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Currents in Teaching and Learning is a peer-reviewed electronic journal that fosters exchanges among reflective teacher-scholars across the disciplines. Published twice a year, *Currents* seeks to improve teaching and learning in higher education with short reports on classroom practices as well as longer research, theoretical, or conceptual articles and explorations of issues and challenges facing teachers today. Non-specialist and jargon-free, *Currents* is addressed to both faculty and graduate students in higher education, teaching in all academic disciplines.

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EDITORIAL

"The Renaissance Humanist Ideal"

— Ana Pérez-Manrique

I have always admired Leonardo DaVinci not just as the great painter of *La Gioconda*, but above all as the genius who embodied the Renaissance spirit of seeking and embracing all different types of knowledge. Da Vinci was an artist and an engineer, an astronomer and a writer, an architect and a botanist. Not only his curious mind led him to explore many different fields of knowledge, but his genius was to amalgamate this knowledge to produce true interdisciplinary works. Jumping forward six hundred years, we cannot help but notice how the world has changed since the 15th century, and how compartmentalized our own knowledge has become --we are specialists who master not just a given discipline, but a very concrete subfield of it. The technological revolution of the end of the 20th century has put a wealth of information at our fingertips, and the world may even be smaller now that it was in DaVinci's days. Yet, we still find many times challenging to think "outside the box." Several of the articles included in this issue revolve around the concept of interdisciplinarity, its importance and benefits. Although nowadays it is almost impossible to individually become DaVincis, interdisciplinary collaboration can take us once again to the Renaissance humanist ideal.

In our essay "Reducing Stereotype Threat in the Science and Mathematics Classroom: An Overview of Research, Best Practices, and Intervention Strategies," David Sparks provides a clear and concrete explanation of the impact stereotype threat has on minority students (African Americans, Hispanics, and females) enrolled in math and sciences courses. In this piece the author suggests several strategies and best practices for instructors to achieve an identity-safe classroom, such as emphasizing a malleable (incremental) concept of intelligence vs. a static view of it, providing mindful feedback to students, reframing tasks in non-threatening ways, or encouraging self-affirmation, among others. Sparks also includes throughout the article an ample bibliography for those educators interested in further research.

Also aiming to create a more relaxed and learning-inducing classroom environment in sciences courses, Keith Starcher presents the results of his case study in "Reducing Statistics Anxiety in Undergraduate Business Students." Starting from the premise that once students in statistics classes relax, the learning environment will improve, and –consequently- so will do student performance, the author revisits his course design and assessment methods to incorporate strategies such as instructor immediacy behaviors, open-note exams, or in-class working groups with student peer tutors. Scoring on the Statistical Anxiety Rating Scale instrument administered to students at the beginning and end of the semester throws some light on the effectiveness of these newly implemented teaching strategies.

Opening the block on interdisciplinarity, Michele Everett shares her findings on how students perceive interdisciplinary studies, interdisciplinary course outcomes, and skill development in "Fostering Interdisciplinary Understanding and Skills." Collecting student feedback from regular "understanding checks" and end-of-semester reflection papers, Everett underlines how students enrolled in an "Introduction to Interdisciplinary Studies" course deepen throughout the semester their understanding of what constitutes this field of study and cognitive process. After completing a real-world problem-solving research project, students gained a better understanding of and appreciation for integration of insights, perspective taking, ethical consciousness, or teamwork, skills that they plan on applying both to their personal and professional lives in an increasingly complex 21st century.

In "Involving Students in Interdisciplinary Faculty Research Teams: Benefits and Limitations," Emily Soltano, Susanna Meyer, and Linda Larrivee present a research project carried out at a non R-1 institution in collaboration with graduate and undergraduate students. Aware that high-impact educational practices such as engagement in research projects broadens the students' knowledge and skills while increasing their retention, the authors of this piece conducted an 18 month long research project related to language development and language learning disorders. Graduate and undergraduate students participated in the project in various ways, from compilation, entry, and analysis of data, to development of surveys and posters, or presentations of the research at conferences. In this article, Soltano, Meyer, and Larrivee outline several costs and benefits at the personal, academic, and professional levels of involving students in interdisciplinary research. The authors also consider the perspectives of both faculty and students to determine whether the benefits outweigh the limitations, or vice versa.

