on course grades, suggesting that the student-teacher alliance may act as a protective factor which buffers against the harmful impact of math anxiety on achievement.

Method

Participants

Participants were recruited from two sections of the author’s Advanced Statistics for Psychology course. All students enrolled in this course were invited to participate in the present study in exchange for extra credit and the opportunity to win a $10 gift card in a raffle. Students who did not wish to participate were offered an alternative extra credit opportunity. Out of 43 total students enrolled in this course, 41 elected to participate in the study (age \( M = 22.31 \) years, \( SD = 4.91 \)). Sample characteristics are presented in Table 1. All procedures in this study were approved by the Institutional Review Board.
Table 1. Sample characteristics.

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Note: 5 participants declined to provide demographic information.

Measures

Math anxiety

The Math Evaluation Anxiety subscale of the Math Anxiety Rating Scale — Revised (MARS-R-MEA; Hopko, 2003) was administered to assess students’ performance-based mathematics anxiety. Students were asked to rate their typical anxiety levels in situations such as “thinking about an upcoming math test one day before” on a scale from 0 (no anxiety) to 4 (high anxiety). Cronbach’s alpha for this subscale was .84.

Student-teacher alliance

The Learning Alliance Inventory (LAI; Rogers, 2012) was administered to assess the strength of the student-teacher relationship. This measure assesses students’ sense of their bond with the instructor (“My teacher and I have connected”), the instructor’s competency (“My teacher welcomes all student input and feedback”), and their investment in the course (“The things we are doing in this course are helping me learn”) on a scale from 1 (not at all) to 7 (very much). Cronbach’s alpha for this measure was .91 at Time 1 and .94 at Time 2.

Trait anxiety

The Trait subscale of the State-Trait Anxiety Inventory (STAI-T; Spielberger, 1983) was administered to assess overall levels of general (i.e., not math-specific) anxiety. Students indicated the degree to which they generally feel “nervous and restless” or “calm, cool, and collected” (reverse-coded) on a scale from 1 (almost never) to 4 (almost always). Cronbach’s alpha for this measure was .94.
**Course performance**

Student self-reported their final letter grade (e.g., A, A-, B+) at the end of the semester.

**Procedures**

One week after the start of the course, students were sent a link inviting them to provide their informed consent to participate in the present study and complete Time 1 questionnaires (demographics, STAI-T, LAI). They completed Time 2 questionnaires (MARS-R-MEA, LAI) in the same manner during the last week of the semester, and they provided their final course grades once the semester had concluded. Missing data were as follows: MARS-R-MEA $n = 0$, LAI-1 $n = 5$, LAI-2 $n = 2$, STAI-T $n = 5$, grade $n = 14$. Cases were excluded listwise in analyses, bringing the total number of usable participants to 23. In order to examine changes in the student-teacher alliance over the course of the semester, an LAI difference score was computed for each participant by subtracting their Time 1 LAI score from their Time 2 score (i.e., LAI$_{diff} = $ LAI$_{Time2} - $ LAI$_{Time1}$). All analyses were conducted using SPSS version 27 and Hayes’ PROCESS version 4 (Hayes, 2022).

**Results**

A moderated regression analysis was conducted with LAI$_{diff}$ scores entered as a predictor, final course grades entered as an outcome variable, MARS-R-MEA scores entered as a moderator, and STAI-T scores entered as a covariate. The overall model was significant, suggesting that these factors have a significant impact on math course performance, $F(4, 18) = 4.22, p = .014$. Consistent with hypotheses, results indicated that students performed more poorly in the course when they had higher levels of math anxiety, $t(18) = -2.57, p = .019$, and a weaker bond with the instructor, $t(18) = 2.58, p = .019$. Unexpectedly, students also performed more poorly when they had lower levels of trait anxiety, in contrast with present findings for math-specific anxiety, $t(18) = 2.54, p = .021$. This pattern of results remains intact when controlling for students’ math anxiety at Time 1, though this was not of primary interest to the present study ($F(5, 17) = 3.66, p = .02$).

Findings also indicated a significant moderation effect, $t(18) = -2.47, p = .004$, such that students with low to moderate math anxiety performed better in their statistics course when the student-teacher alliance was strong (low anxiety: $t(18) = 2.66, p = .016$; moderate anxiety: $t(18) = 2.79, p = .035$). The student-teacher alliance did not impact course grades for students with high levels of math anxiety, $t(18) = -0.37, p = .717$. This suggests that a strong student-teacher alliance enhances performance only among students who experience elevated anxiety related to course content and may not have a significant impact on low-anxiety students. See Figure 1 for an illustration of this interaction.

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The present study sought to examine whether a strong student-teacher alliance could buffer against the impact of math anxiety on course performance among non-STEM college students. Findings replicated existing work demonstrating that math anxiety has a detrimental impact on course performance, such that higher levels of math anxiety were associated with poorer final course grades. Also consistent with past work, results indicated that a stronger student-teacher alliance predicted better math performance, as indicated by higher grades. Moderation hypotheses received partial support, such that students with low to moderate math anxiety experienced less grade degradation when the student-teacher alliance was strong. However, among students with high math anxiety, the student-teacher alliance had no impact on their course performance. Surprisingly, results also indicated that students with low levels of trait anxiety performed more poorly in their statistics course than did students with higher trait anxiety.

The finding that the student-teacher alliance moderates the link between math anxiety and course performance is consistent with previous work by Semeraro, Zhou, and colleagues (2020; 2019), which demonstrated that a strong relationship between a student and their instructor can act as a protective factor against the harmful academic effects of moderate anxiety among elementary and middle school students. This echoes similar work in the field of psychotherapy research, which has consistently highlighted the therapeutic alliance as a key facilitator of positive therapeutic change and psychotherapy goal attainment (e.g., Arnow et al., 2013; Misrahi, Petit, Blance, Bayle, & Llorca, 2012; Ormhaug, Jensen, Wentzel-Larsen, & Shirk, 2014). In the present study, the protective effects of the student-teacher alliance may be attributed to the secure base effect, in which a supportive relationship is thought to provide a safe space from which an individual feels more confident taking appropriate risks and approaching anxiety-provoking stimuli (Bowlby, 2005; Feeney, 2004; Marmorosh et al., 2014). Indeed, existing work has demonstrated that teachers can act as a secure base for children in preschool through middle school, though this has not been examined among students in adolescence.

Figure 1. Interactions between LAI_diff and MARS-R-MEA scores for student course grades.

Discussion

The present study sought to examine whether a strong student-teacher alliance could buffer against the impact of math anxiety on course performance among non-STEM college students. Findings replicated existing work demonstrating that math anxiety has a detrimental impact on course performance, such that higher levels of math anxiety were associated with poorer final course grades. Also consistent with past work, results indicated that a stronger student-teacher alliance predicted better math performance, as indicated by higher grades. Moderation hypotheses received partial support, such that students with low to moderate math anxiety experienced less grade degradation when the student-teacher alliance was strong. However, among students with high math anxiety, the student-teacher alliance had no impact on their course performance. Surprisingly, results also indicated that students with low levels of trait anxiety performed more poorly in their statistics course than did students with higher trait anxiety.

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or early adulthood (Al-Yagon & Mikulincer, 2006; Sierra, 2012). Such an interpretation is also consistent with research by Patrick and colleagues (2003) showing that a strong student-teacher alliance decreases student avoidance of math tasks among elementary and middle schoolers, suggesting that students are more willing to approach anxiety-provoking mathematical stimuli when they perceive their instructor to be a secure base for such behavior. As decreased avoidance of anxiety-inducing stimuli is a primary mechanism of change for evidence-based treatments for anxiety disorders (Buchholz & Abramowitz, 2020), it is possible that a strong student-teacher alliance provides a secure base from which students with moderate math anxiety feel increasingly comfortable approaching, rather than avoiding, math stimuli, thus improving overall course performance.

As noted, the finding that the student-teacher alliance did not impact the course performance of students with high math anxiety was unexpected. However, the qualitative differences between moderate and high anxiety, including their impact on functional impairment, are well-documented. The Yerkes-Dodson Law, for instance, asserts that, while moderate anxiety can motivate adaptive behavior under the right circumstances, severe anxiety is typically maladaptive (Deshpande & Kawane, 1982; Mellifont, Smith-Merry, & Scanlan, 2016). Further, common correlates of anxiety, such as maladaptive, action-inhibiting thought processes, increase linearly with anxiety levels, such that those with moderate levels of anxiety have significantly fewer of these cognitions than do those with high anxiety (Galassi, Frierson, & Sharer, 1981). In the context of the therapeutic alliance, work by Mason, Driessen, and colleagues (2015; 2010) indicates that highly anxious clients respond differently to clinician characteristics than do low-to-moderately anxious clients, as do clients with moderate vs. high levels of depressive symptoms. Furthermore, the therapeutic alliance has been shown to play less of a role in clients’ treatment progress among those with greater symptom severity, with highly anxious clients often requiring more intensive intervention (Cohen, Kim, Van, Dekker, & Driessen, 2020; Leichsenring, 2001). It appears, then, that for students with high levels of math anxiety, the student-teacher alliance alone is insufficient to protect against the maladaptive effects of this anxiety on their course performance.

The finding that students with lower trait anxiety earned poorer grades in their statistics course may also be interpreted in the context of the Yerkes-Dodson Law. Prior research has demonstrated that students with low math anxiety tend to perform worse than do students with moderate levels of math anxiety, ostensibly due to the motivating effect that adaptive levels of anxiety typically have on behavior (Deshpande & Kawane, 1982; Keller, 2010; Mellifont et al., 2016; Wang et al., 2015). This might be particularly relevant in the context of required mathematics courses for non-STEM majors, as low motivation is consistently highlighted as a key factor impeding student success in these classes (Acee & Weinstein, 2010; Lavasani, Weisani, & Ejei, 2011; Roberts & Glynn, 1979; Vaessen et al., 2016). It therefore appears that significantly low levels of trait anxiety may hinder student performance in mathematics courses by decreasing motivation to approach unappealing stimuli (e.g., math homework).

Present findings have implications for both classroom instruction and education research. With respect to practical applications, this work suggests that college-level math instructors should be particularly attentive to the alliances they are forming with each of their students over the course of each semester, particularly if they are teaching a course designed for non-STEM majors. This might be facilitated by smaller class sizes, informal review sessions, offering praise for effort in addition to grade-based outcomes, and periodic assessment of students’ perceptions of this alliance throughout each semester (Blatchford, Bassett, & Brown, 2011; Ferrandino, 2016; McGrath & Van Bergen, 2015). These findings also suggest that students with significantly elevated levels of math anxiety would likely benefit from more direct, intensive interventions, such as referrals to individual psychotherapy services to learn mindfulness and cognitive restructuring skills to support course performance, as the student-teacher alliance alone is unlikely to produce a sufficient protective buffer against poor course outcomes.

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(Asanjarni & Zarebahramabadi, 2021; LaGue et al., 2019; Samuel et al., 2022). Regarding research implications, present results highlight the importance of examining student-teacher relationships outside of the preschool, elementary school, and middle school contexts in which they are typically studied, as these relationships continue to impact student outcomes into their college years despite the limited contact that undergraduate students often have with their instructors. Further, findings underscore the importance of considering the full spectrum of anxiety, rather than categorizing students as anxious vs. not anxious, when examining the impact of math anxiety on academic functioning – a concept that is consistent with proposed changes to the current diagnostic system for anxiety disorders (Cuthbert & Insel, 2013).

The present study is not without limitation. As instructor warmth and other alliance-promoting factors were not experimentally manipulated, causation cannot be explicitly inferred from these findings. Further, sampling from the author’s own course necessitated a non-double-blind study design, which may have introduced experimenter bias and issues with demand characteristics. While anonymized and computerized data collection procedures hopefully helped to minimize these concerns, future studies should strive to replicate this work in a way that addresses these potential issues by either (1) experimentally manipulating instructor behavior, perhaps in a shorter-term laboratory setting, or (2) sampling across courses with different instructors and using hierarchical linear modeling to account for natural variability in instructor behavior. Replication is particularly important in this case given the relatively small sample, and future studies should strive to recruit from a more diverse pool of students in order to enhance the generalizability of these findings – which is particularly important given the documented differences in math anxiety and performance based on gender and racial identity. Finally, future studies should continue to examine the full spectrum of student anxiety levels, including recruiting students with clinically significant levels of anxiety, in order to further clarify the protective role of the student-teacher alliance on math achievement.

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Community College Psychology Students’ Cooperative Learning Experiences--A Qualitative Analysis By Year In College

Christopher T. Arra
Northern Virginia Community College
carra@nvcc.edu

Abstract: The study aimed to assess the effects of year in college on students’ perceptions of the cooperative learning process. Ninety-six college students completed 5 open-ended questions that asked students about their preferences for cooperative learning activities. Forty-nine first-year students and 47 second-year students participated in the study. A qualitative research design was used. Qualitative analyses compared—by year in college—the 5 open-ended questions. The principal investigator qualitatively analyzed the data for themes and subthemes, high-frequency responses, and percentage of response. Some findings were that first- and second-year students preferred the same types of group work and both groups had overlapping ideas on ways to make group work more enjoyable.

Keywords: cooperative learning, year in college

Cooperative learning activities are used in classrooms from elementary school through college (Johnson & Johnson, 2009), with college students reporting having a variety of different cooperative learning experiences during their primary and secondary education (Arra, Shuaib, & McGarry, 2014). Therefore, upon entering college, students have been exposed to a wide variety of cooperative learning activities (Arra, Shuaib, & McGarry, 2014). This exposure invariably makes students more comfortable with certain cooperative learning activities that they may wish to continue using in college (Arra, D’Antonio, & D’Antonio, 2011). Finally, it is important to note that college students’ overall level of exposure to cooperative learning activities varies significantly, and not all students have been exposed to cooperative learning activities that are beneficial in college.

A Review of Cooperative Learning

Robert Slavin (1994) defined cooperative learning as an instructional program where students work in small groups to help each other master academic content. In this way, when the group succeeds, everyone in the group succeeds (Bishnoi, 2017). Slavin (1994) also suggested that cooperative learning has the potential to capitalize on the developmental characteristics of students. In this way, these techniques capitalize on students’ desires for peer orientation, expressions of independence, and social enthusiasm. Additionally, McKinney & Cook (2018) identified two types of cooperative learning. Formal cooperative learning is structured and is used to achieve group goals and informal cooperative learning incorporates group learning with passive teaching. Finally, Elliot and Reynolds (2014) suggested that cooperative learning is fun for students and that they also support each other’s learning.

The use of cooperative learning strategies in American schools dates back to the 1950s. The rationale, proposed by James Coleman (1961) was that cooperative learning activities reduced competition in schools. Competition amongst students was viewed as a negative component of the education system. Instead, Coleman suggested that a more cooperative approach to teaching would discourage competition in academic settings which effectively impedes the process of education.

While theorists such as James Coleman began establishing the tenets of cooperative learning theory in the 1950s, modern theorists David and Roger Johnson head the Cooperative Learning Center at the University of Minnesota. The center focuses on making classrooms and schools more
cooperative places by teaching cooperative skills, leadership, and communication. Johnson and Johnson identified that cooperative learning promoted skills within the group including better communication, mutual liking, and high acceptance and support (Johnson and Johnson, 1975).

Subsequently, Johnson and Johnson identified the 5 elements for effective group learning. These elements are positive interdependence, face-to-face orientation, individual accountability, processing, and social skills. It is important to note that all 5 elements are equally important for effective group learning (Johnson and Johnson, 1994). Additionally, Johnson and Johnson (1999) modified their 5 criteria in 1999 to include positive interdependence, individual accountability, promotive interaction, group processing, and the development of small-group interpersonal skills, with all elements being equally important. Brandl, Schneid, Smith, Winegarden, Mandel, & Kelly (2017) expanded on these ideas by suggesting 8 key elements to cooperative learning: teacher supervision, heterogeneous groups, positive interdependence, face-to-face interaction, individual accountability, social skills, group processing, and evaluation. Again, all 8 elements are equally important for effective group learning (Brandl et al., 2017).

According to Johnson, Johnson, and Smith (2007), cooperative learning has two components: social and academic. The social aspect of cooperative learning can be very exciting for students who enjoy this element of the activity. Academic learning can therefore flow more easily as it is cloaked by social interaction. Johnson and Johnson (2009) also stated that cooperative learning is based on social interdependence theory. In this way, cooperative learning activities are tied to theory. Teachers appreciate and prefer to implement interventions that are not only empirically-supported but also tied to theory. It can be said that theory drives practice.

Collectively, the literature around cooperative learning suggests that, although it’s use in academic environments surely precedes the mid-twentieth century, it was formally introduced into the schools in the 1950s. The literature also points to the research and dedication to cooperative learning by Johnson and Johnson. They were instrumental in defining the components and elements of cooperative learning.

A Review of the Literature of Student Perception of Cooperative Learning

Several studies have been conducted that assessed students’ perceptions of the cooperative learning process. Marks and O’Connor (2013) administered a survey to college students to determine their attitudes about cooperative learning activities in the classroom. Prior to finalizing the survey, a small sample of students reviewed the instrument for clarity, acceptability, comprehensiveness, and implementation efficiency. The surveys were administered to 8 business classes and 19 English Classes. The response rate was 85% in business and 71% in English. Results showed that students saw cooperative learning as a positive experience but did not necessarily prefer it to individual assignments. Students also questioned instructors’ motivations for using group work.

Sarobol (2012) investigated university students’ perceptions of group work in the classroom. Ninety-five first-year university students were assessed. The students were divided into groups, each of which contained 4-6 members. The students worked in the same group the entire semester. The students spent time working in their groups both during class and outside the classroom. Findings suggested that most students preferred group work to traditional instruction, and that most students also viewed group work in a positive light.

Another study by Chiriac (2014) also looked at university students’ perceptions of cooperative learning activities. Two hundred-ten university students participated in the study. The students were assigned to groups of 4 to 8 students, with the groups being heterogeneous concerning gender. The empirical data were collected through a study-specific semi-structured questionnaire. Results showed that students saw group work as an activity that facilitated learning, had a social function, and that the
group must be well organized with both male and female members. Additionally, students reported that a lack of group structure could lead to a low degree of satisfaction with group work.

A study by Schultz, Wilson, & Hess (2010) assessed student preference for cooperative learning activities by evaluating open-ended questions given to the students. Students identified some benefits of group work including, a better product, improved learning opportunities, and reduced workloads. Student concerns included giving up control over grades, free riding by others, and difficulties finding times for the group to meet.

Du, Ge, & Xu (2015) looked at African-American females’ perceptions of the cooperative learning process. This study employed a qualitative methodology as the participants in interviews containing open-ended questions. The results indicated that the participants preferred to work in racially mixed groups and that they viewed cooperative learning as a learning activity not a social one. In another study, Opdecam, Everaert, Keer, & Buysschaert (2014) studied undergraduate accounting students. For this study, they compared group learning and lecture-based learning. Results indicated that female students had a higher preference for group work compared to male students. Additionally, they found that students who preferred group work were more help seeking, more intrinsically motivated, had less control of their learning beliefs, and were more willing to share their knowledge with their peers. Interestingly, researchers also found that engaging in group work resulted in increased performance as compared to lecture-based learning.