Lee Fox, Kim Finer, Claudia Khourey-Bowers, and Leslie Heaphy embark in a project to design interdisciplinary courses that will enhance the students' global understanding and promote civic engagement. The results of this initiative are outlined in our next article, "The Genesis and Evolution of Two Interdisciplinary Courses Focused on Global Learning." Its authors integrate four different disciplines (biology, history, education, and psychology) in their two newly designed courses ("HIV/AIDS: Science and Culture," and "Genocides"), aimed to encourage students to approach complex issues from multiple perspectives, contextualize these issues in national and global viewpoints, and promote critical thinking. In their article Fox, Finer, Khourey-Bowers, and Heaphy describe the revisions and changes made to these courses since their initial offering in an effort to include meaningful civic engagement activities and to improve student outcomes.

Interdisciplinarity is also a desired element when selecting a title for a common book program, as Kristen Ferguson, Natalya Brown, and Linda Piper discuss in "Tensions and Issues in Selecting a Book for a University Common Book Program." This initiative for first-year university students aims to "foster a sense of community and belonging" among students and to create "an interdisciplinary approach to learning" through the integration of the book program into first-year classes. However, as Ferguson, Brown, and Piper explain, the task of selecting an engaging and thought-provoking book through a democratic process is not always an easy one. In this article the authors review the main issues, grouped in five categories, that arouse during the process of selecting a title for the Common Book Program at Nipissing University: academic rigor vs. student engagement; student involvement in the process; power imbalance in the selection committee; establishment of the selection criteria; and actual application of the selection criteria.

In our last report, "Volunteerism: Its Impact on Personal Development and Educational Experience," Richard Harnish, Robert Bridges, and Andrea Adolph share the findings of their study, conducted to determine the impact of campus-related volunteer activities on university students. The authors studied specifically the connection between volunteering in campus based activities and the students rating of their own general knowledge, satisfaction with their university experience, and actual grades. Based on their observations, Harnish, Bridges, and Adolph invite us to consider expanding volunteer opportunities as a strategy to improve retention and help at-risk students.

As always, I want to close this editorial by expressing my sincere gratitude to the team of referees, collaborators, and copyeditors who diligently and generously work behind the scenes to make this issue a reality. In no particular order, thank you to Nicole Rosa, Eileen Perez, Joan Mahoney, Michelle Sterk Barrett, Susan Mitroka, Don Vescio, Joyce Mandell, John Pruitt, Maria Fung, Randy Laist, Margarita Perez, Holly Ketterer, Eihab Jaber, Jennifer Lanter, Sebastian Velez, Madeline Otis Campbell, Li-Shih Huang, Sam O'Connell, Daniel Hunt, Maria Acosta, Mark Wagner, Charles Cullum, Amy West, Cleve Wiese, and Kisha Tracy.

Finally, as I fulfill my term as editor of *Currents*, I send my best wishes to new editor Martin Fromm. I am confident that *Currents* will continue to flourish under his leadership.

I hope you enjoy the issue.

Reducing Stereotype Threat in the Science and Mathematics Classroom: An Overview of Research, Best Practices, and Intervention Strategies

— David Sparks

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Abstract

Stereotype threat research is relatively new in the world of social psychology, yet since the mid-1990's thousands of studies have been generated to explore this social-psychological phenomenon. It is now known that it can change the thought processes and aspirations of African American students and either point them into or away from a career in mathematics and science. Stereotype threat research has taken a welcome direction in the last few years, much of it now focusing on classroom and institutional interventions that contribute to reducing the threat to students in classrooms across the United States. This practitioner-focused report highlights research that can be useful to classroom teachers, policymakers, and educators at all levels, especially in urban school districts, to help make decisions and develop training for classroom teachers. The report includes a list of books, websites, videos, and an extensive set of references to guide future research and implementation.