Collectively, the research on the student perception of cooperative learning suggests that college students view group work in a positive light as long as the groups have structure. Students indicated several perceived benefits including that it reduces individual workload and that engaging in group work increases academic performance. However, the research indicates that a lack of group structure and negative group work experiences both lead to low degrees of perceived satisfaction by college students. It is clear the study’s findings are varied, and that more attention needs to be given to this important topic.

Year in college and its effect on attitudes about Cooperative Learning Activities

Very little attention in the extant body of research has focused on year in college and attitudes regarding cooperative learning. A study by Asghar (2010) examined first-year students’ perceptions of a specific cooperative learning activity—reciprocal peer coaching. Students were interviewed and three themes emerged: motivational learning, learning in groups, and the context of learning. The themes were then analyzed across a common concept—self-regulation.

Another study by Hodgson, Chan, and Liu (2014) examined the process of peer assessment with teacher guidance. The participants were 153 first-year college students. Results indicated that the first-year students expressed the need for both peer feedback and the instructor’s direct guidance.

Finally, a study by Loes, An, Saichaie, and Pascarella (2017) sought to determine whether engaging in cooperative learning persisted to the 2nd year of college. The participants were 2987 college students from 19 institutions. The results indicated that learning in groups leads to greater levels of positive peer interactions which is related to students persisting to the 2nd year of college.

Collectively, a review of the research concerning year in college and cooperative learning indicates that little research has been conducted on this specific topic. Two studies focused on a specific cooperative learning activity, and the third study examined cooperative learning activities and their effects on college retention. The comprehensive literature review on this topic suggests that there is room to explore, and the present study does just that by asking first and second-year students their general perceptions of cooperative learning. In this way, the researcher seeks to advance, however slightly, the knowledge base of this important topic.
Purpose of the Study

In the present study we investigated college students’ perceptions of the cooperative learning experience by year in college. Many studies have been conducted that examine students’ preferences for different types of cooperative learning activities, and several studies have been conducted that examine students’ perceptions of the cooperative learning process. A handful of studies have even looked at college students’ perceptions of the cooperative learning experience, but scant, if any, attention has focused on year in college and perceptions of cooperative learning activities.

Additionally, analysis of the data across years in college is useful because it informs instructors of how students progress in their knowledge of and utilization of cooperative learning activities from the first to the second year in college. Instructors are then able to take this information into consideration when developing and incorporating cooperative learning activities with their students. This information is useful because it informs all college instructors, regardless of their field of expertise.

Finally, there is little research that specifically evaluates college students’ perceptions of the cooperative learning process using a qualitative research design. Therefore, the present study attempted to inform instructors by analyzing the cooperative learning process from the perspective of the first- and second-year college students and to extend this nascent field. The goal of the researchers was to answer the following questions by year in college:

1. What are the advantages of working in groups?
2. What are the disadvantages of working in groups?
3. Describe specific types of group work/activities that you like.
4. Describe specific types of group work/activities that you do not like.
5. Describe ways to make group work more enjoyable.

Method

Participants

A total of 96 students participated in the study. The participants were first- and second-year students from a community college in the Mid-Atlantic region of the U.S. Forty-nine first-year students and 47 second-year students, ranging from 18 to 63 years of age with an average age of 21, participated in the study (see Table 1). Fifty-two female and 44 male students participated in the study. There were 21 Caucasian, 12 Asian American, 13 African American, 31 Hispanic, 5 Middle Eastern students, 1 Pacific Islander, and 12 Mixed/Other participants.

First-year students were defined as students who have completed 30 credits or less. Second-year students who have completed 30-60 credits. Students were both part and full-time enrolled in college.

The students agreed to participate in this research study. Students completed and signed an Informed Consent Form that was developed by the researcher. The ethical principles provided by the APA formed a guideline for the present study. These principles, which emphasize the concern of the participant’s interest, were applied throughout the study (APA, 2002).
**Table 1. Descriptive Statistics of the Participants.**

<table>
<thead>
<tr>
<th>Total Number of Participants</th>
<th>95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>51</td>
</tr>
<tr>
<td>Male</td>
<td>44</td>
</tr>
</tbody>
</table>

**Ethnicity**

- Caucasian                     | 21 |
- Asian-American                | 12 |
- African American              | 13 |
- Hispanic                      | 31 |
- Middle Eastern                | 5  |
- Pacific Islander              | 1  |
- Other                         | 12 |

**Measures**

Five Open-Ended Questions: Five open-ended questions were also administered (see Appendix 1). The use of open-ended questions allowed respondents to give exact answers to questions without being forced into picking the closest representation to their actual response. The researcher also used open-ended questions as a way of allowing the respondents to “vent” or add information, comments, or opinions. Additionally, the use of open-ended questions by the researchers generated facts, opinions, and insights from the participants (Yin, 2003).

**Procedure**

The 5 open-ended questions were administered to the students by the principal investigator. Students volunteered to complete the questions and were not penalized if they chose not to participate.

**Qualitative Data Analysis**

The 5 open-ended questions were first analyzed by pattern coding. This type of ‘low-level’ coding seeks to find patterns in the data and uses these patterns as the basis of coding. The codes were then reviewed and combined into ‘high-level’ codes that included both themes and subthemes. The data were also analyzed for frequency of response and percentage of response. Finally, tentative conclusions were developed as the principal investigator attempted to find explanations from the data.
Results

First Research Goal

What are the advantages of working in groups?

Eighty-six student responses, or 90% of the total responses, were analyzed for the first probe (see Table 2). Forty-four responses were from first-year students and forty-two responses were from second-year students.

Two themes emerged from the data analysis of the first- and second-year students. The themes were: academic and social. The student responses fit into either category, as some responses were related to academic aspects of cooperative learning, and some responses related to social aspects of cooperative learning. An additional part of the data analysis included calculating the response percentages.

For the first research question, three subthemes emerged as the researcher analyzed the data from the first-year students. The responses and percentage rates were: Getting to Know People (59%), Developing Social Skills (62%), and Finishing the Work Quickly (68%). A first-year student wrote “Some advantages are getting the work done quicker and meeting people in class.”

Three subthemes also emerged from the second-year responses. The responses and response percentages were: Provides Me With Study Partners (55%), The Project Is Finished Quickly (66%), and You Get A Well-Rounded Perspective (47%).

For first-year students, a response such as “getting the project completed quickly” relates to the broader ‘academic’ theme. However, responses such as “getting to know people” and “developing social skills” relate to the broader ‘social’ theme.

For the second-year students, high-frequency responses such as “you get a well-rounded perspective” and “the project is finished quickly” relate to the broader ‘academic’ theme. However, a high-frequency response such as “provides me with study partners” relates to social aspects of group work.

Table 2. Advantages of working in groups by year in college.

<table>
<thead>
<tr>
<th>Subthemes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting To Know People</td>
<td>26</td>
<td>59%</td>
</tr>
<tr>
<td>Developing Social Skills</td>
<td>27</td>
<td>62%</td>
</tr>
<tr>
<td>Finishing The Work Quickly</td>
<td>30</td>
<td>68%</td>
</tr>
<tr>
<td><strong>Second-Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides Me With Study Partners</td>
<td>27</td>
<td>59%</td>
</tr>
<tr>
<td>The Project Is Finished Quickly</td>
<td>30</td>
<td>66%</td>
</tr>
<tr>
<td>You Get A Well-Rounded Perspective</td>
<td>22</td>
<td>47%</td>
</tr>
</tbody>
</table>
Second Research Goal

What are the disadvantages of working in groups?

Eighty-seven student responses, or 91% of the total responses, were analyzed for the second probe (see Table 3). Forty-three responses were from first-year students and forty-four responses were from second-year students.

Two themes emerged from the data analysis of the first- and second-year students. The two themes were: academic and social. High-frequency responses, or subthemes, fit into either category as some responses related to academics, and some responses related to social aspects of cooperative learning. An additional part of the data analysis included calculating response percentages.

Two subthemes emerged from the first-year responses. These responses and response percentages were Not Everyone Participates (62%) and Conflicting Viewpoints (71%).

Two subthemes also emerged from the second-year student responses. These responses and percentages were: Not Everyone Likes Working In Groups (68%) and Not Everyone Participates Equally (92%). A second-year student wrote “I would rather work alone than in a group.”

For first-year students, a high frequency response such as “conflicting viewpoints” relates to the broader ‘academic’ theme. However, a response such as “not everyone participates” relates to the broader ‘social’ theme.

For second-year students, a high frequency response such as “not everyone likes working in groups” relates to the broader ‘social’ theme.

Table 3. Disadvantages of working in groups by year in college.

<table>
<thead>
<tr>
<th>Subthemes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Everyone Participates Equally</td>
<td>27</td>
<td>62%</td>
</tr>
<tr>
<td>Conflicting Viewpoints</td>
<td>31</td>
<td>71%</td>
</tr>
<tr>
<td><strong>Second-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Everyone Likes Working In Groups</td>
<td>30</td>
<td>68%</td>
</tr>
<tr>
<td>Not Everyone Participates Equally</td>
<td>40</td>
<td>91%</td>
</tr>
</tbody>
</table>

Third Research Goal

Describe specific types of group work/activities that you like.

Ninety student responses, or 86% of the total responses, were analyzed for the third probe (see Table 4). Forty-seven responses were from first-year students and forty-three responses were from second-year students.

One theme emerged from the first and second-year responses. The theme was: groups. High frequency responses, or subthemes, from the first-year students were Group Projects (62%) and Group Presentations (54%). High frequency responses, or subthemes, from the second-year
students were also Group Projects (59%) and Group Presentations (65%). A first-year student wrote “I like doing group projects with my classmates.”

**Table 4. Specific types of group work that you prefer by year in college.**

<table>
<thead>
<tr>
<th>Subthemes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Projects</td>
<td>29</td>
<td>62%</td>
</tr>
<tr>
<td>Group Presentations</td>
<td>25</td>
<td>54%</td>
</tr>
<tr>
<td><strong>Second-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Projects</td>
<td>25</td>
<td>59%</td>
</tr>
<tr>
<td>Group Presentations</td>
<td>28</td>
<td>65%</td>
</tr>
</tbody>
</table>

**Fourth Research Goal**

Describe specific types of group work/activities that you do not like.

Ninety-four student responses, or 98% of the total responses, were analyzed for the fourth probe (see Table 5). Fifty-one responses were from first-year students and forty-three responses were from second-year students.

One theme emerged from the responses: academic. High-frequency responses, or subthemes, emerged from the first-year student responses. These categories and response percentages were Science Group Work (58%) and Learning Teams (54%). Two high-frequency responses, or subthemes, emerged from the second-year students. These categories and response percentages were Science Group Work (62%) and Math Group Work (61%). A second-year student wrote, “I don’t like doing group work in science class, it is confusing.”

**Table 5. Specific Types Of Group Work That You Do Not Prefer—By Year In College.**

<table>
<thead>
<tr>
<th>Subthemes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Group Work</td>
<td>30</td>
<td>58%</td>
</tr>
<tr>
<td>Learning Teams</td>
<td>23</td>
<td>54%</td>
</tr>
<tr>
<td><strong>Second-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Group Work</td>
<td>27</td>
<td>62%</td>
</tr>
<tr>
<td>Math Group Work</td>
<td>26</td>
<td>61%</td>
</tr>
</tbody>
</table>
Fifth Research Goal

Describe ways to make group work more enjoyable.

Eighty-nine student responses, or 85% of the total responses, were analyzed for the fifth probe (see Table 6). Forty-five responses were from first-year students and forty-four responses were from second-year students.

Two themes emerged from the data: academic and social. Three subthemes emerged from the first-year students. These subthemes and response percentages were Being Able to Select A Leader (57%), Provide Rewards (52%), and Everyone Participates (51%). Three subthemes emerged from the second-year students. These subthemes and response percentages were Make All Group Members Accountable (52%), Provide Rewards (65%), and Everyone Participates (71%). A first-year student wrote, “Teachers could provide incentives for groups who did a good job.”

Table 6. Ways To Make Group Work More Enjoyable-- By Year In College.

<table>
<thead>
<tr>
<th>Subthemes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being Able To Select A Leader</td>
<td>27</td>
<td>57%</td>
</tr>
<tr>
<td>Provide Rewards</td>
<td>23</td>
<td>52%</td>
</tr>
<tr>
<td>Everyone Participates</td>
<td>23</td>
<td>51%</td>
</tr>
<tr>
<td><strong>Second-Year Students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make All Group Members Accountable</td>
<td>23</td>
<td>52%</td>
</tr>
<tr>
<td>Provide Rewards</td>
<td>29</td>
<td>65%</td>
</tr>
<tr>
<td>Everyone Participates</td>
<td>31</td>
<td>71%</td>
</tr>
</tbody>
</table>

Discussion

The current research base is conflicted when it comes to college students’ preference for cooperative learning activities over traditional instruction. A study by Sarabol (2012) revealed that most college students prefer cooperative learning activities over traditional instruction. Marks and O’Connor (2013) findings were a bit different. They found that students do not necessarily prefer cooperative learning activities over individual assignments. While these studies examined preference for cooperative learning activities over traditional instruction, a review of the literature revealed that little is known about perceptions of the cooperative learning process by year in college. The current study provided information that could be useful to instructors regarding cooperative learning activities by year in college. It is apparent, from a review of the data, that first-year students and second-year students view group work in both similar and different ways. Themes and subthemes emerged from the data analysis across the five research questions. A discussion of the findings follows.

For the first research question, first- and second-year students had differing responses regarding the advantages of working in groups. First-year students indicated both academic and social themes. Responses included getting to know group members as well as the efficiency of project completion. One student wrote, “Each member does less work and we get the work done...
very quickly.” The theme of this specific response is academic as the student in this example is focusing on the amount of work and speed of completion. Teachers should also consider these aspects of the cooperative learning process as they plan to implement these types of activities. It is also important to note that the present findings are supported by Schultz, Wilson, and Hess (2010) who found that students stated that reduced workload was a benefit of working in a group.

Second-year students, however, indicated the opportunity to find study partners and get a well-rounded perspective as advantages of group work. One student wrote, “I meet people that I can study for the tests with.” This specific response reflects a broader social theme as the student is potentially widening his colleague circle at the college. A study by Jain and Kapoor (2015) found that social interaction has a positive effect on academic achievement. In a practical sense, the present findings coupled with the findings by Jain and Kapoor (2015) show teachers the usefulness of incorporating group work into the classroom experience of college students.

The second research question asked participants about the disadvantages of cooperative learning activities. A review of the subthemes indicated that first-year students reported conflicting viewpoints and lack of participation by all group members as disadvantages. One first-year student wrote, "Some group members don't do any work." This is an element of cooperative learning that teachers need to be aware of. Because each student does not participate equally, teachers may face some resistance when presenting cooperative learning activities in the classroom (Shimazoe and Aldrich, 2010). Therefore, it is necessary for teachers to play an active role as facilitators of the cooperative learning process. A study by Tabach and Schwarz (2018) reinforces this idea by stating that students must be taught how to learn together, and teachers must be facilitators of small-group collaboration.

Their second-year counterparts suggested that not everyone likes working in groups and not everyone participates equally. A second-year student wrote, “I like working by myself.” Overall, these findings are supported by the results of a study conducted by Marks and O’Connor (2013) who found that students did not necessarily prefer group work over individual assignments. Additionally, Schulz, Wilson, and Hess (2010) support the present findings by indicating that students do not like giving up control over grades, free-riding group members, and the difficulty that comes with finding common times for the group to meet outside of the regular class. These practical concerns should be considered by teachers before introducing cooperative learning activities in their classes.

The third research question asked students to report the types of group work they preferred. Interestingly, both groups of students reported similar findings. A first-year student wrote, “I like group projects.” Both first-year and second-year students preferred group projects and group presentations. A second-year student wrote, “Presentations are fun to do.” A study by Du, Ge, and Xu (2015) extended the current findings by indicating that students prefer to work in racially mixed groups. The results of this study speak to preferences regarding the composition of groups. Additionally, Opdecam, Everaert, Keer, and Buysschaert (2014) extended the current findings by suggesting that female students had a higher preference for group work compared to their male counterparts. The present findings, coupled with the aforementioned studies, can guide teachers as they consider both types of cooperative learning activities to use and group composition.

The fourth research question asked students which group activities they did not like. First-year students reported science group work and group presentations. A first-year student wrote, “I don’t like group work in science class.” Second-year students also reported science group work as an activity that they disliked. Second-year students also indicated that they did not like math group work. A second-year student wrote, “I would not like group work in Math.” The reasons why students do not like group work in these areas are unclear and warrant further investigation.
Finally, the participants were asked to report ways of making group work more enjoyable. First-year students reported being able to select a leader as an important criterion. One first-year student wrote, “Choosing who is in charge makes it better.” Second-year students reported making all group members accountable as an important criterion. One second-year student wrote, “Make sure everyone participates.” Interestingly, both groups of students indicated rewards and having all members participate as ways to make group work more enjoyable. These findings are supported by a study conducted by Chiriac (2014) who found that a well-structured group leads to a high degree of satisfaction with group work. The present findings are also useful to teachers as they reveal how cooperative learning works best in the classroom.

It is important to note that the findings of the current study may be useful to teachers regardless of their field of expertise. Cooperative learning is a technique that can be used by any educator who is willing to learn the techniques and incorporate it into the classroom as a learning tool (Tabach and Schwarz, 2018). The current findings allow teachers to consider which types of cooperative learning activities are useful in the college setting.

Limitations and Future Research

There are several common limitations of qualitative research. First, the quality of this type of research—as compared to quantitative research—is heavily dependent on the skills of the researcher. Also, the interpretation and discussion of the findings may be influenced by the perspective of the researcher, thus causing a bias in the results.

Additionally, there are several confounding variables such as age of the participants, marital status, home life, work status, and type of institution attended that could have affected the results. These variables were not controlled for so they therefore could have affected the results of the study.

For the current study, areas of future research include investigating this topic by comparing possible differences across age and home life. Other areas of future research include investigating this topic by comparing possible differences across work status, and type of institution attended.

Appendix

Appendix 1. 5 Open-Ended Questions.

Age________________________Gender________________________Ethnicity________________________

1. What are the advantages (pros) of working in groups?
2. What are the disadvantages (cons) of working in groups?
3. Describe specific types of group work/activities that you like.
4. Describe specific types of group work/activities that you do not like.
5. Describe ways to make group work more enjoyable/effective in the classroom.
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Dialogue with Students as a Valuable Tool in Teacher Inquiry for Professional Development: A self-study of a novice science teacher educator learning about student interaction in biology classrooms

Hlogelo Climant Khoza
University of Pretoria, South Africa
climant.khoza@up.ac.za

Abstract: There is a consensus amongst scholars that learning from student feedback depends on how the feedback is sought and used by the individual teachers. Using Hand and Rowe’s (2001) framework of eliciting and using student feedback, the purpose of this self-study was to investigate how I, as a novice teacher educator, can use dialogue with my students to learn about and how to foster student interaction in my biology classroom. I collected data through multiple sources including students’ written feedback, my reflective journal, focus-group interviews with the students, and video recordings of my teaching. Data were analysed through a narrative approach. Findings indicate that the continuous dialogue with my students helped me learn about student interaction and fostering it in my classroom through a variety of ways. This study also illustrates that the teacher needs to establish trust with students from the onset such that the dialogue cannot only be of professional value to the teacher but also improve the students’ learning. These insights are discussed, and recommendations are made in the article.

Keywords: student feedback; dialogue; teacher inquiry; novice teacher educator; self-study, narratives

Introduction

In the early 1980s, the use of teacher inquiry as an approach has been acknowledged for its value as it puts forward the teacher as a researcher (Samaras, 2011). Generally, when teachers are involved in any form of inquiry, they engage in reflection to identify a particular pedagogical issue where they plan with the intention of understanding that issue and improving practice (Hall, 2009). Scholars agree that teacher inquiry is a way of fostering professional development as it is systematic in nature and leads to the expansion of knowledge for teaching in specific ways (Golombek & Johnson, 2017). Although teacher inquiry is aimed at improving practice and solving educational issues, these issues impact student learning (e.g. students’ concerns about the use of a certain pedagogical issue). Therefore, one of the key characteristics of teacher inquiry is its influence on student learning (Mor et al., 2015). Against this background, the involvement of students in teacher inquiry cannot be underestimated as students make a valuable contribution to the teacher’s professional development. In this self-study article, I illustrate how being in dialogue with my students and using their feedback as a basis of my reflection has helped me to learn about and how to foster student interaction in biology teacher education classrooms. The main aim of this article is to extend a conversation around being in dialogue with students as a valuable tool in teacher inquiry to improve a particular pedagogical issue. The key question that I am addressing in this article is: In what ways does being in dialogue with my students serve as a tool in my inquiry to learn about student interaction and fostering it in biology teacher education classrooms?

Context: How it all began

This is part of a larger project where I explore my professional journey of becoming and being a science teacher educator using self-reflexive methodologies like teacher inquiry and self-study (Samaras, 2011). The study emanated from when I was employed at a South African university to teach 3rd year Life Sciences content to pre-service teachers on a sessional basis. In this university, a
concurrent model of preparing science pre-service teachers is followed where the students complete both the content and the methodology modules concurrently (see Khoza, 2022). Since it was my first time teaching pre-service teachers, I was not given the whole year. An academic year at this institution, excluding recess days, is made up of 4 quarters with 7–8 weeks each. I was only allowed to share topics of experienced teacher educators’ modules throughout the year. The first topic that I had to teach was the biochemistry of photosynthesis (a part of the biochemistry of photosynthesis and respiration module) for three weeks in the first quarter of the year. The second topic that I had to teach was the human ear (a part of control systems and senses) for a week in the second quarter of the year. The third topic that I had to teach was population ecology for four weeks in the third quarter of the year. Due to my self-reflexivity and a quest to learn, during my last lecture on the biochemistry of photosynthesis, I asked my students to write me feedback on both my teaching and their learning during the lessons. To guide them, I gave them the prompts (1) Comment on how the lectures were conducted and if you understood what was taught, (2) What did I do well? Be specific on the incidents that took place and, (3) What can I improve on? Reading through 73 of 132 written feedback that I received, I began seeing my teaching from the perspective of students. This ultimately became the motivation for this where I investigated how being in dialogue with students helps me learn. In this article, I report on how being in dialogue with my students served as a valuable tool in my inquiry about learning about student interaction and how to foster it in my lessons in quarters 2 and 3. I chose to focus on student interaction because this was common from the students’ written feedback.

**Literature review and conceptual perspectives**

**Student feedback and impact on professional development**

Dialogue is generally defined as a ‘conversation’ between two or more people. In this study, I am using the term dialogue to mean students providing feedback to the instructor on a regular basis while the instructor responds to that feedback (Jones & Hall, 2021). As such, student feedback is a component of dialogue with students depending on the teacher’s uptake of that feedback. Student feedback used synonymously with student evaluation in literature is defined as the use of processes where information about students’ perceptions of their instructors’ practices and the quality of modules and programmes is gathered (Kember et al., 2002; Richardson 2005). A common practice of student evaluation/feedback is when the students are asked using a Likert scale questionnaire to rate their educators on their knowledge, communication skills, their conduct, and other aspects which may affect the teaching and learning of the course. According to March and Dunkin (1992), there are four main purposes of student feedback. The first is to provide feedback to the instructors on their teaching. In this case, the instructors can improve their teaching by looking at what works (or does not work) for their students. The second is to look at how effective the instructor’s teaching is. However, this is for the institution’s administration. The administration benefits from student feedback as they file for the effectiveness of the courses or modules offered to students. The third is to improve the course such that upcoming students benefit and the fourth is to use the data to research teaching. This article is positioned within the first purpose where student feedback is used for one-self’s professional development. While this is the case, there are arguments that Likert scale questionnaires for gathering student feedback do not work for teachers’ professional development. There have, therefore, been suggestions by scholars like Ang et al. (2018) and Borch (2020) to change how student feedback is collected and interpreted by instructors. In particular, Kane and Maw (2005) emphasise that the students need to be aware of why they are providing feedback such that the feedback is about their learning and not only about the teacher’s teaching.
Not only does student feedback help the teacher to learn but it also gives students a voice. When students provide feedback, they usually focus on, for example, the teacher’s pedagogical approaches and assessment practices (Vaessen et al., 2017). According to Flutter (2007), students tend to communicate their concerns, vulnerabilities, and teaching and learning challenges. However, the question of how and whether the teachers take the students’ concerns into account remains unanswered. Based on how and when the student feedback is done, it seems that it is not the case that the students’ concerns will be attended to. Firstly, the questionnaires are normally administered and analysed and interpreted by the institution’s teaching and learning centre then the report is sent back to the educator. It is only those that are self-reflexive who reflect on their practice. Flutter (2007) argues that this approach can perpetuate teachers to overlook the most important aspects of the teaching and learning process: “learners and how they learn best” (Flutter, 2007, p. 345). Secondly, the feedback is usually sought at the end of the course. Despite the argument that this might impact the teacher’s practice, only the upcoming cohort of students may benefit, thus, raising concerns about the role of this feedback. An important aspect that teachers need to be aware of when collecting student feedback is the process of collection (Borch, 2020) and the usability of feedback including teacher uptake (Jones & Hall, 2021; Mandouit, 2018).

In this study, I drew from Hand and Rowe’s (2001) framework of eliciting and using student feedback. The framework considers collecting student feedback in a structured and planned manner and that collecting student feedback is a continuous endeavour. Teachers can collect student feedback that is planned through questionnaires composed of open-ended questions (Hand & Rowe, 2001). I agree with the authors that the collection of student feedback needs to be planned because it enables one to structure questions that align with the purpose and the knowledge that is being dealt with at hand. In other words, one moves from generic questions to questions that seek to understand what and how students learn and understand the content. Literature suggests that students, in their capacity, as they are the ‘consumers’ of the knowledge taught, can provide valuable insights in terms of how their understanding of certain concepts has improved. Therefore, the questions asked can be structured in such a way that they are specific to the course (Hand & Rowe, 2001). When interpreted by the instructor, this can lead to improved practice (Gün, 2011). To do this, the ongoing continuous nature of collecting student feedback is about collecting and using feedback as one progresses in teaching (Jones & Hall, 2021). When feedback is sought on a continuous level, one is able to make changes to the current practices where the instructor can change learning activities, this student learning is also improved (Biachinni et al., 2013). In this way, using student feedback is a developmental approach that can result in the teacher’s professional development.

Student interaction

Student interaction is conceptualised differently in literature. In this study, I take interaction as defined by Moore and Kearsley’s (2011) categories. The first is student-content interaction defined by how students engage and make sense of the content provided to them (Moor & Kearsley, 2011). The content in this case can be in the form of instructional material like PowerPoint presentations. As such, the teacher should present intentional material that affords the students to interact (Khoza & Nyamupangedengu, 2018). The second type of interaction is student-instructor which takes place when the educator communicates with the students (Moore & Kearsley, 2011). In science classrooms, communication can also include the talk (including questioning) that goes together with instructional material like concrete models. According to Bolliger and Martin (2018), students develop a sense of belonging when the educator takes the initiative to interact with them. Also, Khoza & Nyamupangedengu (2018) illustrated that the quality of this kind of interaction is dependent on the instructor’s facilitation. In this study, I envisaged that, through inquiry, I would be able to initiate and
facilitate interaction in a variety of ways. Student-student interaction is explained by the ability of students to work collaboratively and exchange ideas (Moore & Kearsley, 2011). The educator's involvement here is important as they need to design tasks that could lead to this kind of interaction. Such tasks are those that require a high level of cognitive engagement such that students can then share their thinking and collaborate on a specific activity because students can cognitively detail, organize and reflect the new knowledge (Khoza & Nyamupangedengu, 2018).

Research methodology and design

Self-study

I employed a self-study as a methodological approach to teacher inquiry. Self-study is a study about one's own actions and ideas where one aims at understanding their practice better and making certain assertions based on evidence (Samaras, 2011). An important characteristic of self-study is that it is self-initiated where a teacher takes a stance to research their practice and improve it (Samaras & Freese, 2006). I used a self-study methodology to understand the role of being in dialogue with my students in my inquiry. According to Samaras and Freese (2006) self-study is constructivist because it is inquiry-based and collaborative. The collaborative nature of self-study results when the researcher involves critical friends. Throughout the study, I had a critical friend – Mike – who critiqued my plan and actions and helped me to reflect on my practice and reflect on my interpretations of the data.

Participants

I was the main participant in this study. The other participant was my critical friend (Mike) who served the purpose of empowering my inquiry (Punch & Oancea, 2014). My pre-service teachers were also participants. These are the 132 3rd year Life Sciences pre-service teachers who were registered for the content modules.

Data collection procedures and analysis

I collected data through multiple ways described below:

- Students’ written feedback on my teaching: After every one or two lectures, I requested students to provide me with written feedback based using the prompts: (1) How was the student interaction in this lecture? (2) How would you want me to change how I attempt to foster interaction? (3) Provide some general comments on the lecture. On average I got 43 written feedbacks from students after every one or two lectures.
- Students’ focus group interviews: At the end of my teaching of population ecology, the students were interviewed in 4 focus groups of 3-5 members each. The purpose of the focus interviews was to get their experiences on my teaching. These interviews were conducted by my research assistant, and they were audio-recorded and transcribed verbatim.
- Informal conversations with students: Throughout the study, I conversed with students. Some would come to my office specifically to provide feedback on my teaching. In such cases, I would seek their permission to audio record the conversation. In some cases, I would talk with students in the corridors and just before and after the lessons. In such cases, I would record what transpired during the conversations, in my reflective journal.
Lecture transcripts: All my lectures were video-recorded. The purpose was to capture my practice so that I can replay the videos for validation purposes as I was reflecting. I use some of the excerpts from my teaching to support my claims.

Recordings of meetings with a critical friend: In total, I formally met with my critical friend four times to discuss my interpretation of the student feedback and my response to those. However, in many cases, we would communicate through email correspondence and telephone calls.

In self-study, data analysis takes place as data is collected (Samaras, 2011). To make sense of the data, I employed a narrative analysis as highlighted by Polkinghorne (1995). According to Polkinghorne (1995), there are two ways of making sense of narratives in educational research. In the first approach, the narratives are constructed by the respondent. In this case, the respondents are the students I was teaching. In the second approach, the narratives are constructed by the researcher where the data is transformed to provide an overview of the situation or phenomenon being investigated. In this study, I employed both approaches to analyse, interpret and tell a story. Using this mode of analysing data, I was able to make sense of how being in dialogue with my students serves as a tool in my action research of learning about student interaction in biology classrooms.

**Discussion of insights**

**How dialogue with students helped me gain insight into promoting interaction through the use of various instructional material**

Cerlson et al. (2003) describe instructional material as tools that aid the instructor when teaching students. Below, I illustrate how being in dialogue with students helped me learn about and how to use instructional material to foster interaction. I use PowerPoint presentations and worksheets as examples.

Since a PowerPoint presentation is the predominantly used instructional material in higher education (Roblyer & Doering, 2013), when I was planning to teach the human ear, I thought of not only using PowerPoint presentations but also how I need to structure my slides. I held an idea that in Life Sciences, understanding the ‘structure’ is a pre-requisite to learning the functions and processes. I, therefore, opted to structure my PowerPoint presentation in such a way that I show the structure of the middle ear and an explanation at the bottom of that. However, when I was teaching, I noticed that the students respond to the questions without hassles. This was also observed by one student whom I talked to immediately after class and two students who came to my office after the lecture:

Student 1: Sir, you gave us responses to the questions you asked on a silver platter.
Instructor: What do you mean?
Student 2: Like every question you would ask, the answer would be on the slide.
Student 1: And that became ‘boring’ knowing that answers are already there and in a way, I could not think deeper.

Student 1 notes that my arrangement of slides inhibited him from thinking deeper and this is an aspect of cognitive interaction (Khoza & Nyamupangedengu, 2018). My conversation with the two students confirmed my observation. As such, this kind of dialogue served as a vehicle for my reflection (Borch, 2020) and how I altered my construction of slides going forward. Figure 1 illustrates an example of how I ultimately structured my slides for the second lecture.
When using the slides as presented in Figure 1, I noticed a difference in the students in the sense that when I asked a question, the students would look closely into the structure of the inner ear and try to respond to the question. It was the interaction with the picture as a visual representation tool (Khoza & Nyamupangedengu, 2018) that helped them to restructure their thinking (Piaget, 2003). For example, I asked them a question on amplification and the oval window, and I had to give them at least a minute to think about the structure of the oval window. I would refer them back to the questions that I had asked when I explain the text that I had written in the subsequent slides (See slides A and B in Figure 1). Some of the written feedback I received from the students after the lecture included the following:

Student 12: The interaction today was better than the last time.
Student 28: I enjoyed today’s lecture and I learnt how to work with content especially when you are dealing with internal structures. I could even discuss with my peers when we were asked questions.

The students’ utterances above indicate the shift in terms of the extent of interaction from the first to the second lecture. Therefore, student-content interaction was achieved (Wei et al., 2019) as gleaned from their feedback. The same students who came to my office after the first lecture came again and confirmed what the other students had stated in the written feedback. My improvement was because I allowed my students to critique my teaching. As Floden (2017) states; student feedback is more beneficial when the educator takes the critiques and views them as learning opportunities. The continuous and perhaps informal verbal conversations with students proved to have a professional value for me as I had improved on my pedagogical practice and this is what Hand and Rowe (2001) advocate for in their model of gathering and making use of student feedback.

In planning for my teaching of population ecology, I thought I had solved how I need to structure my PowerPoint presentations to maximise student interaction until after the first lecture when I deliberately asked a student who had come to my office for a consultation to comment on the lesson. Amongst other things, she referred to the interaction; “I think our engagement declined from when you were teaching us the ear…I do not know what it could be but that is just my observation, or they are just not enjoying the topic”. The student was able to comment on this because I had probed her. According to Bijlsma et al. (2019), probing the students to voice out their perceptions of how their teacher teaches often leads to improvement in practice. In this case, my reflection on the conversation with the student helped me understand that fostering interaction through a particular design/structure of the PowerPoint presentation requires the teacher to understand the nature and demands of that particular topic. I realised that a straightforward movement from slide A to B would not engage the students in ways that I envisaged when teaching the topic of population ecology. Another conversation with a student...
after the lecture revealed how I can think of using worksheets. In particular, the student had said that in their other course, the educator uses worksheets to engage them. From this, I decided that introducing the worksheet after slide A would be beneficial as shown in Figure 2 below.

![Figure 2. The order of slides in a PowerPoint presentation I used when teaching population ecology with worksheets incorporated](image)

In this order of slides, I would show a diagram that serves as an aid for interaction about a concept of dispersion. I would use the worksheet that has questions pertaining to a specific concept/main idea (dispersion in this case) for the students to put their thoughts down. The questions on the worksheet with instructions for example “think, write, pair, and share” become part of the PowerPoint slides to serve as a signal to students. In this way, they interacted with the worksheet as a scaffolding tool first. However, these instructions were different for each activity on a specific main idea. Slide C would not be available in the students’ hand-out because it would capture some of the answers to B. The students revealed the following in their feedback after the second week:

Student 11: I was more engaged in this lecture than the first lecture…what did you do sir?

Student 20: I liked how you did your worksheets. It is a lesson for me as a future teacher if I want to involve my learners in active learning

Student 14: When the worksheet said ‘think’, I was thinking and when I discussed with my friends afterward, I was able to understand what they were thinking to compare to mine.

As can be seen in the students’ utterances above, their feedback confirms that their interaction had heightened due to the use of worksheets. For example, Student 14 expressed that the instructions made it possible for her to follow his thoughts which were then discussed with his friends. Again, this is an indication that I was able to understand and learn about interaction and how to foster it because of what the students had raised before. My initiative of asking them to provide me with feedback was a valuable tool for me to learn about the use of worksheets and the instructions accompanying those worksheets. This did not only help me learn but also led to successful student learning (Wiszewski et al., 2019).

I continued with this particular practice in my teaching as the students said it was working for them and during the focus group interviews (focus group 2) the students confirmed that my endeavour of coupling the PowerPoint presentations with worksheets resulted in students not only interacting with the content but also with the educator and their peers:
Student 1: He would teach something then give us an activity, teach then, something, write an activity. For me, that was exactly what I see as learner engagement, like teacher-learner interaction that I wanted in a lecture.

Student 2: When we were calculating the rate of increase in populations, my understanding came about when he gave us a chance to work through the example, with a partner on a worksheet.

Student 3: I think the most interactive part was the worksheet almost after every two or three slides.

The main lesson was that listening to the students’ perceptions through dialogue that is context-specific (Borch et al., 2020) helped me understand the role of worksheets as materials that foster the three types of interactions in biology lectures. However, beyond that, I learnt that the worksheets need to form part of the whole lesson as divided into parts instead of being administered at the end of the lecture as some form of assessment. Student 1’s utterances that “he would teach and give us something to do” confirms this.

Dialogue with students led to my awareness of the role of questioning and discursive moves in fostering student interaction

Questions that I initiated

There was an exchange of questions and answers between me and the students and among the students themselves. When planning for teaching the human ear, I had prepared the questions that I would ask in my lectures without anticipating the possible student responses. At the beginning of the first lecture, just after covering the structure of the middle ear, I asked students the question “what is the structural and functional difference between the oval and round window as you see in this structure”. All the students kept quiet as they paid attention to the structure displayed on the screen. Despite my efforts of rephrasing the question, I still could not get any response from the students. I assumed that the students did not want to participate. However, the students had to say the following about how the interaction unfolded in the lecture:

Student 6: What I noticed about you is that firstly, you assume that everybody has got an answer to your questions about the ear which you are to teach. How do you expect students to know what you are currently teaching?