Keywords

stereotype threat, STEM, stereotype vulnerability, psychological interventions, African American

Introduction: What is stereotype threat?

Imagine a student starting the first day at a new school. She is an African American female whose mother had to transfer because of a new job. Her last school was 50% African American, 30% Hispanic, 20% white, and a mix of students from other countries. At her old school, she was near the top of her class and enrolled in Advanced Placement (AP) science and mathematics courses. As she walks into her AP Physics course, she is struck with the fact that, out of 18 students in the class, she is one of only five females and only the third African-American student. She is the only African American female. It does not take long for her to feel out of place, as though she does not belong. Her new school is a suburban school with 70% white, 15% Hispanic, 10% African American, and only a few other nationalities. She worries it is going to be a long year. She meets her teacher, a white male with many years of experience and he greets her with a smile. She has no idea what the year has in store.

African American students in this country continually fall behind their white peers in mathematics and science (Massey & Fischer, 2005). The reasons for this trend are numerous, but many researchers feel it is related to a psychological concept known as stereotype threat. C. M. Steele (1997, pp. 616-617) defined stereotype threat as follows:

> The event of a negative stereotype about a group to which one belongs becoming self-relevant, usually as a plausible interpretation for something one is doing, for an experience one is having, or for a situation one is in, that has relevance to one's self-definition.

In other words, some students have a fear of confirming a stereotype for a group to which they belong (e.g. race or gender), which has the potential to negatively impact their performance. Stereotyped messages are in the form of stereotypes that are brought forth by the media (Davies, Spencer, Quinn, & Gerhardstein, 2002), racial slurs and micro-aggressions, and even well-meaning individuals who are uninformed. But make no mistake, students take these messages to heart. In situations where they feel as though they are being compared to other groups (usually white or Asian students) or feel as though they must represent their own race and prove to the world that those stereotypes are untrue, stereotype threat can have serious effects on classroom performance. In the 1990's, Claude Steele and Joshua Aronson tested a number of situations in a laboratory setting where they gave tests to different groups of African American students. For one of the groups, they told them it was a test of intelligence. For the other group, they told them it was simply a test of comparison. Without the threat of believing that the test measured intelligence, the African American students scored nearly the same as their white student counterparts (Steele, Spencer, & Aronson, 2002).

C. M. Steele (1997) believes that stereotype threat may be one of the reasons for differences in SAT test scores, IQ tests, and other measures of aptitude in the United States. Other researchers, such as Aronson and Inzlicht (2004), conducted a longitudinal study of African American students and found that many of them were unable to assess and gauge their level of test performance (which they called inaccurate performance assessment), which could be a factor in their testing gap differences. Walton and Spencer (2009) conducted a meta-analysis of over 18,000 studies of stereotype threat from five countries and found that stereotype vulnerability, a precursor to stereotype threat, could account for almost 10% of the variation in grades between African American students and white students.

Although it is unlikely that every African American student is affected by this feeling of stereotype threat, many of them are vulnerable and it affects their everyday life in the science and mathematics classroom. Stereotype vulnerability, the tendency to be influenced by negative stereotypes about one's racial or social group, is prevalent in not just African American students, but also in other students of color, such as Asian (Whaley & Noel, 2013) and Latino (Gonzales, Blanton, & Williams, 2002) students. Even white female students may be vulnerable to stereotypes in the field of mathematics (Spencer, Steele, & Quinn, 1999). It is difficult to know which students are vulnerable to stereotype threat, so teachers must assume that all African American students feel the pressure to perform in even small amounts. Since research has shown that stereotype threat is pervasive for African American students in this country, it is reasonable to assume that we can put interventions in place to stop this from happening (Walton, Cohen, & Steele, 2012). However, the answers may be more complex and deeply ingrained in the students than educators have ever imagined.