Student 39: I could not understand many questions, especially at the beginning of the lecture. I got to understand what the questions you were seeking in the middle of the lecture.

It was only after reading their written feedback on my teaching that I realised what was wrong with my approach. My reflections on the students’ feedback helped me to realise two things, that there was nothing wrong with the questions and that their silence did not mean disengagement. The questions were not asked at the right time inhibiting them to be part of what I had envisaged would happen – a whole-class discussion. Even though they were not voicing their ideas concerning the questions asked, they were engaging with the question in their minds and their engagement manifested through silence (Khoza & Nyamupangedengu, 2018). Again, their feedback on my teaching was valuable for me to understand this insight about student interaction. This became the basis of my planning for teaching population ecology in terms of questioning techniques.
Instead of only asking the question verbally based on the content, I thought of more general questions at the beginning of the lecture and reserved the content-based questions for the middle of the lecture after covering certain concepts (see the section on worksheets). I relied on metaphors and analogies and examples to phrase my questions. I am showing the following excerpt as at least three students referred specifically to it in their written feedback:

Instructor: Suppose we are enclosed in here for 2 years and just given enough food and some resources to get us going…we still do what normal human beings would do. What do you think will happen? How will life unfold in those two years?

Student 1: One thing I know is that we will fight [Laughter from other students]
Student 2: There will just be too much chaos.
Instructor: But why would we fight?
Student 1: We are coming together with varied personalities and we would not get enough resources.
Student 3: Wait Sir, would the food and resource be increased with time? Like after 3 months, they increase the amount of food given to us?
Instructor: No, let’s say the food does not increase.
Student 3: What if we make babies? [Laughter from other students] How will we feed them? It will be the survival of the fittest.
Instructor: Okay, that makes sense. Survival of the fittest how?
Student 2: Some will even die of hunger and just to add on…those who are strong enough will survive.
Instructor: Right, so let us take it to population growth… [Educator presents a representation –graph –on the screen]. Look at that and think about what is telling you…what do you see?

A noticeable feature of interaction evident in this excerpt is how I responded to the students. For example, in turn 4, I probed the student by employing a move that Tytler and Aranda (2015) call asking for clarification, and this opened for Student 3 who participated by asking a question. My persistent use of specific discursive moves (e.g. requesting clarity in turn 9) further led to Student 2 explaining what was uttered by student 3 in turn 8. In their written feedback, the students referred to the excerpt above by writing the following:

Student 7: I think so far, this lecture was introduced in a good way because the question you asked got us thinking and you were patient with us and pushed us by questioning us more.
Student 29: To be honest sir, I see an improvement in how you engage us. I was able to see how others were curious when you asked them that question of food and all that…

The students’ written feedback above indicates that I had learnt about initiating questions at the right time of the lessons. I learnt that starting with a contextualised, general question (see turn 1 of the excerpt) requires them to ‘wonder’ and predict what would happen in a given situation. Because of the feedback earlier on, I also learnt that how I respond to their contributions, especially in terms of discursive moves (Buma & Nyamupangedengu, 2020) makes a huge difference.
**Questions initiated by the students**

In science classrooms, students should be encouraged to ask questions for them to learn (Chin & Osborne, 2008). The student feedback shows that they had observed a unique dynamic in terms of my responses when a student-initiated a question for discussion during the lectures on the human ear:

Student 5: There was a time where X asked you a question and I felt like it was dismissed.

Student 27: I wish you can also improve on how you respond to our questions when we ask you...some questions are not part of the topic but they link. The question from X also made me curious.

The two students’ feedback above became a catalyst for the lessons learnt. I learnt that I denied the students an opportunity to engage with the content in such a way that they link the concepts that they have learnt already and what they were learning at that moment. The following excerpt illustrates what had happened in the classroom:

Student X: May I ask?

Instructor: Yes, you can ask.

Student X: Earlier on when we did the brain, I don’t know, they mentioned cerebellum has to do with something like movement, and you say the ear helps us for balance. So, I am confused, maybe there is a connection between cerebellum and cochlea? How so?

Instructor: I will do that on Friday because today we are only covering the structure of the ear and how it helps us to hear.

As can be seen in the excerpt above, the student sought to initiate a discussion in turns 1 and 3 which could have possibly resulted in student-educator interaction. My response in turn 4 indicates that I was not ready to engage with the students as I thought the concepts were not part of what I was doing. I realised that what was inhibiting me from responding to the students’ questions was my unconsciousness of the concepts that were taught before in the course and how these linked to what I was teaching.

In my planning for teaching population ecology, I then constructed a ‘map’ that served as a ‘road map’ for me and this led me to think about how I can use concept maps as representations. I decided to use these concept maps at the beginning of every lecture. The concept map would illustrate what we have covered in the previous lecture and how it links with what we would be covering. My students revealed the following in the focus group interviews (focus group 4):

Student 1: And about student engagement, I like his idea of using concept maps because I could also see how different ideas interrelate.

Student 2: I know it is a bit challenging to construct concept maps, but I wish we could have been given a chance to construct and maybe present ours, maybe to our friends but the way he introduced his lectures using the maps grasped our attention and one would try to make sense of the map as well as talking to friends.

As can be seen from the students’ utterances above, the students confirm how the use of concept maps at the beginning of every lecture helped them to interact. However, what I also learn from...
student 2 regarding interaction is that I should have also provided them with the opportunity to construct and present their concept maps could have resulted in student-student interaction. If I had not been in constant conversation with them from the onset of my teaching, I would not have gained such insights about student interaction and I would not have been able to engage in reflection that leads to the improvement of my practice. Evidence for the student feedback as shown above and my learning manifested in the third week of the teaching of population ecology as shown in the excerpt below:

Instructor: So, as you can see on the concept map there, it shows how the logistic model of population growth illuminates certain kind of interactions. The carrying capacity...[Explanation continued]

Student 1: Sir, the link between the concepts of carrying capacity, competition and environmental resistance, can you explain that?

Instructor: What do others think?

Student 2: I remember in our second year, we covered ecology and I remember Mrs X saying competition can be within species and or different species.

Student 1: I remember that but what I am asking now is how carrying capacity links to competition and environmental resistance.

Student 3: Year, I get what you are saying...let me try explaining it... [Student continued explaining].

The excerpt above illustrates how the interaction unfolded as I used a concept map at the beginning of the lesson. Student 1 was able to ask a question in turn 1 because the concept map aided her thinking. My response to her question was relevant because instead of disregarding her question as it included the concept of competition which was to be covered in the lecture to follow, I tossed back the question to spark student interaction. This resulted in student 2 going back to what they have done in the second year (see turn 3) and student 3 explaining his thoughts (see turn 5). As such, not only did the concept map serve as a tool for me to understand links between concepts better in such a way that I can better respond to students' questions, but it also served as a vehicle for student interaction. In the focus group interviews, the students had to say the following about the use of concept maps.

Learning new approaches

The flipped classroom teaching approach is defined as when the teacher provides students with direct access to video lectures, slides, and other teaching resources on online educational platforms (Bergmann and Sams, 2012). In my inquiry to learn about interaction and how I can promote interaction in my lectures, I learnt about flipped classroom teaching approach as a way of fostering student interaction from the feedback that students provided at end of teaching the human ear as shown below:

Student 34: I wish we can get the slides beforehand so that we can read through them before coming to class.

Student 12: I think I would also learn a lot from online discussions, and we can come to the lecture with questions of clarity.

Student 45: Last year, the educator would give us notes at least a day before and we would go through them, like me, I would also discuss with my friends and come prepared to the lecture.
As can be seen above, the student feedback alludes to aspects of flipped classroom teaching approach. When I was planning my teaching of the human ear, I never thought of it as a driver of interaction in educators. The students made me aware of what I could consider doing to heighten their interaction in the lectures. In this case, being in continuous conversation with my students helped me to learn about an approach that I never thought I would use. This is what Borch et al. (2020) call “unintended learning as consequences of evaluation processes” (p. 87). According to Golding and Adam (2016), acquiring feedback from students is desired as it propels a quest for an academic to strive for improvement. As such, this insight became valuable as one of the pedagogical approaches to try when teaching population ecology.

During my teaching of population ecology, I began to make short video clips (10 min max) where I would explain a concept. In some cases, the short clip was to help students overview what we will do in the practical session. In focus group 1, the students referred to this:

Student 1: There was a time when he posted a video of him explaining what the practical was about and the procedure, you remember, right? That helped me in preparing for the practical.
Student 2: Yes, and I remember we did not struggle because most of us were prepared, the video was very useful.
Student 3: I remember watching that video with her [referring to her friend] and we would even go back to lecture slides to refer, I think that was kind of cool for us!

The two students’ utterances above indicate that my approach of posting the video before the lesson/practical did not only make things easier for them but also helped them to interact. For students 1 and 3, the videos helped them to engage with the content whereas, for student 3, it resulted in the interaction between her and her friends – student-student interaction (Moore & Kearsley, 2011). This is an illustration that taking their feedback as shown above and incorporating it into my teaching was valuable. The dialogue with them made a difference in my inquiry.

Conclusions

The focus of this inquiry was to illustrate how being in dialogue with students served as a tool for my professional development where I was learning about interaction and how to foster it in my lessons. Firstly, continuous dialogue with students in education has professional value (Wisniewski et al., 2019). I was not only able to learn about student interaction but also how to foster that in my biology lessons as I was continuously modifying my approaches to foster student interaction. For example, I learnt about how to construct instructional material that fosters student interaction. Secondly, dialogue with students is a valuable tool to ultimately validate the extent of this development, especially in self-reflexive methodologies – similar to the role of critical friends in self-study (Samaras, 2011). Thirdly, I have illustrated that the practice of both planned/formal and unplanned/informal continuous dialogue with students through a variety of ways (i.e. written feedback after every lecture, verbal conversations in the office, focus group interviews at the end of the course, and informal conversations on the corridors) works for one’s professional development in an inquiry. Asking the students to write a piece of reflection after every week or every lecture has made me continually reflect on my practice and improve it on an ongoing basis to better their learning. However, one must establish an environment where the students can be trusted and can trust the teacher. In my case, I was upfront in terms of my needs and my quest to develop professionally. Due to this trust, the
students were able to suggest ‘new’ ways that I can try to foster interaction (e.g. flipped classroom approach). Therefore, when teachers want to use student feedback continuously to professionally develop themselves, they need to be transparent with the students such that the students can suggest specific pedagogical approaches that help them learn without any fear.

**Recommendations**

Although this was a self-study based on one novice teacher educator in a particular teaching context, the insights reported here can be a starting point for teachers to think about ways in which dialogue with their students can lead to their professional development. One interesting insight emerging from this study is that students can serve as critical friends in self-studies. In the past, critical friendship has been conceptualised as having the more knowledgeable other, thus, restricting practitioners to focus on their colleagues. As pointed out by Pinnegar and Hamilton (2009, p. 15), critical friends have a key role of “confirming and disconfirming evidence for our understandings and assertions for action” In this paper, I am arguing that in addition to the colleagues as critical friends, the students that one is teaching can serve the purpose of critical friendship in a slightly different perspective. However, this was not the focus and a suggestion that I am bringing forth is for future studies to look at the extent to which this can be done, the dynamics involved, and how it would be different from the involvement of colleagues as critical friends.

**References**


Deconstructing a Geology Field Trip to Reconstruct Around a Pedagogical Framework: A Case Study on the Integration of Cognitive Learning Theories and Learning Progressions

Erin P. Argyilan  
Indiana University Northwest

Kristin T. Huysken  
Indiana University Northwest

Robert Votaw  
Indiana University Northwest

Abstract: Field-based education is an integral component of undergraduate geoscience curricula and provides educational and social benefits associated with enhanced learning. But field excursions can too often end up as simple show-and-tell events and fall short of implementing effective teaching practices and achieving desired student learning gains. Moreover, logistical and economic pressures tend to discourage or create obstacles for the inclusion of field-based activities in undergraduate geoscience programs, especially in commuter-based colleges and universities. This case study shares how a one-day field trip offered at a commuter-based undergraduate campus of Indiana University was deconstructed to identify content-specific learning outcomes, and then reconstructed to a unit-based learning progression. The site-specific geologic content focused on describing and correlating outcrops of Paleozoic sedimentary strata in the Starved Rock area of Illinois. Shifting from a single-day field trip to a multi-session learning progression focused on instructional scaffolding and emphasized formative assessments that integrate cognitive learning theories including retrieval practice, elaboration, spaced practice and dual coding. Common practices of field geologists such as creating sketches of outcrops (dual-coding) were purposefully integrated as meaningful activities with opportunities for peer mentoring and reflection. Restructuring to a three-week unit included pre- and post-trip assessments to enable instructors to identify and address knowledge gaps and facilitate self-driven learning opportunities for students.

Keywords: Learning progression, field-based education, undergraduate, scaffolding, cognitive learning

Introduction

The National Association of State Boards of Geology (ASBOG) reviewed geoscience curricula from 62 universities and reported that 79% of those programs required a course in Field Methods or Field Geology to achieve a BA/BS degree in geology (AGI, 2019). These results underscore the fact that courses in geologic field methods are considered integral components of undergraduate geoscience curricula. In their research on Sense of Place (SOP), Shepphard et al. (2010) effectively notes that field-based pedagogy has long been recognized in the literature as effective, transformative, hands-on active learning that fosters comprehension and retention of content (e.g., McKenzie et al., 1986). Field courses and experiences enhance learning of fundamental geologic concepts, increase student interest and motivation, and better prepare students for professional careers and/or graduate studies (Huysken et al., 2016; Kelso and Brown 2009, Elkins and Elkins, 2007). Additionally, students may reap the social benefits of field-based work that can include enhanced communication, self-reliance and motivation, and increased confidence (McConnell, 1979, McNamara and Fowler, 1975), skills
that Boyle et al. (2007) argued are transferable beyond a single course. Moreover, field-based education has the potential to engage students with recognizable disparities in their individual learning styles: sensory/intuitive perception of information, visual/verbal sensory of information, preference for inductive/deductive organization of information, tendency to actively/reflectively process information, and progress toward understanding through sequential/global steps (Felder, 1993).

The design and implementation of field courses and field experiences inevitably vary widely in undergraduate curricula depending on factors that include faculty/student time availability or allocation, functional and financial resources, geographic setting of the institution, role of distance education, and institution type (e.g., 2-yr versus 4-yr, residential versus commuter) (Thomas and Roberts, 2009). Huysken et al. (2016) argued that while there are many ways to incorporate field geology education into undergraduate curricula (e.g., field trips, individual field-based projects, complete field-based courses), too often field work can end up as simple “show-and-tell” experiences; and it becomes difficult for educators and students to fully assess and appreciate student learning gains beyond basic increased student interest or enthusiasm. Weinstein et al., (2018) suggests that instructors in evidence-based disciplines overwhelmingly spend their time on learning content and practicing skills, leaving them unable to focus on best strategies in teaching practice and the science of learning. Meanwhile, from the perspective of administrators, field-based education might be considered inefficient in terms of scheduling challenges (Thomas and Roberts, 2009), logistical expense, and low student–instructor ratio (Salter, 2001; Sheppard et al., 2010).

As undergraduate institutions and programs intensify their focus on assessment, high impact practices, and student retention, it becomes essential for geoscience educators to purposefully integrate cognitive learning theories into the content and assessment of field-based courses and to fold high impact teaching practices into course design. The purpose of this contribution is to demonstrate how a one-day undergraduate field trip was deconstructed to identify critical content components and redesigned into a three week learning progression to deliberately draw ties between best teaching practices, cognitive learning theories, and assessment tools. Instruction adopts the premise of the TILT model (Transparency in Learning and Teaching) by Winkelmes (2013) that builds on research in metacognition which demonstrates students learn more and retain that learning longer when they have an awareness of how they are learning (e.g., Cohen, 1980; Dunlosky and Metcalfe, 2009; Nelson and Dunlosky, 1991). As the unit progresses, students engage in low-stakes formative assessments specifically designed to reinforce essential skills for field geologists that construct components of a larger summative report on the geologic history of a study site in the Starved Rock State Park in north-central Illinois.

The one-day field experience visits multiple outcrops of Paleozoic sedimentary rocks in the area of Starved Rock State Park near Utica, Illinois and asks students to construct and assemble site-specific stratigraphic columns into a cross section and interpret the geologic history of the area (Huysken et al, 2016). Today the Starved Rock area lies in the central craton of the North American continent within the Illinois Basin. Outbursts of glacial meltwater from moraine-dammed lakes during the Quaternary deepened the Illinois River valley through tills, exposing Paleozoic bedrock along bluffs and in tributaries. The Paleozoic stratigraphy records successive marine transgressions and regressions of an epeiric sea across a shallow marine platform. A major unconformity exists between Ordovician and Pennsylvanian strata. The largest and most prominent structural feature in the Starved Rock area is the Peru Monocline, an asymmetric north–south-trending antiformal feature. Deformation is most pronounced in Ordovician-aged rocks that make up the western limb of the monocline, striking approximately 34 degrees and dipping to the north-northwest, and can be observed in two outcrops included in the field trip; Matthiessen State Park and along the I&M Canal.
Fieldwork focuses on rock and outcrop descriptions, generating site-specific stratigraphic columns, constructing a local cross section, and interpreting the sequence of events and geologic history of the area. Instructors unfamiliar with the area (e.g., traveling from outside the Midwestern states) can readily reproduce the learning objectives as these are broadly applicable to undergraduate geoscience curricula and the pedagogical approach could be easily adapted to local field projects elsewhere. The unit learning objectives are presented as:

“By the end of this unit students should be able to:
1. identify and describe sedimentary rocks with appropriate terminology and methods in hand sample and at outcrop scale
2. apply the principles of relative and absolute dating to relate individual rock units to a published stratigraphic column and identify unconformities in the rock record
3. locate field sites on geologic maps (topographic and surficial geology) and interpret landscape features
4. correlate individual rock units across multiple outcrops, identify contacts and/or unconformities, and interpret underlying geologic structures
5. reconstruct the geologic history of the study area by interpreting transitions in depositional environments and unconformities in the rock record”

Institutional and Curriculum Background

Indiana University (IU) Northwest is a public non-residential regional campus of the IU system founded in 1948 and serving a seven-county region in northwest Indiana and bordering Illinois. Enrollment in the 2019-2020 academic year was ~3,500 (Indiana University Office of Institutional Effectiveness and Research). The Department of Geosciences is within the College of Arts and Sciences which reported a 2019-2020 student population that is a majority female (~68%), with African-American (~15%) and Hispanic (~25%) populations reflective of the communities it serves (Indiana University Office of Institutional Effectiveness and Research). In 2020, the institution was designated as a Hispanic Serving Institution (HSI) by the U.S. Department of Education, reflecting demographic shifts in the region. The Department of Geosciences consists of three full-time tenured professors holding Ph.D.s and typically maintains between 20 and 30 full-time undergraduate majors. The department currently provides B.A./B.S. degrees in Geology and an Interdepartmental Major in Environmental Science. Graduates typically pursue graduate school, gain employment in geology, environmentally related, or other STEM fields, or enter earth science education. While a semester-long field and laboratory methods course is required for all majors, undergraduate students pursuing a B.S. in Geology are further required to attend a field camp through an accredited college or university.

Laboratory and Field Methods in Geosciences (GEOL 317) is a 4-credit lecture/laboratory course available to students that have completed an introductory course in geosciences (equivalent courses at other institutions may include Earth Science, Geology, Physical Geography or Environmental Science), and also serves to partially fulfill the College’s Intensive Writing requirement. The course is offered on a two-year rotation so undergraduate geoscience majors enroll when it fits their schedule, producing a class that can be populated by sophomores to seniors with a wide range of content knowledge, field/laboratory experience, confidence, and motivation. Occasionally an enrolled geoscience major will have already completed their required field camp experience. More often, the course attracts non-majors and potential majors enticed by the idea of field trips. Initially the field methods course was scheduled as an extended face-to-face session (minimum of four hours) once a week for a 16-week fall semester. Each week was initially structured
as a self-contained unit, focused on creating unique hands-on experiences that exposed students to a wide range of geologic topics that contained field components, rather than on connecting learning from across individual geoscience courses in the undergraduate curriculum.

The Rationale for Course Redesign

The Starved Rock correlation project consisted of a single day in the field. Students were asked to complete formative assessment tasks in the field that included outcrop descriptions with detailed field notes, construction of individual site-specific stratigraphic columns with appropriate geologic symbols and labels, and a regional cross section correlating Paleozoic rock units, and highlighting unconformities (Figure 1). Stratigraphic columns for outcrops or quarries not accessible to students were provided as a guide. The summative assessment required students to generate a time series drawing that illustrated the series of geologic events that produced the stratigraphy and structures observed in the field. Students should arrive at specific conclusions, denoting evidence for multiple Paleozoic marine transgressions and regressions, the timing of regional tectonic activity, and geologic evidence for an underlying regional bedrock structure minimally identified as an anticline or monocline (Figure 2). Instruction for the summative assignment relied on an instructor-led detailed group discussion.

While students were consistently enthusiastic about the trip and reported increased confidence and enthusiasm for fieldwork, the one-day field trip and assessments failed to adequately promote self-driven learning, provided little opportunity to evaluate individual student learning gains, and lacked a clear alignment between content and course learning objectives. In general, advanced students moved quickly and confidently in the field and demonstrated higher order thinking skills in the context of Bloom’s Taxonomy of Cognitive Development (Bloom, 1956). They demonstrated competency by (1) describing and identifying rock units in the field and relating them to the published stratigraphic column, (2) correlating rock units across individual outcrops, (3) recognizing unconformities versus contacts, (4) describing connections between rock type and depositional environments, (5) interpreting an underlying monocline structure, (6) identifying the timing of regional folding between Ordovician and Pennsylvanian strata, and (7) generally describing how transitions in sedimentary rock types would represent Paleozoic transgressional/regressional events in a shallow marine environment. Less experienced students demonstrated competency at lower levels of Bloom’s Taxonomy. Collectively students consistently reported feeling rushed for time and uncertain of how to connect information across individual outcrops. While students generally arrived at a basic understanding of the series of geologic events during the Paleozoic, they struggled to connect depositional environments to a broader interpretation of geologic history and paleogeography. Moreover, there was a missed opportunity to connect the modern landscape to exposures of Paleozoic stratigraphy and to ask the broader question of “Why are these Paleozoic sedimentary rocks exposed as they are today?”
Figure 1. Fence diagram illustrating stratigraphy at individual outcrops in the Starved Rock study area. Student handout with information provided for inaccessible outcrops (A) and instructor guide illustrating rock units, contacts and unconformities, strata symbology and labels (B).
Figure 2. Geologist’s sketch of the series of geologic events and changes in depositional environment that led to the stratigraphy and bedrock structure observed in outcrops of the Starved Rock area. Ordovician transgressional/regressive sequences (A), folding in response to basin development (B), and erosion of Ordovician strata prior to deposition of Pennsylvanian sedimentary strata (C).
Course Deconstruction to Critical Component Concepts

The one-day scheduling model provided the long blocks of time necessary for hands-on field trips and the field-based problem inherently provides a complex real-world problem, a tenant of critical thinking. But the scheduling failed to provide time for instructional strategies that are recognized to develop critical thinking including guided discussions, self-reflection on formative tasks, instructor/peer feedback, and an impactful summative assessment that measures individual student learning gains. In 2019 the schedule was revised to a three week unit that meets twice a week for a short face-to-face session (maximum of one hour) early in the week and an extended session late in the week (minimum of three hours) to accommodate field/laboratory work. This scheduling model provides time for pre-fieldwork preparation, post-fieldwork reflection, and data analyses. Core geologic concepts were identified and partitioned into a three-week unit focused on (1) building foundational geologic knowledge, (2) field preparation and experiences, (3) data synthesis including analysis, interpretation, and communication (Table 1).

Integrated Cognitive Learning Theories

The modified course schedule creates time and opportunity to build formative assessments that intentionally integrate cognitive learning theories. Weinstein et al. (2018) suggests that instructors and researchers outside the field of educational psychology often struggle to integrate the science of learning into evidence-based teaching. A purpose of this contribution is to demonstrate that field-based instruction in the geosciences inherently incorporates or can be easily adapted to integrate multiple cognitive learning theories, although it may be unknowingly and unintentional. While geologists have long accepted the importance of annotated “geologist’s sketches” in our field books, rarely is it acknowledged that this practice is a demonstration of dual coding cognitive learning theory (Paivio, 1971, 1986, 1990; Clark & Paivio, 1991). Consequently, with intentional redesign of field course instruction and assessments, instructors and students can reap the benefits that effective cognitive learning strategies can provide.

Throughout the learning progression outlined in Table 1, each topic contains a paired assessment that integrates cognitive learning theories recognized to promote effective teaching and enhance student learning (Pashler et al., 2007; Weinstein et al., 2018), specifically retrieval practice, elaboration, spaced practice and dual coding. Retrieval practice is the cognitive learning strategy of accessing learned information (e.g., Collins and Quillian, 1969, Thomson and Tulving, 1970; Salatas and Flavell, 1976, Shrunck 2016, Weinstein et al., 2018). While testing and quizzing are one form of retrieval practice, asking students to apply learned information to higher-order questions is another. Elaboration theory requires students to connect new information to preexisting knowledge (e.g., Postman, 1976; Anderson 1983; Shrunck, 2016; Weinstein et al. 2018). Spaced practice or distributed practice theory recognizes that practice with information that is spaced over time produces superior long-term learning as opposed to cramming or mass repetitions (Ebbinghaus, 1885, 1913; Roediger, 1985; Kang 2016). And finally, dual coding theory emphasizes improved memory when imagery is presented with text. Weinstein et al. (2018) further emphasizes that research indicates the physical act of drawing imparts an additional “motor code” that enhances learning and memory (Engelkamp and Zimmer, 1984; Wamme, Meade, and Fernandes, 2016). An explanation of how individual assessments are paired with learning theory in the revised field unit is presented below.
Incorporating High Impact Teaching Practices

The expanded schedule provides opportunity to focus on integrating high impact teaching practices with content delivery and assessment. During course redesign the trip was deconstructed to identify critical geologic concepts and to develop assessments that align with course learning objectives following the principles of backward design (Wiggins and McTighe, 1998; 2011). Course redevelopment through backward design theory moves through three stages: (1) identifying desired results or learning objectives in terms of what students should know and be able to do, (2) determining assessment evidence that would indicate that students have learned and can apply the new knowledge, and (3) planning instruction and activities that will allow students to perform effectively and achieve desired results. After applying backward design theory, the field trip was reconstructed into a well-defined learning progression (Table 1) (e.g., National Research Council [NRC], 2005, 2007; Duncan 1993; Duncan and Hmelo-Silver, 2009). Popham (2007) summarized a learning progression as a “powerful analytic tool” whereby instructors present students with subskills and bodies of enabling knowledge as the building blocks that students must accomplish en route to mastery of critical concepts.

Engaging in an explicit conversation that frames the field trip within the context of a learning progression and ties formative assessments with course learning objectives invites students into a deeper understanding of metacognition and the importance of applying knowledge acquired across other geology courses. Increasing the transparency of course design can be an important step toward helping students develop metacognitive skills and establish self-motivation toward learning. Research on transparency in teaching and learning by Winkelmes (2013) has demonstrated that students’ learning outcomes improved when they understood how and why instructors had structured their learning experiences. A fundamental goal of undergraduate instruction is to move students from being instructor-centered learners to self-directed learners. Yet the knowledge gaps that inevitably exist amongst students enrolled in this field course present obstacles to individual student motivation and learning. Creating a social collaborative learning environment can allow students to identify and address learning gaps through constructive rather than punitive methods. Instructional scaffolding is a teaching approach based on Vygotsky’s (1978) concept of the Zone of Proximal Development that suggests that learners advance toward understanding complex problems by working socially alongside a knowledgeable instructor or more capable peers. As the name implies, instructional scaffolding aims to tailor instruction to support students as they move from familiar tasks they can easily master to those that challenge their abilities and knowledge (Simons and Klein, 2007; Bruning et al., 2004; Puntambekar & Hübscher, 2005). Redesigning the course as a learning progression aims to move students toward mastery of fundamental geologic concepts and skills by implementing high-impact teaching practices that emphasize scaffolding of instruction and transparency in teaching to promote metacognition, self-directed, active and collaborative learning.

Week One - Building Foundational Knowledge with Fundamental Geologic Concepts

The project introduction begins by building a sense of purpose and place. Photographs of the Starved Rock area highlight the dramatic vertical bluffs, canyons, dells and waterfalls within the Ordovician St. Peter Sandstone along the Illinois River. Images of past students examining outcrops with hand lenses and Brunton compasses illustrate the expectations for hands-on fieldwork. Examples of figures and notes from field notebooks of previous classes further elucidate expectations and course standards (Figure 3). This brief introduction to the study area can be delivered face-to-face or online depending on an instructor’s scheduling needs.
Past experience shows that students struggle with defining the objectives of a field study and instructors can move students into a conversation about required knowledge and tasks if they provide a concise statement of purpose. An explicit conversation about course learning objectives, the development of the learning progression, and the formative assessments that students will synthesize into a summative assessment (e.g., paper, virtual field trip, StoryMap) creates transparency and establishes expectations for self-driven learning. A quick exercise through which the class brainstorms and maps out the geologic skills and knowledge required to meet the goal of each week, provides an opportunity for students to self-identify where they perceive individual knowledge gaps or strengths and develops a visual model of how instructional scaffolding will help construct knowledge (Figure 4).

Constructing foundational content knowledge and identifying knowledge gaps through formative assessment begins by directing students to concepts from their introductory geoscience course(s) that will be relevant and applied in this field study (Table 1). A basic exercise that asks students to review and apply principles of relative dating can be administered in a traditional class or online. The review requires students to engage in retrieval practice (e.g., Collins and Quillian, 1969, Thomson and Tulving, 1970; Salatas and Flavell, 1976, Shrunk, 2016, Weinstein et al., 2019). Baddeley (1998) argues that retrieval occurs best when retrieval cues match those present during initial learning. This suggests that the review ought to adhere to teaching methods of introductory geoscience courses and might focus on simply defining terms and applying concepts rather than demonstrating proficiency. The review addresses fundamental concepts that include: an understanding of the rock cycle, describing and identifying different rock types, relating rock types to depositional environment, applying principles of relative dating, and using the geologic timescale (Figure 4).
Figure 4. Conceptual model of content contained in the learning progression. Instructors ought to prepare to scaffold instruction to address gaps in background knowledge.

TABLE 1. The revised unit schedule introduces content as a learning progression of formative assessments that build to a summative assessment that interprets the geologic history of the study area.

<table>
<thead>
<tr>
<th>Week</th>
<th>Focus</th>
<th>Delivery Format</th>
<th>Critical Concepts &amp; Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rock Cycle &amp; Rock Types (review)</td>
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<td></td>
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<td>Rock descriptions of hand samples</td>
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<td></td>
<td></td>
<td></td>
<td>Photograph and label hand samples</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Read &amp; create stratigraphic columns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Interpret depositional environments</td>
</tr>
<tr>
<td>1</td>
<td><strong>Foundations</strong>: Describe Rocks and Interpret Depositional Environments</td>
<td>Monday: Lecture/Lab; Friday: Lab</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Field Study</strong>: Describe and Correlate Outcrops in the Field (Formative)</td>
<td>Monday: Lecture/Lab; Friday: Field Trip</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><strong>Foundations</strong>: Describe Rocks and Interpret Depositional Environments</td>
<td>Monday: Lecture/Lab; Friday: Lab</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Field Study</strong>: Describe and Correlate Outcrops in the Field (Formative)</td>
<td>Monday: Lecture/Lab; Friday: Field Trip</td>
<td></td>
</tr>
</tbody>
</table>

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The initial extended laboratory session of the unit is its own learning progression that requires students to examine hand samples, construct written rock descriptions, identify each sample by name, and relate it to the stratigraphic column of the Starved Rock area of Illinois published in (Nelson et al., 1996). These low stakes formative assessments aim to familiarize students with the rocks they will see in the field. Unlabeled hand samples include sedimentary rocks that will be observed in the field: Ordovician St. Peter Sandstone, Ordovician Shakopee Dolostone, Ordovician Platteville-Galena Limestone, Pennsylvanian LaSalle Limestone. (Figure 5). Initial rock descriptions vary in detail depending on student background and provide an opportunity to assess student knowledge and confidence with basic rock identification (Figure 5). One-on-one interaction between the instructor and student can be followed immediately by a think-pair-share (TPS) collaborative learning opportunity that partners upper-level with lower-level geoscience students to discuss their descriptions. While students ought to identify basic rock type with relative ease (sandstone, dolostone, limestone), further instructional support can direct them to add new information and expand beyond rock type (e.g. structures, fossil type, grain size), an application of elaboration learning theory (e.g., Postman, 1976; Anderson 1983; Hirshman, 2001; Shrunk, 2016; Weinstein et al., 2018). Once hand samples are identified, instructional support emphasizes elaboration by asking students to photograph hand samples with a scale bar and create individual figures with figure captions to be used in the summative unit project.

"Weak reaction to acid. Alternating bands of lighter and darker grey. Porosity. Fine to medium-grained. Moderately well-sorted grains" – sophomore level respondent

"A gray fossiliferous limestone with noticeable fossil fragments ranging from 3mm-10mm. This poorly sorted limestone contains angular inclusions, very fine cement, and recrystallization. Fossils largely found are brachiopods and crinoids that reveal index fossil time. This clay rich sample is very brittle, breaks angularly, and effervesces strongly due to the calcium carbonate within the structure" – junior/senior level respondent

Figure 5. Example of a hand sample of Pennsylvanian limestone of the McLeansboro Group with samples of student rock descriptions.

Students then relate the rocks to the published stratigraphic column of the Starved Rock area to identify geologic age within the Paleozoic (e.g. middle Ordovician, lower Pennsylvanian). Students prepare for the field exercise by constructing a stratigraphic column with appropriate rock symbols, notation, and representation of contacts versus unconformities. The session ends with a discussion
of possible depositional environments for the individual rock types and brainstorming about the paleogeography and tectonic setting of Illinois during the Paleozoic. Collectively the formative activities associate learned information (rock types and principles of relative dating) with new information needed to identify specific rock units in the field, helping students move toward deeper meaning that will facilitate the interpretation of depositional environments and geologic history. By the end of this unit, students have constructed figures and written descriptions of each Paleozoic rock type that they will observe in the field. They are prepared to analyze these rocks at outcrop scale, to identify contacts and/or unconformities between rock units, and to prepare site-specific stratigraphic columns.

Week 2 - Moving from Classroom into the Field

Once students are familiar with the individual rock they will observe in the field, the schedule redesign allows for a full session where students can explore topographic and surficial geology maps to orient themselves to where rocks are exposed in the study area. Students transfer outcrop locations from a sketch map of the trip route to the relevant topographic and surficial geology maps of the Starved Rock, Utica, IL area (Figure 6). Students are assigned the task of developing a written description of the study area prior to entering the field using data from relevant topographic and surficial geology maps along with online tools like Google Earth.

![Figure 6. Sketch map of field trip route (A) with individual stops identified on a map of surficial geology (B).](image)

Constructing the site description facilitates the broader questions of why Paleozoic sedimentary rocks are exposed today and what evidence exists for the major unconformity between
Paleozoic rocks and Quaternary tills. Collaborative discussion asks students to apply their map reading skills to note the contrast between the flat topography of north central Illinois composed of Quaternary ground and end moraines versus the steep canyons or “dells” that expose Paleozoic sedimentary rocks along the Illinois and Vermilion Rivers and their tributaries. Apparent age inversions are evident as Quaternary alluvium occurs within the river channels formed of Paleozoic rocks. This collaborative low stakes learning activity leads to a discussion of the Quaternary processes that produced moraine-dammed lakes and the outburst flooding that incised the Illinois River to expose the Paleozoic rock sequences observed in the field. The study site session strives for self-driven discovery while the instructor trains students in methods for analyzing a field site prior to field work. By the end of this session, students have constructed the “study site” section suitable for the summative project paper or project.

Field work focuses on conducting outcrop descriptions at six locations including three roadside exposures and sites within Starved Rock, Matthiessen, and Buffalo Rock State Parks (Figure 1). A thorough description of the geologic setting and field trip route is available in Huysken et al. (2016). Students are already familiar with the individual rock units from hand sample and quickly engage in retrieval practice to identify rock units in the field, relate them to the stratigraphic column, identify contacts and unconformities, and construct the site-specific stratigraphic columns. Instruction applies elaboration theory by having students describe rocks at outcrop scale (e.g. thickness, orientation of strike and dip, weathering patterns, fossil assemblages, sedimentary structures, contacts etc.) and create detailed and annotated drawings in field notebooks, another application of the dual coding learning theory. Rather than asking students to arrive at an interpretation of the geologic history of the area, the day of field work now ends by asking students to correlate individual rock units and unconformities to construct a geologic cross section across the Starved Rock area, again relying on dual coding theory (Figure 1). By the end of the field day, students are prepared to analyze the geologic cross section. Before the next meeting they are required to establish a sequence of geologic events that would produce the stratigraphy and structure observed in the field and to justify their reasoning (Figure 2).

Week 3 - Analysis and Summative Assessment of Field Data; Focusing on Science Communication

Asking students to prepare a sequence of geologic events is the first step toward arriving at a broader interpretation of the geologic history and paleogeography of the Starved Rock area. The final lecture session emphasizes metacognition by engaging students in collaborative discussion to examine the geologic evidence and reasoning for their interpretations. Instruction can utilize elaboration theory by asking students to relate rock types and stratigraphy to depositional environments and transitions between depositional environments. More advanced students should describe transgressive/regressive sequence stratigraphy and explain to peers how it relates to the stratigraphy of Paleozoic sedimentary rocks of the Starved Rock area with limited instructional support. Instruction can focus on clarification of misconceptions and aligning claims, reasoning, and evidence.