The Problem with Stereotype Threat

Stereotype threat interferes with learning in mathematics and science in a number of different ways. Students under threat mistrust their internal performance feedback mechanisms and develop inaccurate academic self-concepts, especially in domains in which they are deeply invested or identified (Aronson & Inzlicht, 2004). If those domains include mathematics and science, students may start to feel as though they are not as capable in those subjects and that mathematics and science are not for them. If the student is highly identified in these subjects, he or she may withdraw and weaken his or her identity as a good mathematics and science student, which will lead many students not to consider

these fields as college majors or future career choices. This process is called *disidentification* (Schmader & Beilock, 2012). In a longitudinal study, Fischer (2010) found that breaking identification with any academic domain could make students underperform in that discipline.

A number of studies have looked at the question of whether stereotype threat causes students to underperform in academic domains. The added stress of stereotype threat could interfere with attentional resources, specifically working memory (Schmader & Johns, 2003). Think of it this way. When students are taking a test, they have a number of issues on their minds, as though they are juggling three balls. Most talented jugglers can handle three balls when they can concentrate. Every time another ball is added, it increases the difficulty for the juggler, thus increasing the need for concentration. African American students taking a test have a number of issues on their minds, but the threat of disproving stereotypes about themselves and their race is like another ball to juggle. It robs them of the attentional resources they need to concentrate and do well. Most white students in the same situation do not feel the weight and distraction of that burden.

A study by Taylor and Walton (2011) showed that stereotype threat may not only attack memory, but could be implicated in deficits in both learning and performance. Students studying in a condition in which they were told they were taking a test of intellectual ability had lower recall performance skills than white students in the same threatened environment. Studies by Schmader and Beilock (2002) proposed that African American students' working memory was taxed when primed with a stereotype condition. They are unable to give the test their full attention because of competing thoughts, emotions, and anxieties (Schmader & Croft, 2011). This process is referred to as rumination, and it could affect African American students' standardized test scores and even their interaction with other races (Steele, 2011).

Most white students, with the exception of white females in a mathematics classroom, do not experience the pressure of stereotype threat. In fact, their knowledge of stereotypes may even give them a boost in confidence and push them to an even higher achievement level. Walton and Cohen (2003) discovered instances of stereotype lift, where white or Asian students receive a boost in confidence by having derogatory thoughts about the intellectual ability of minority groups, women, or even poor people. It could be said that, for white students, *stereotype lift* works exactly opposite of stereotype threat and gives them a boost to achieve even more. If you pair this with the negative consequences of stereotype threat for African American students in regards to testing and achievement, it becomes painfully obvious how the gap in mathematics and science achievement continues to widen.

When Does Stereotype Threat Begin?

Research suggests that one's awareness of their ethnicity and associated stereotypes begins at quite a young age. Some studies have found that students as young as ages 4 to 6 are already familiar with ethnic stereotypes (McKown & Weinstein, 2003), although students as young as 3 to 5 years of age can recognize a person's ethnicity (Ambady, Shih, Kim, & Pittinsky, 2001). Studies have also found that students are aware of other types of stigma, particularly socio-economic status (SES). According to Ambady et al., (2001), students in the first grade may already believe boys are better than girls in mathematics. First graders may also express the belief that mathematics is more relevant to boys' self-concepts than girls. They also found that students around the age of 10 are already aware of stereotypes related to gender and mathematics. Although the students would explicitly tell you that boys are no better at mathematics than girls, implicit stereotype-awareness tasks revealed that students believed those who were good at mathematics were more likely to be male and Asian (Ambady et al., 2001). Although it is slightly disconcerting to realize that students are already forming impressions of ethnic and gender stereotypes at such a young age, the study results also point to the fact that these students are still impressionable and can unlearn these stereotypes with effective intervention.