Through discussion that emphasizes retrieval and elaboration, all students should arrive at the understanding that the stratigraphic sequence is indicative of a shallow marine platform that experienced multiple transgressive/regressive events during the Paleozoic. Beyond an explanation of depositional setting, the interpretation of geologic history must include the timing of folding and erosion between Ordovician and Pennsylvanian sedimentary strata and the major unconformity between Paleozoic and Quaternary deposits. Paleogeographic maps (www.PaleoMap.org) can provide visual tools to reinforce the interpretation and can facilitate discussion of how geologists
generate these maps. While this session emphasizes collaborative learning, individuals are required to revisit topographic and surficial geology maps and edit their site descriptions to add new knowledge from the field experience. By the end of this session students will have prepared a written explanation of the geologic history of the Starved Rock area from early Ordovician to present that directly relates interpretations to geologic evidence.

The final extended laboratory day is devoted to assembling and revising formative assessments (text and figures) and constructing the summative report. The site description, methods, and results have largely been constructed in formative assessments and students should focus on developing text. Instructional support focuses on helping students to align their interpretations of depositional environments with the evidence. For example, students must use the lithology of the St. Peter sandstone (well rounded, well sorted, frosted, fine to medium grained quartz sand) and observations of sedimentary structures from the field (low-angle cross bedding) to justify interpretation of a nearshore environment. Think-pair-share and small collaborative reading groups should be utilized to help students progress through each section of the scientific report (Introduction, Methods, Results, Discussion/Conclusions). The summative assessment is a full scientific report in which figures and figure captions are aligned with text. Students are required to conduct peer reviews using the project rubric and to complete revisions of their own work. This process fulfills the course’s intensive writing component. Geology programs that have scientific writing embedded into other courses might ask students to design a virtual field trip or ArcGIS StoryMap as an alternative summative assessment.

Discussion

Field trips and field-based education is an integral component of undergraduate geoscience curricula. While field trips unarguably represent important place-based and hands-on experiences, field excursions often lack the pedagogical framework and intentional design of classroom activities. Moreover, field trips are increasingly being cut from smaller undergraduate geology and environmental programs due to logistical and economic obstacles. To truly understand and articulate the educational “value added” of a field trip, this project deconstructed a favorite local one-day field trip to the Starved Rock area of Illinois to reconstruct the content as a multi-week project with a pedagogical framework developed as a learning progression with intentional integration of cognitive learning theories.

The one-day field trip experience was rich with geologic information and included project-based design, but highlighted knowledge gaps amongst undergraduates and failed to provide time for students to reflect, assess and address those gaps to achieve maximum learning gains. Revision occurred over three sequential offerings of the field course and because enrollments in upper-level geology courses are low (n<15), and because student content knowledge varies significantly within and across courses sessions, the assessment of the impact of the redesign is based mainly on the instructor’s evaluation of learning gains demonstrated by the detail and sophistication of student responses to short answer questions.

Because this course is offered on a two-year rotation, the students enrolled typically span a range of background knowledge with some having only completed 100- and 200-level courses, while others have completed 300- and 400-level courses and some level of independent research. During course revision, a pre-field trip lab session was created in which students were asked to apply foundational geologic knowledge and skills (rock identification and description, map reading and site description, reading stratigraphic columns), and allowed the instructor to conduct a quick assessment of knowledge gaps for students at all levels of experience in a low stakes environment. While upper-level students excelled at detailed rock descriptions, the activity creates an opportunity...
for peer mentoring and collaborative learning. Interestingly, all students struggled to understand how to connect claims, evidence, and reasoning in terms of identifying an unconformity using the published stratigraphic column of the Starved Rock area. Similarly, all students struggled to construct a written site description using observations of topographic and surficial geology maps, which created an opportunity to for instructor-centered instruction to clarify key details about the study site and map reading.

During the actual field excursion in session two of the unit, students were challenged to collect geologic data to validate their site descriptions using a different set of skills and techniques. As a result of working with maps and describing hand samples of the specific rock units, students were better prepared for fieldwork and exhibited higher confidence when asked to approach outcrops and identify individual rock units, contacts between rock units, and relate the information back to a stratigraphic column. Rather than spending time on foundational skills, students moved immediately into applying field-based skills that included constructing detailed outcrop measurements and descriptions and recording data in their field books. Most notably complaints about students feeling “rushed” at outcrops declined. Discussion in the field moved beyond rock type and age to evaluating sedimentary features, noting transitions between rock types, detecting contacts and unconformities, observing and measuring bed thickness and orientation, and taking field measurements including strike and dip. Undergraduates at all levels of experience reported an increase in their confidence and skill in conducting fieldwork.

Week three of the unit focused on data analysis, interpretation and communication by asking students to use their own notes, observations, and stratigraphic columns to interpret the series of geologic events from Paleozoic to present time. The result was a self-driven classroom discussion as opposed to an instructor-dominated discussion in the field with a group of students anxious to end the long field day. The revised analysis session is focused on assisting students to connect interpretations (claims) with the geologic data (evidence) collected in the field to develop the reasoning component for a written explanation of the geologic history of the Starved Rock area for a final lab report (communication).

Interestingly, while the course revision focused on many low-stakes formative activities and collaborative learning opportunities, students expressed a desire for more quizzing and individual assessment. Their request indicates that students perceive learning gains from quiz preparation and possess a desire to directly assess their individual knowledge of geologic content by traditional metrics. Dunlosky (2013) provides perspective on the benefits of quizzing and testing as a tool to develop students’ study habits and future course offerings will incorporate traditional quizzes as opportunities for retrieval practice and spaced practice. Development of low-stakes formative assessments that utilize cognitive learning theories (e.g. retrieval practice, elaboration, spaced practice, dual-coding theory) and are paired with key geologic concepts prepare students for field work and allow instructors to identify and address knowledge gaps. The formative assessments should be aligned with course learning objectives to increase course transparency and enhance metacognition. And high impact teaching practices focused on instructional scaffolding and collaborative learning help undergraduate teaching practices focused on instructional scaffolding and collaborative learning help undergraduate students transition to self-directed learning and move along the spectrum of content knowledge toward mastery. As a result of these considerations, the next offering of the course will include pre- and post- assessments disseminated during the first and third sessions of the unit.

Conclusions

Field-based education represents a fundamental and critical component of undergraduate geoscience curricula. It engages students in learning strategies shown to promote higher level thinking skills like
active-learning, project-based learning, problem solving, and place-based learning. Field-based education allows undergraduates to apply knowledge, develop skills, and “hone their field credentials” (Whitmeyer et al., 2009). But to reap the potential educational benefits of field-based education, geoscience instructors must actively marry principles of learning theory and high-impact teaching practices in their course design. Like traditional lecture and laboratory-based geoscience courses, field geology courses must provide a pedagogical framework that moves students toward mastery of core geologic concepts while consistently working to develop written and oral communication skills, quantitative and computing skills, and problem solving and critical thinking skills (Kelso and Brown, 2009). Revising a favorite field trip to a learning progression and purposefully integrating cognitive learning strategies and high impact teaching strategies can be achieved with minor adjustments to an instructor’s current practice building from core learning objectives and assessing the desired field skills we aim to develop. The biggest change and challenge will be time and the fear of sacrificing content. But online or hybrid approaches might facilitate additional interaction if additional in-person contact is impractical. This case study presented how a one-day field trip can be deconstructed and reconstructed around a solid pedagogical framework.

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The Limits of White Privilege Pedagogy: A Reflective Essay on using Privilege Walks in the College Classroom

Amy Dundon
Clark University

Elisabeth Stoddard
Worcester Polytechnic Institute

Geoff Pfeifer
Worcester Polytechnic Institute

Nestor Noyola
Clark University

Abstract: The privilege walk is a pedagogical tool used to teach students about often-ignored aspects of privilege. Despite their popularity, privilege walks are under-examined in the scholarship of teaching and learning. This leaves open questions about the efficacy of the walk, and whether, and to what extent, the walk yields different results among students from different backgrounds. This paper critically examines the privilege walk by reflecting on our experience of teaching the walk and analyzing student learning reflections about the exercise. We draw on critical race theory to interpret our data and also to help introduce the concept of slippage. We use slippage as shorthand for systematic issues long described by critical race theorists, such as meritocracy, that are reframed as individual responsibilities. We conclude by discussing how educators might prioritize teaching about structural power by integrating ideas from critical race theory, and abandon intellectual traditions that center Whiteness or the individual.

Keywords: Critical race theory, White privilege pedagogy, privilege walk, meritocracy, colorblindness, structural racism

Introduction

With the aim of teaching students about social privilege, many educators in the United States (U.S.) have conducted privilege walk activities (Pennington et al., 2012; Kumasi, 2017; Alexander and Herman, 2015). A privilege walk is a physical teaching and learning exercise meant to illuminate often-ignored aspects of privilege. Participants line up, then take steps forward (toward privilege) or backward (towards marginalization) as a facilitator reads questions aloud (e.g., “If your ancestors came to the United States by force, take one step back”). When the exercise concludes, participants are usually scattered throughout the room – an uneven result meant to represent a participant’s privilege in relation to their peers. While the exercise is common in educational settings, few empirical studies examine the efficacy of privilege walks. We suggest the walk deserves critical empirical investigation, particularly in the scholarship of teaching and learning, for several reasons.

1 Social privilege involves receiving unearned advantages by being born into or a member of a specific group, such as a member of a particular class, gender, race, ethnicity, religion, ability, sexual orientation, and more (National Association of School Psychologists, 2016).
First, there has been a renewed focus on diversity, equity, and inclusion (DEI) in educational settings. Social unrest following the murder of George Floyd highlighted inequities in American society, and it motivated and pushed students, educators, and administrators to talk about these issues in the classroom (Clayton, 2021). The Covid-19 pandemic also highlighted and exacerbated ongoing educational inequities in the U.S. while addressing inequities in society and in education has been a part of university dialog and programming for years, the triple crisis of the pandemic, systemic racism made visible through police violence, and the intensification of educational inequities have increased the priority of DEI efforts across the educational landscape (Clayton, 2021). Educational settings have become central for discussions around DEI: higher ed administration, for instance, have rolled out efforts to attract racially diverse students and faculty (Nunes, 2021); students have led on-campus protests of economic and racial inequality (Hendricks et al., 2021); and critical pedagogical approaches, meanwhile, have become deeply politicized (Kim, 2021).

Second, the privilege walk is the most common tool to emerge from White privilege pedagogy in the 1980s, and is still prominent today (Tevis et al., 2022). White privilege pedagogy aims to have “White people explore the unearned social privileges they receive as a result of being White” (Cabrera, 2017, p.79). The privilege walk exercise has been described as an effective and transformative practice (Margolin, 2015; Kumasi, 2017), that is helpful for discerning personal privileges and biases (Siliman and Kearns, 2020), understanding positionality, and how Whiteness can shape approaches to teaching (Pennington et al., 2012). Education professionals suggest the exercise benefits aspiring teachers (Martinez, 2015) and school counselors (Rothman et al., 2012). Other studies explain that the walk fosters a nuanced understanding of how race and class shape life outcomes (Arapah, 2016; Hanasono, 2022), and that the exercise is especially useful for White students’ recognition of Whiteness as a racial category (Ford, 2012) and of racism writ large (Kernahan and Davis, 2007).

Third, an empirical, student-centered study of the privilege walk is useful because the exercise is contested. Despite its ongoing popularity, educators and scholars, particularly those of color, have challenged the utility and function of the walk for decades. Some critics of the walk question whether the walk is an effective tool to teach about privilege in the first place (Lensmire et al., 2013). Others demonstrate that the walk fails to situate White privilege in its broader context of White supremacy, and is therefore an inadequate pedagogical tool (Leonardo, 2004; Tevis et al., 2022). Studies have also examined the ways that privilege walks instrumentalize Black students (Foster, 2005) and other students of color for the express pedagogical benefit of White students (Sassi and Thomas, 2008; Magana, 2017).

Finally, our experience with the walk aligns with ongoing critique. We found that the walk led White students to conceptualize privilege in individual and superficial terms, and failed to teach students of all races to recognize structural conditions that make and remake privileged categories and life outcomes. The walk also animated race-neutral and universalized categories of difference, fostered an essentialized understanding of race, and advanced meritocratic standards. We use core literature within the critical race theory cannon to make sense of these outcomes and introduce the concept of slippage to signal where and how the privilege walk reproduced logics and perspectives long critiqued by critical race scholarship.

In addition to critical race theory (CRT), this retrospective study engages in scholarship of our own teaching and learning (SoTL). Following Cranton (2018), this study contributes to critical scholarship of teaching and learning because our pedagogical approaches were transformed during our experience with the walk. Through candid reflection on the outcomes of the walk, we offer an example of reflexive pedagogy (Fanghanel, 2013; Cook-Sather et al., 2019) in an effort to help teachers at all levels engage with their own pedagogy in rigorous and constructive ways.
Literature Review

This section outlines our theoretical framework, beginning with a brief introduction of White privilege pedagogy and the privilege walk. We then outline concepts rooted in critical race scholarship that have significance to SoTL and critical education studies literature. Finally, we re-examine White privilege pedagogy through the lens of critical race scholarship, and introduce slippage, a theoretical frame we use to illustrate the ways White privilege pedagogy decontextualizes racial structures, individualizes race and racism, and essentializes racial categories.

White Privilege Pedagogy and its Discontents

White privilege pedagogy (Gillespie et al., 2010) and privilege studies more broadly (Lensmire et al., 2013; McIntosh, 1988a; McIntosh, 1988b) are largely associated with feminist scholar Peggy McIntosh. McIntosh’s well-known essay, “Unpacking the Invisible Knapsack” (1988b) is a pedagogical tool that aimed to teach educators about aspects of their Whiteness (McIntosh, 1988b; Margolin, 2015; Crowley and Smith, 2020). The article is brief – only about three pages – and consists of 26 “I” statements (McIntosh, 1988b). The essay’s expository tone encourages personal reflection about the ways Whiteness confers privilege in different contexts and settings (McIntosh, 1988b).

The article was adapted into a physical, cultural training exercise now known as the privilege walk (Leonardo, 2004; Lensmire et al., 2013) and became particularly popular in educational settings as a training tool for teachers (Pennington et al., 2012; Guillian and Zeichner, 2018) and students (Sassi and Thomas, 2008; Silverman, 2013). White privilege pedagogy and the privilege walk have remained popular in classrooms across the US partly because White educators find the walk useful for examining teaching positionality (Pennington et al., 2012; Brock et al., 2012; Chen, 2013) and internal biases (Sassi and Thomas, 2008: 25).

The walk has also attracted scrutiny. Recent SoTL scholarship, for example, notes common diversity, equity, and inclusion efforts center privilege, and in doing so, obscure broader systems of White supremacy (Mowatt, 2022). Meanwhile Sarigianes and Banack (2021), follow studies in social psychology (e.g., Leach et al., 2006) to demonstrate that any anti-racist potential of the walk is stymied by the walk’s propensity to spark feelings of guilt and shame among White participants. The walk has been critiqued for fostering complacency to structural racism (Margolin, 2015), flattening difference (Siliman and Kearns, 2020), hampering meaningful dialogue about racism (Cabrera, 2017), and, similar to Mowatt (2022) insufficiently addressing broader social systems that are structured by White supremacy (Leonardo, 2004).

Concepts in SoTL from Critical Race Theory

Much of the privilege walk critique shares intellectual commitments with, and builds from, core concepts from critical race theory. Critical race theory (CRT) is a relatively narrow body of literature situated in American legal scholarship that examines the ways US law produces conceptions of race that benefit White people (Gillborn and Ladson-Billings, 2010; Delgado and Stefancic, 2013; Williams, 1991). Critical race scholarship began in the 1970s and examined how race-neutral or “color-blind” rhetoric is operationalized in US law, and specifically how such race-neutral ideals are mobilized to obscure the definitive role of race, racism, anti-Blackness, and White supremacy in the US legal system (Lawrence, 2001; Bell, 2004). In addition to law, CRT scholarship demonstrated that race and White supremacy are enshrined in different areas of policy, and, therefore, that race and White supremacy shape unequal social and economic conditions (Matsuda, 2018; Crenshaw, 2011; Harris, 1993; Crenshaw, 1997).
As race-neutral and color-blind rhetoric became prominent in US higher education in the 1990s (Cochran-Smith, 1995; Parker, 1998; Choi, 2008), critical education scholars integrated concepts established in critical race theory to make sense of the role and place of race in education (Tate, 1997; Ladson-Billings and Tate, 1995). The critique of color-blind racism in CRT, for example (Hiraldo, 2010; Taylor et al., 2009; Lynn and Dixson, 2013), advanced critical education studies scholarship beyond studies of gender and class (Cochran-Smith, 1995; Parker, 1998; Choi, 2008). Additional concepts that examine the relationship between race and education like multiculturalism and epistemological ignorance have also had notable impacts for critical education studies.

**Race Liberal Practices, or Multiculturalism, Meritocracy, and Color-Blindness**

Race liberal practices articulate through race-neutral rhetoric and policies, which produce, mediate, and perpetuate White supremacy throughout society (Gallagher, 2003; Doane, 2017). Race liberalism is an ideology that nominally seeks redress for racial inequality, but in practice operationalizes race-neutral, color-blind, or “race-evasive” tactics that mute and diminish the significance of race and racism (Mills, 2008; Mills, 2017; Crenshaw, 2017; James-Gallaway and James-Gallaway, 2020). Critical theorists of race and culture have long demonstrated the ways that fictional color-blindness – or, inattention and/or active denial of racial social formations – enacts ongoing racial dominance and oppression (Hall and Gieben 1992). Positioning race as neutral helps to render racial categories and structures as natural, unpolitical, and normative. Critical race, Black studies, and other critical social studies scholars demonstrate that race and racial categories are socially constructed, geographically and historically contingent expressions of power (Hall 1980; Wynter 2003; Fanon 2008; Robinson 2020).

Multiculturalism is an ideology that formally promotes diversity and difference through rhetoric and practices that conceal the significance of race and racism (Appiah et al., 1994; Phillips, 2002; Melamed, 2006) in order to reproduce White supremacy (Hudson, 2020; Jay, 2003; Ladson-Billings and Tate, 1995). Scholars have long critiqued western education for its adherence to and reproduction of multiculturalist ideals, which render matters of racial difference neutral – and therefore inhibit recognition and critique of racial oppression (Gordon, 2005; Wang et al., 2014; Alon and Tienda, 2007). Critical education and critical race scholarship documented the ascent of multiculturalism and colorblindness in US education in the 1990s (Cochran-Smith, 1995; Parker, 1998; Choi, 2008), and assess ongoing impacts of race-neutral standards on education today (Vilapando, 2004; Liu, 2011; Patton, 2016).

The institutionalization of race liberalism (also, “racial liberalism” (Crenshaw, 2017; Choi, 2008)) and “abstract liberalism” (Bonilla-Silva, 2017)) are also evident in meritocratic practices, sensibilities, and education policy. Meritocracy is theorized as a hegemonic or ideology that promotes liberal notions of equality, such as equal opportunity (DeCuir and Dixson, 2004; Villalpando, 2004; Carbado, 2013). Meritocratic ideals like equal opportunity conceal power differentials (Bell, 1972; Slaton, 2015; Delgado, 1989) by centering merits (e.g., hard work, dedication) as exclusive factors in successful life outcomes (McNamee and Miller, 2009). Thus, meritocracy negates the ways race, gender, and class mediate structural advantages and proximity to power. Meritocratic standards obscure the role and place of race in society (Bonilla-Silva, 2017; Neville et al., 2016). Meritocracy also abstracts the ways that advantage and disadvantage are historically, socially, and politically produced and articulated through ongoing, exclusionary regimes of wealth, property, and education (Liu, 2011; Mijs and Savage, 2020).
Epistemological Ignorance

Alongside multiculturalism, critical education scholars demonstrate the ways racial ignorance enacts racialized social systems (Mueller 2020). Theorized as *epistemological ignorance*, these perspectives describe the ways racial oppression, and White supremacy in particular, structure social formations and processes (Mills, 1998; Mills, 2012 [2007]). The dominance of White culture produces and enacts hegemonic, normative social formations (Alcoff, 2007; Mills, 2007 [2012]:28; Doane and Bonilla-Silva, 2013). The normativity of Whiteness ensures that the impacts, production, and even presence of White racial domination go unacknowledged and unrecognized (Mills, 2012 [2007]). In education and other sociopolitical processes, the prominence of White culture enables White people, culture, and social formations to remain willfully ignorant of White supremacy, despite its pervasive and detrimental presence (Sullivan and Tuana, 2007; Mills, 2012 [2007]; Mills, 1997). Scholars note that North American education practices are structured by epistemological ignorance and reproduce coloniality and other forms of racial violence (Calderón, 2011; Andrecotti, et al., 2011; Stein, 2020, Cabrera, 2012). Others have described the ways diversity-centered professional development workshops in higher education typify epistemological ignorance (Grinage, 2020) and dilute anti-racist circular efforts (Tate and Page, 2018) by adopting neoliberal multiculturalism (Melamed, 2011).

The literature highlights that White people often separate themselves from the historical production of Whiteness and the ongoing impacts of White supremacy. Cabrera and colleagues (2016) argue that White college students enter college “not knowing” about the impacts of White supremacy because of structured ignorance. More specifically, Cabrera and colleagues contend that White college students tend to come from racially homogeneous (i.e. White) neighborhoods and high schools, and tend to enter racially homogeneous (i.e. White) college environments. This racial isolation builds an all-White social structure that ultimately protects socially constructed Whiteness. The insulation of Whiteness by way of racial segregation is an example of what critical race theorists term White ignorance, epistemological ignorance, or epistemological individualism; that is, limited racial interaction creates a type of ignorance about any culture/existence other than one’s own (Mills 2012; Mills 1997). Epistemological ignorance induces a slippage in understanding racism as a structural issue — and thus produces a slippage in scale, where the individual experience of Whiteness becomes a metonymic device for the actually existing, always racialized, production of uneven social hierarchies.

As Mills (2012) notes, epistemological ignorance works at multiple levels, and as Alcoff (2007) notes, there are multiple types of ignorance. These levels include historical regimes of US property ownership contingent on Whiteness and where Whiteness itself is instrumentalized as a metonymic device of property rights (Harris 1993); the arch of US civil rights progress and its contingency on what Bell (1980) calls “interest convergence”; the displacement of civil rights legislation in favor of race-neutrality (Crenshaw), and so on.

Race/Whiteness structure the very broadest aspects of life: social institutions like school, health and law; and therefore life expectancy metrics like generational wealth, homeownership, natal mortality and general healthcare; neighborhood policing and surveillance; transportation; environmental health, and more (Sze 2006; Gilmore 2007; Shabazz; 2015; Wang 2018; Yamahtta-Taylor 2020), and therefore structure both epistemologies and ontologies. What we think of as “slippage” applies when students begin to internalize these structures (ontologies) as individual choices.

Situating White Privilege through CRT and Slippage

Crucially, the rise of race liberalism in US social institutions was accompanied by the rise of White privilege pedagogy in US education. As discussed, White privilege pedagogy became prominent in US education during the 1990s as a tool to help White people reckon with and understand race-based
privilege. However, White privilege pedagogy is an insufficient tactic for teaching and learning about racially conferred privilege because, like meritocracy and multiculturalism, White privilege pedagogy is structured by and constitutive of racial liberalism (Solomoma et al., 2005; Crowley and Smith, 2020).

White privilege pedagogy centers and reifies Whiteness without an assessment of White supremacy (Leonardo, 2004; Tevis et al., 2022). By centering Whiteness without sufficient contextualization, White privilege pedagogy partitions the effects of Whiteness (e.g., privileges) from the causes of Whiteness (e.g., social institutions that are structured by White supremacy). As a result, White privilege pedagogy offers an incomplete and inaccurate perspective of race, racism, and racial dominance. Second and relatedly, White privilege pedagogy focuses on the individual and avoids explicit discussion of the structures that enshrine and reproduce race categories, enable racism, and animate racial hierarchies. As a result, White privilege pedagogy presents an underdeveloped and reductionist formulation of power. Three, in neglecting (or avoiding) the structural, contingent, historical production of race, White privilege pedagogy advances an overly essentialized conceptualization of race (Crowley and Smith, 2020). Under this view, racial categories themselves and membership to a particular social group is determined by underlying, biological, essential, and fixed characteristics (Wilton et al., 2018; McBride, 2004).

We shorthand the impact of these three outcomes of White privilege pedagogy – decontextualized racial structures, individualized race/racism, and essentialized racial categories – as slippage. By slippage we mean that the context of race and racism “slips” into an atomized and truncated formulation of race, that structural forms of power and racial domination “slip” into individual terms, and the historical production and flexibility of racial categories “slip” into fixed and essentialized terms. We argue White privilege pedagogy fosters a theoretical gap between understanding the individual repercussions of Whiteness (being White, having privileges) and the broader social scale of Whiteness as an historical institution of dominance and oppression, rooted in a constructed racial supremacy. This conceptual gap fosters a conceptual slippage in students’ (or any privilege walk participants’) grasp of privilege. The slippage occurs when matters of socially-produced, structural racism are internalized as individual, aberrant phenomena.

Slippage in the scale of understanding difference is thus part and parcel of collapsing difference; both are produced by interlocking factors. First, the privilege walk is set up to describe the outcome of structural racism as an abstracted, individual experience. Next, because that individual experience is attached to only students marked by their Whiteness, students mistake structures that create oppression as individual responsibility, or, confoundingly, shirk responsibility after identifying racism as an external event. This conceptual slippage is apparent in our findings, particularly where students internalize (take as a personal matter) the structural privileges inherent in Whiteness. Critical race theory helps us make sense of the elision of difference and the conceptual slippage between understanding, on the one hand, the individual as an agent of privilege, and conceptualizing, on the other hand, Whiteness as a structuring logic of society.

Methodology

Introduction

In the mid-2010’s, through an assessment of our first-year project-based program, we found that students of color who took the course were slightly more likely to leave the university. This data was distressing and surprising, as research shows that courses with high impact practices (HIPS), such as projects and teamwork, are more likely to retain historically minoritized and underrepresented
students (Sweat et al., 2013). SoTL research focuses on practice-driven inquiries about the classroom, curricula, or institution, with an explicit focus on transformation (Hubball and Clark, 2010). These iterative processes of inquiry are informed by multidisciplinary theories that shape the development of a hypothesis, hypothesis testing, planning, observing, analyzing, and acting upon the associated practice (Hubball and Clark, 2010).

As such, our SoTL research took place in two iterative phases. During the first phase 1) we inquired with students about team-based practices in our classrooms, as well as with the literature, about issues of bias and stereotyping on student teams and how this impacts student learning; 2) we went to the literature and to our diversity and inclusion professionals to learn about possible curricular and classroom interventions; 3) drawing on these, we developed a set of practices to help students learn about structural racism and bias, including the privilege walk. We hypothesized that the privilege walk would help white students recognize their structural privilege, see that underrepresented students got to the same place without the benefit of such structural privilege, and that this would help to reduce bias and stereotyping on student teams. In the second phase, we 1) tested our hypothesis by running the activity; 2) analyzed the outcome through student reflective essays; and 3) we acted on the results through another iteration of developing practices, hypotheses, analyzing outcomes, and so on. Through this process, SoTL provided us with unique opportunities as faculty to observe, analyze, and reflect on our practices, deeply engage with our students about their own learning, and to understand how these practices created harms and benefits. We used that evidence to re-design our curriculum to reduce harm and to better address issues of bias and stereotyping on student teams ([citation redacted for peer review]), and we continue to learn and re-design through this ongoing iterative process (Hubball and Clark, 2010). In the remainder of our discussion of methodology, we discuss the setting of our study, our participants, our data collection methods, and our procedures for data analysis.

Setting

Our university is a private, predominantly White and predominantly male science, technology, engineering, and math (STEM) oriented university. Our university combines typical, American college learning with hands-on, project-based learning that is often completed in student teams. It is in the northeastern United States. Accepted students have an average GPA of 3.92 and an average class rank of top nine percent, and admissions are considered “most selective.”

Participants

Our student body is approximately 60 percent white and 62 percent male. The non-White student body is comprised of approximately 7.8 percent Latinx students, 2.9 percent Black/African American students, 8.8 percent Asian, 0.02 percent Indigenous American, 0.04 percent Indigenous Hawaiian or Pacific Islander, 3 percent multi-ethnic, 13 percent international students, and 7 percent unknown.

Students that participated in this study were enrolled in 5 different first-year project-based seminar courses. A total of 69 students participated, and all were first-year college students. We broke the 69 students from 5 different courses into two mixed course groups to ensure even and sufficient participant numbers and to artificially construct more racial diversity within each participant group.
Data Collection

We collected data for this study in the mid-2010’s, when our research team implemented the privilege walk for the first and final time. The walk itself was designed in collaboration with our then-director and co-director of our office of multicultural affairs, and their associate director, whose expertise in this area was invaluable. They also facilitated the walks themselves, along with debriefing sessions directly after the walks.

The walk involved the students stepping forward or stepping backwards in response to different statements. For example, if you grew up in a house with more than 50 books, take one step forward. Or, if English is not your first language, take one step backward. Upon completion of the walk, students discussed their experiences in small groups, with prompts created by the then director and co-director of the Office of Multicultural Affairs. Afterwards, for homework, the students were asked to read literature on the benefits of diversity on teams, and how bias and stereotyping shape educational and professional group settings, particularly in STEM environments. Then, for homework, they wrote individual reflections about their experiences in the walk based on a set of prompts created by the faculty and facilitators. Data was collected with the approval of our Institutional Review Board (IRB) and with consent from participating students.

Analysis Procedures

Upon completing the reflections, participants uploaded their reflections to an online course management system (i.e., Canvas). Only our research team had access to the reflections. To protect participants’ confidentiality, and aligned with our IRB guidelines, one member of the team alone deidentified all reflections (e.g., names and personal references) and gave each student reflection an identification number before the rest of the team formally analyzed the data. That same team member linked each student’s identification number to students' self-reported data, including parental adjusted gross income, gender, first-generation status, and race, as well as additional categories students identified in their reflections, such as nationality and citizenship. All names associated with student quotes are fictional names we created and all identifiers have been removed to protect student confidentiality.

Data analysis has been led by two faculty members over several years, in partnership with several undergraduate and graduate students, including those on the authorship team. We used a mix of deductive and inductive thematic analysis (Hubball and Clarke, 2006). With the former, we had themes we identified from the literature that we coded for as we read and analyzed the students’ reflections. With inductive thematic analysis, we identified themes that emerged, and then coded for them throughout the set of student reflections. Our analyses drew on concepts rooted in critical race theory, used CRT analyze the student reflection data, the privilege walk, and white privilege pedagogy. We used NVivo, a qualitative data analysis software, to help organize the data and to use the software’s data analysis and visualization tools. We conducted regular research team meetings to discuss what themes were emerging, linkages to relevant theories and frameworks, as well as differing interpretations and analyses.

As we discuss our analysis of the student experiences, we want to underscore that we do not blame students for their responses, nor do we wish to minimize student agency. Rather, we acknowledge the complex relationship between students and their environments. We interpreted data from the perspective that the students made sense of their experiences with the privilege walk by

3 For the purposes of protecting our students’ confidentiality, we offer a range of years instead of the precise year.
drawing on the literature and narratives provided by us, their faculty and facilitators, as well as from within their particular sociocultural and political environments.

Finally, we acknowledge the data analytic process is fundamentally shaped by the positionality of the research team. Undoubtedly, our research team’s experiences in institutions of higher education—as researchers, teachers, graduate student workers, and, indeed, as students—have created complex situated knowledge that informed our interpretation of the data. Our own identities also shaped the ways in which we understood and interpreted the students’ reflections and qualitative data. Our research team has a diversity of ethnic, racial, gender, and class identities and sexual orientations, as well as disciplinary backgrounds, and staff, faculty, and student positions. In our regular meetings, we discussed where our interpretations overlapped and where they differed. We discussed our analyses through the lenses of the literature and through the lenses of our various positionalities, and we drew our conclusions through this process (Holmes, 2020).

Results

Our analysis revealed that the walk resulted in three significant outcomes. Students: 1) collapsed and depoliticized difference 2) advanced meritocracy and colorblindness, and 3) deferred to epistemological ignorance of Whiteness. We examine these outcomes by analyzing student reflections on the privilege walk, and draw on critical race scholarship to frame our analyses. We shorthand the themes we imported from CRT as slippage, in order to discuss how these ideas are operationalized in our student reflections. Slippage helps identify how the privilege walk fostered the tendency to decontextualize racial structures, individualize race and racism, and essentialize racial categories, and leading to student understanding of race and racism as merely individualized, epiphenomenal, and aberrant.

Collapsed Difference

Students often minimized the impact of, and therefore collapsed, salient facets of difference (e.g., race, ethnicity). We interpret this phenomenon as an expression of race liberalism, diminishing the significance of race and racism (Crenshaw, 2017). Students also collapsed difference by flattening categories of difference into a universalized conception of being different, which is an example of a conceptual slippage. An example comes from Dan, a White male student, who expressed that being in university provides all students with a “clean slate” that is no longer shaped by privilege:

> Now that we are [in university], I feel that we can start on a clean slate. What got everyone here now does not matter. History, other than how it shaped us into who we are today, has no impact anymore. It is all about what we do here [in university], with this opportunity.

Dan both acknowledges that ‘history’ shaped his and his peers’ development, while simultaneously dismissing any impact of this ‘history’ by claiming that higher education provides a level playing field for all students. The notion of an ‘equal playing’ field qualifies as a transhistorical interpretation of privilege. We interpret Dan’s collapsing of difference as an articulation of slippage. That is, Dan, renders structural, historical, and systematic forms of difference (e.g., class, race, and gender differences) into individual terms; oppression can be overcome, because of the shared/same experience of attending college, which offers a “clean slate.” The “from now on” sensibility minimizes and individualizes power hierarchies embedded in racism, classism, and gender inequality.

Similarly, José, a Latinx student with dual citizenship, minimized and collapsed difference by emphasizing college as a universalizing destination:
While it is true that maybe our parents or ourselves had to leave our home countries at some point and that adjusting to a new culture and lifestyle was not easy, we still had managed to be at the same place as those who were considered more “privileged” [...] 

José acknowledges that achievements, like attending college, are easier for some students than others. José also suggests that difference can be overcome through achievement, a perspective that conceals the significance of race and racism (Phillips, 2002; Melamed, 2006). Collapsing difference in this case functions to neutralize the meaning, impact, and significance of difference, and offers an example of how students conceptually slipped between recognizing and acknowledging differences between structural and individual forms of oppression.

A final example of collapsed difference comes from Tyler. Tyler is a White male student that identifies as highly privileged. For Tyler, the privilege walk opened his perspective of privilege. He says:

Suddenly all the challenges I was facing - homework, living in a new place, and meeting new people- seemed so insignificant when weighed against all my good fortune. Nonetheless, at the end of the exercise almost all of the participants had made the journey to the circle’s center, suggesting that from a privilege standpoint, [our college] is uniformly fortunate.

Tyler, like José and Dan, seems to acknowledge the ways social formations structured in racial dominance (Hall 1980) confer uneven and unequal privileges. For Tyler, his whiteness, class, and gender bestow him with “good fortune.” However, as Tyler reflects on the results of the walk – that most of his peers are also privileged – his recognition of difference slips from structural to individual terms. Moreover, the assertion of “uniform” privilege or fortune indicates that the walk rendered significant aspects of difference neutral and trivial.

Depoliticized Difference

Students also commonly depoliticized difference, specifically racial differences. Depoliticizing difference is an expression of race liberalism, where a muted conception of difference obscures the relationship between privilege, race, and power. An illustrative example comes from Anna, a first-generation, working-class White female student who was apprehensive about the exercise but felt relief that the privilege walk integrated differences other than race:

Before going to the privilege walk I had very reserved and negative feelings about going to this event. With all the controversy about racism in the world, and especially over the “Black Lives Matter” group, I automatically assumed that this would focus more on “White privilege” and racism. However, thankfully it didn’t focus on that one topic [...] I liked the questions that were asked; they were not focused on one certain thing, but of a very broad span of privileges.

Importantly, despite asserting that she “liked” that a variety of privileges were addressed in the activity, Anna minimized the role of power, oppression, and privilege later in her reflection, and expressed a negative sentiment toward comparison:

Factors like race, religion, sexuality, money, gender and other things discussed all affect our lives- some more than others. We live in a society where we are educated about our differences and most people are accepting about it. So, this [privilege walk activity] didn’t dredge up any deep emotions inside of me, it just reinforced my belief that everyone is different because of their backgrounds, and for that reason we shouldn’t be comparing ourselves to others.

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While Anna’s attention to a range of privileges appears to be a positive outcome of the privilege walk, Anna’s omission of race while discussing privilege is a troubling example of race liberalism. Anna’s response also articulates semantic strategies examined by Bonilla-Silva (2002), which avoid any direct mention of race itself when discussing race or racism. For Bonilla-Silva, these “Anything But Race” strategies protect White people from direct engagement of race and avoid potential accusations of racism, while working to render race invisible, apolitical, and inconsequential to everyday life (2002).

Covert references to race were common in our data. Students expressed preference for discussion of social privileges rather than race, a type of rhetorical move akin to the “Anything but Race” strategy described by Bonilla-Silva (2002). Instances of “Anything but Race” in our data revealed that White students who expressed a preference for addressing a wide range of social privileges also tended to ignore race, racism, and White privilege in their reflections altogether. This suggests White students engaged in discussion of privilege to avoid or depoliticize race. Indeed, Anna, despite expressing approval for questions on different sources of privilege, later disclosed general disapproval of focusing on difference:

Yes, it’s good to be sympathetic of [sic] those who are less fortunate than yourself, but people [should] not feel guilty for the privileges that they were born with. I am a firm believer that we should embrace the privileges that we have, and not focus on what we don’t have.

Anna mobilizes “less fortunate” as a proxy for difference. Noting that privileges are immutable characteristics, or aspects of identity one is “born with” Anna’s discussion of privilege here is alluding to, but actively avoiding, race and racism. Anna argues that sympathy for the underprivileged is permitted (to a degree), and that one should not feel guilt for unearned privileges, and, ultimately, that students should not focus on differences. Similarly, John, a White working-class male student reported that the privilege walk left students feeling “divided.” In particular, he highlighted that the exercise accentuated differences between students on campus in antagonistic ways:

[The privilege walk] was well intentioned, yet it did more harm than good for the majority of the participants [...] Talking to many of my classmates, after the walk people felt more divided than anything else and felt that it was either a waste of time or sending the wrong message. I believe some of the reasons for this were because people already recognized the differences between their classmates' situations and their own and did not appreciate a reminder and visual representation of these differences. During the walk, I thought the questions were interesting, yet I did not feel moved or touched by any of the proceedings.

John appears to reject the exercise and claims it may be harmful because of the ways differences are highlighted and politicized. His argument that the divisiveness of the walk outweighs any benefit qualifies it is an example of depoliticization of difference: John already knew and recognized differences among his peers, and did not approve of a direct mention of difference or privilege. These kinds of negative reactions, as Leach and colleagues (2006) explain, are common in situations where dominant racial and cultural groups are confronted with inequality. Individuals in the dominant racial group commonly manage the discomfort of such confrontation through a focus on the individual, rather than structural inequality. John and Anna, like other White students, responded to the privilege walk with “negative” reactions because of the politicization of race.

Dhruv, a South Asian male student with dual citizenship, like Anna and John, responded to the privilege walk by depoliticizing difference. Unlike his peers, Dhruv depoliticized difference in a way that generated feelings of comradery: for Dhruv, recognizing difference, when sufficiently
depoliticized, was an overall positive experience. Going into the privilege walk, Dhruv reported he was nervous that he would be ‘put on the spot’; he noted that in the past, he had experienced harassment from his American peers because of his race. He then noted that he was surprised and relieved to discover that he was not the only person who was “different”:

At first, I was afraid of sharing my life experiences with complete strangers. I believed that I would stick out like a sore thumb or even worse, get picked on for being “different.” However, I found it oddly surprising that I wasn’t the only person who was “different.” Looking around, everyone had some level of uniqueness.

Carolina, a first-generation working-class Latinx student, collapsed different aspects of her own identity in order to depoliticize markers of her difference. Carolina reported feeling out of place on campus, and that the privilege walk allowed her to find community in other students with similar experiences as hers:

My first week at [university] I felt like I didn’t fit in. I felt everyone was smarter and had rich parents; and there was me: worried about how to get good grades to maintain my scholarships. Even though my parents aren’t poor they work very hard for the money they make and having four kids brings a lot of expenses. Being able to be part of this privilege walk I saw that there were other students who are just like me. I was able to see that not everyone had the perfect family or highest social class. Many students have been through similar situations too.

Carolina was able to reflect on feelings of alienation rooted in her race and class as a result of the exercise. However, Carolina appears to frame her multidimensional experience (as working-class, as Latinx, as first-generation, as a woman) into a strictly class-based experience that she shares with her working-class peers. Carolina’s class-based, reductionist analysis can be interpreted as an erasure of her complex identity. On the other hand, Carolina reports to have found community through the exercise.

As with Carolina, David, a Black male student reports initial feelings of alienation and instrumentalization provoked by the privilege walk, which are then mediated by the collapsing of difference:

One of the leaders of the walk instructed us to form a circle. 2 minutes passed and we had succeeded in making a haphazard oval. We were then instructed to listen to different privilege statements, such as “I have never been afraid of loving my significant other in public...” or “I never have to worry about a cop following me because of my complexion,” and to take a step for each one that applied to us. Without even saying a word I was giving a mass of strangers insight into my life. It felt as if with each step I was removing a piece of clothing. Nude. Bare. Exposed. I remember when they stopped reading the statements and told us to look around and compare where people had started and ended. I was surprised that I was one of the people closest to the front. Being a black young man I thought I would have been close, if not completely, at the back of the crowd. It made me become aware of the fact that I do have some privileges that I take for granted. I can love who I want to in public, I have two supportive parents, and the list goes on. I know now that we all have some type of privilege in our lives, whether it may be visible or not. Societal norms and expectations effect all of us negatively in some shape or form because we are human. Humans are not one dimensional, they have depth.

While uncovering community seemed to benefit some historically minoritized students as
partially demonstrated by these examples, it is important to note that this benefit exists because our campus, like other institutions of higher ed, is structured by Whiteness. As Dhruv, Carolina, and David note, their discomfort and fear of judgment was experienced in the context of a predominantly non-Latinx White student group (according to university data, over 60% of students on campus are White). Many White students reacted negatively to this exercise and, in particular, to its effect of exposing and politicizing Whiteness. Thus, the experience of finding community reflects the ways the culture of Whiteness shapes higher education and perpetuates marginalization among historically minoritized students.

Our student responses also reveal that claims of victimhood depoliticized difference and privilege. The tendency to express victimhood is a noteworthy pattern: it appeared almost exclusively among the White middle- and upper-class male students who felt targeted in the privilege walk. For instance, recall John, a working-class male student that had a generally negative reaction to the walk. John described himself as a victim of the privilege walk and noted a concern for how others – especially marginalized students – may see him:

The activity seemed directed at me, pointing out how I was in the wrong for being privileged. I didn't choose to be born into a well-off family. Even though I may not have had as many hardships as others, I don't want to be looked down upon.

John focuses on how the privilege walk negatively impacted him as an individual. As McIntosh explained, privilege refers not to “earned strength” but instead refers to “unearned power,” including the “privilege to ignore less powerful people, distort the humanity of the [privilege] holders as well as the ignored groups” (1988b, 7). Importantly, McIntosh warns us that what may look like earned strength may actually be “permission to escape or to dominate” (1988b, 6). We see this in John’s reflection: John centers himself and presents the “fact” that he has not done anything “wrong” – he was merely born into privilege – and that recognizing his privilege will make others “look down” upon him – something that will hurt him.

**Meritocracy and Colorblindness**

John’s response is not uncommon. John, like other students, engaged the rhetorical tool of projection (in John’s case, projection of blame), which is characteristic of colorblindness and meritocracy (Bonilla-Silva, 2003). Quizzically, John claims that he, rather than his peers of color, is a victim. This move is characteristic of leveraging Whiteness and gender to escape accountability or recognition of privilege and, ultimately, to center Whiteness. Cabrera (2017) suggests centering Whiteness to avoid accountability is a common strategy among White men on college campuses who claim victimization in response to discussions of race and racism. We understand such reactions, whether claiming victimization or centering one’s Whiteness, as expressions of race liberalism that simultaneously minimize difference and promote, however superficially, notions of equality.

Minimizing difference was consistent among students of different races and income brackets. Students of color, for example, reported that despite initial worries about being exposed to judgment from more privileged students, the focus on privileges helped create a more inclusive social environment. However, this privilege-based camaraderie was achieved by collapsing distinct, race-based privileges into more general or class-based difference. Following critical scholarship of race, we suggest generalizing identity obscures and negates social and political processes that make and remake identity, the co-production of difference, and the ways particular identity markers (e.g., race and class, gender and race, etc.) are entangled with one another (Gilmore, 2008; Hall, 1980; Gilroy, 1993; Omi and Winant, 1986).
We understand the superficial conceptualizations of difference to be a major flaw of the privilege walk, despite apparently positive reports of inclusivity in the classroom. Relatedly, students tended to collapse or depoliticize difference through appeals to meritocracy. Meritocracy is a key tenet of abstract liberalism that is based on the assumption that systems reward people based on their abilities rather than other factors like race and social class (Bonilla-Silva, 2017). We find that this undermines the aim of the privilege walk because it reinforces fictional, race-neutral colorblindness (Bonilla-Silva, 2017). For José, the Latinx student we discussed in a previous section, experiences with social adversity allowed him to develop assets:

At the beginning I thought privilege was having nice things and having a life where everything was given to you and not earned. I thought that people with these qualities were ahead of the game because they had power over others in society. In reality, it was the whole opposite. The people who have had more handicaps and obstacles in their life were actually way ahead of the people whose lives were facilitated by others. The individuals who had more obstacles to avoid had been more prepared for life and the future. They are more experienced in tackling problems and that is why every time that they fall, they will get back up because they know that in the end all the work they put in is worth the fight.

In José’s previous response, his focus on success in spite of differences in hardship (‘while it is true that maybe [...]’), minimized the significance of race and racism. Here, we understand that the emphasis on hard work and resilience, and particularly linking hard work and resilience to success, appeals to meritocracy. To be sure, José is communicating a praiseworthy pride in the strengths he and his peers developed in the face of these hardships, but the coupling of hard work and achievement in José’s response obscures the fact that hardships are socially patterned. Here, meritocracy (expressed as “despite of”) detracts from understanding structural forces, rather than individual effort, determine the likelihood of achievement. While José later asserts that students who have enjoyed less privileges are ‘actually way ahead’ of students who have enjoyed privileges, this sentiment does not capture the complexities of historically minoritized students’ experiences with oppression. Like colorblindness, meritocracy is a common ideology promoted in education, despite research that demonstrates the ways “opportunities for merit are themselves determined by non-meritocratic factors” (Mijs, 2016, p. 14)

Epistemological Ignorance

Scholars have demonstrated that epistemological ignorance aids the naturalization of Whiteness, and that White people often separate themselves from the ongoing social, political, and economic violence of White supremacy (Matías and Boucher, 2021; Cabrera, 2022). The privilege walk provided White students with the opportunity to move beyond epistemological ignorance. In their reflections on the privilege walk, several White students noted that although their understanding of privilege did not change, the privilege walk gave them a ‘better’ perspective or increased awareness of the ‘effects’ of privilege. For instance, Johanna, a non-Latinx White female student, noted that she grew up in social environments where Whiteness was the norm. Moreover, she noted that although she ‘knew’ about her privileges, the privilege walk allowed her to gain a deeper understanding of them:

I was born and raised in the small suburb … a mere twenty-minute ride from [city] yet sheltered from any hardship or struggle that city living may be accompanied by. The majority of my classmates were just like me: White, middle-class students with two parents who worked and lived in nice homes on tree lined streets. Like all kids, we complained about what we didn’t
have and begged for what we wanted, however, I was never ignorant of the fact that I had it better than most children my age [...] even so, I don't think one can really understand their privileges until they take a step back and actually look at them face to face.

As seen in Johanna’s reflection, despite the fact that she never felt ‘ignorant’ about her privileged social position, because of structured ignorance (i.e., being raised in a small suburb, being ‘shielded’ from hardship, attending a predominantly White middle-class school, etc.) she had not previously been able to come ‘face to face’ with the privileges she has enjoyed -- and been aware of. In a similar manner, Doug, a White male student who described himself as, “quite literally, a part of every privileged group there is”, explained that although he was aware of privilege, the privilege walk helped him gain a better perspective on the realities of oppression:

While my understanding of the definitions of privilege, power, and marginalization did not change after the privilege walk, my understanding of their effects in practice did. I was aware that there were a large number of people who are marginalized by society, but the privilege walk put those numbers into perspective. I was able to see just how many people were affected by marginalization, and yet we were biased towards those with privilege.

Both Johanna and Doug claimed to be aware of oppression and its harmful impacts prior to the privilege walk. Yet, their reflections demonstrate that this ‘awareness’ did not equate with actual understanding. Additionally, Johanna and Doug indicate a slippage in conceptualizing individual and structural articulations of racial difference. We might think about this slippage as a variant of epistemological ignorance—or, what critical race theorists discuss as the ways that ignorance (of life experiences, cultures, perspectives, and hardships outside of one’s own) can be structured, political, managed, nuanced, and tantamount to privilege (Sullivan and Tuana 2007). As evidenced in Joanna and Doug’s reflections, the privilege walk can reify the individual rather than address structural matters of privilege – and contribute to a slippage in students’ understanding of structural forms of race and racism.

Conclusion

When designing and conducting the privilege walk, we hypothesized that the privilege walk would help white students recognize their structural privilege, see that underrepresented students got to the same place without the benefit of such structural privilege, and that this would help to reduce bias and stereotyping on student teams. However, our data and analysis demonstrate that while students express a range of reactions to the privilege walk, the exercise encouraged a flattened conception of difference, resulted in them focusing on individual rather than structural power, and alienated students of color. We discuss each of these shortcomings in this concluding section.

Many students reported a depoliticized and flattened conception of salient identity-based difference after their participation in the privilege walk. The tendency for students to elide, collapse, minimize, or ignore race-based differences creates the opportunity to reinforce the uneven power dynamics that we aimed to interrupt by conducting the walk. For instance, students of all racial backgrounds collapsed difference, differed to fallacies of equality, and reified meritocracy; many White students internalized the walk in a way that sparked feelings of anger, guilt, or victimization.

The feelings that White students commonly expressed in relation to the privilege walk exercise demonstrate that the activity tended to generate (or reinforce) an individualized conceptualization of racism. The feelings of guilt, shame, and other negative emotions indicate that the walk has a tendency to activate conceptualizations of difference that are characteristic of liberal ideology. Liberal ideology
in student response manifested through an adherence to meritocratic standards of success, the erasure of race and race-based difference in favor of class or gender, and the operationalization of race-neutral narratives. These responses reveal the ways that engaging in the privilege walk allowed students to conceptualize difference, power, oppression, and race in ways that actively displaced any notion of structural power. This is a disappointing outcome given our intention of aiding student understanding of the structures of power that shape society.

We also note that within our predominantly White institution, the walk served White students only. This result is partly because by design: White privilege pedagogy is an instrument meant to teach White people about their Whiteness (Margolin, 2015; Cabrera, 2017; Lensmire et al., 2013). Positive impacts, however, were limited. Many White students reflected on the exercise with strong negative emotions. For most White students, the focus on Whiteness and privilege failed to meaningfully impact, teach, or change perspectives of power or privilege.

The aggregate impact of the walk on our students is troubling, and we are particularly discouraged about the walk because of the care and attention with which we constructed the exercise. We recognize there are other forms or modes of privilege walks, such as privilege walks conducted as individual, written exercises; “blind” privilege walks that assign fictional privileges students at random; and walks that center the assets of students, rather than describe deficits (e.g., Stevens et al., 2019; Oropeza et al., 2016; Parker et al., 2019).

Other educators and university administrators might assume that the “right” privilege walk could mitigate the harms of the traditional exercise while fostering the benefits. Some might suggest anonymous privilege walks (conducted individually, on paper; or, “blindly” with fictional privileges allotted randomly to students; with a focus on assets rather than deficits, and so on—see Stevens et al 2019; Oropeza et al 2016; Parker et al 2019). The different iterations of the privilege walk still facilitate a slippage between individual and structural matters of race. However, we believe that at its core, the privilege walk fails to create transformative learning about race and power. The shortcomings of the walk, despite our best intentions, suggest that the exercise is an inadequate pedagogical tool for understanding difference, power, and privilege, and race and racism in particular. Given these results, we suggest White privilege pedagogy, including the privilege walk, should be replaced with pedagogical approaches that center race and racism in a structural context, while assessing the role of race in shaping everyday life. We find critical race theory a more appropriate and effective perspective to help students learn about race, power, and difference because much of the literature in CRT explicitly identifies and names White supremacy.

Additionally, SoTL studies have demonstrated that integrating readings from CRT into the classroom can help students connect broader, “real life” processes of racism to the ways that racism shapes education (Parker and Stovall, 2004), helps educators better understand the ways racism shapes education policy (Gillborn, 2007), and can help White educators understand and combat racism in the classroom and on campus (Bergerson, 2003). Concepts rooted in CRT can also aid in teaching about race, privilege, and power in ways that frame societal privilege and disadvantage from a “both/and” rather than an “either/or” perspective. For example, readings and exercises that explain how multiple and overlapping facets of identity shape life outcomes could benefit White working-class students in critical reflection about the ways race and class intersect. Such a perspective encourages more flexible thinking about how identity can produce positive and negative experiences – that race and class contribute to experiences of both advantage and disadvantage in higher education and in other spaces.

While the one-off event of a privilege walk can feel more manageable to educators like us, who are new to these literatures and pedagogies, we advocate for educators to acquaint themselves with literatures that explain race as a historical and structural process. We find critical race theory is an effective alternative to performing White privilege pedagogy. As fellow educators, we also find critical race theory key to informing our understanding of our students’ experiences during the
privilege walk, as well as in our understanding of why this approach was problematic for us to roll out. As such, we find this literature is a foundation for informed pedagogy and praxis moving forward. We suggest that faculty spend some time with this literature (much of which we cite above) and have students also engage with some of it.

For good places to start with both students and faculty in mind, we recommend in particular, literature around race liberalism cited above, such as Crenshaw’s 2017 “Race Liberalism and the Deradicalization of Racial Reform”, Mills’ 2007 “White Ignorance” and his 2008 “Race Liberalism” to be effective, short, and accessible readings for students to help get them started in thinking about structural racism, its impacts, and the ways that whiteness and privilege allow some people to ignore the ways they are implicated in the racial hierarchy even without intention. These readings, along with others like Yosso’s much cited 2005 article, “Whose Culture has Capital: A critical race theory discussion of community cultural wealth” and the Introduction and first few chapters of Keeyanga-Yamahtta Taylor's From #BlackLivesMatter to Black Liberation (Taylor, 2016) can give students necessary background for both understanding some of the racial history that has led to the current conditions and also help them see the ways privilege and oppression are unevenly distributed by systems and structures which helps push back on the kinds of slippage we describe above. Further, if faculty have the time and the space in the classroom, we also recommend viewing the California Newsreel’s fantastic three part documentary series, “Race: The Power of an Illusion” as another way to help students understand this complicated history and the ways it reverberates in their own lives (Pounder et al, 2003), and the University of California has also created a very nice companion website to the documentary with a lot of material and activities that can be used in the classroom (see: https://www.racepowerofanillusion.org/). These suggestions are offered in hopes that they provide an alternative starting point for both faculty and students lacking expertise in these areas to begin to work through issues of race, power, and privilege in a way that does not bring with it the problems inherent in the privilege walk activity that we have identified above.

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Contact Info for the Journal

JoSoTL Editorial Office

Indiana University
Bryan Hall, Room 203 B
107 S. Indiana Avenue
Bloomington, Indiana, 47405

josotl@iu.edu