Identity-Safe Classrooms

If minority and female students are to find success in mathematics and science fields and subsequently choose to enter those fields as a college major and potential career choice, they must be taught in an environment where they feel safe in honoring their ethnicity and feeling the security of an effective classroom teacher. Dorothy Steele (2012) defines an *identity-safe classroom* as one that validates "students' experiences, backgrounds, and identities to promote academic and social success for all students" (p. 1125). She believes these classrooms should not associate a student's race, gender, or religion with academic performance in any way. Identity-safe classrooms should emphasize student belonging, focus on cooperation as opposed to competition, and use challenging curriculum and learning tasks that focus on student interests (D. M. Steele, 2012). This child-centered pedagogy focuses on listening to the student and allowing minorities to share their thoughts and interests in a non-threatening environment, which can help them gain a sense of belonging and purpose.

Similar to regular classrooms, identity-safe classrooms require a classroom management plan, yet focus more on training self-discipline within the student. This self-discipline training requires that a teacher have firm and consistent expectations of the students, provide emotional support to them as they learn how to effectively manage themselves, and give students adequate time to learn about and practice pro-social behaviors, such as being responsible and respectful. Identity-safe classroom teachers have a rigorous curriculum and high academic expectations of their students. The majority of the time in class is focused on stimulating activities and intellectual discussions. The curriculum is rigorous and gives the students adequate time to think, reflect, and practice. D. M. Steele (2012) suggests including the following in identity-safe classrooms: (1) students placed in diverse working groups, (2) examples of books, music, and art from different backgrounds within the classroom, (3) posters with examples of important minority figures, (4) multiple languages in the classroom or providing examples of them, and (5) asking students to infuse their own histories and experiences within class assignments (p. 1127).

What Works to Reduce Stereotype Threat?

Thousands of studies have been conducted since C. M. Steele and Aronson (1995) first coined the term "stereotype threat". Since that time, the momentum and direction of the research has slowly turned from the laboratory to the field. As social psychologist Toni Schmader says in a recent *Scientific America* article (Yong, 2013), "I see three waves of research. The first was identifying the *extent of the* phenomenon. The second was looking at who experiences the effect and its mechanisms. The third wave is now to translate these results into interventions" (p. 78-79). Most of the data from interventions have come from 2010-2014, so the intervention phase of stereotype threat research has just begun. Table 1 summarizes a number of the remedies compiled by Walton, Cohen, and Steele (2012), which have been divided into classroom interventions and institutional interventions. The proceeding discussion will focus on classroom interventions, since the majority of the changes that are desperately needed are in the science and mathematics classrooms and depend on the instructors for effective implementation. Institutional involvement is highly important (Walton et al., 2013), but it is not the focus of this review.

Before discussing these interventions, it is important to note that stereotype threat is individualistic, in that it affects students as individuals and not as groups. Some students are vulnerable to stereotype threat and the deficiencies it causes, but many are not. It might be more accurate to say that some have developed personal coping mechanisms to be successful. McGee and Martin (2011), in a comprehensive qualitative study, found that students can overcome the negative effects of stereotype threat through a process called *stereotype management*. Although it is believed that stereotype threat is common and pervasive for students of color, especially African American students in the areas of Science, Mathematics,

Engineering, and Technology (STEM), many students use the occasion of stereotype threat as an incentive to push themselves to perform and succeed. In a study by Alter, Aronson, Darley, Rodriguez, and Ruble (2010), the researchers reframed a test as a challenge instead of focusing on related stereotypes and found that the African American students used the challenge as motivation to succeed.

The strategies in this paper are focused on the role of the teacher of minority students in the mathematics and science classroom and how they can decrease the likelihood of stereotype activation in their students. Although there are many positive ways to overcome stereotype threat, there a few that are not successful, such as withdrawal of effort, engaging in less practice or study time to provide an explanation for poor performance, and denial (Rivardo, Rhodes, & Klein, 2008). The intervention strategies will be discussed, with appropriate references, including a brief explanation of important best practices.

1. Teach science and mathematics students that abilities can be improved and intelligence can be expanded (Aronson et al., 2002; Blackwell et al., 2007; Dweck, 2007). Emphasize an incremental (malleable or changeable) view of intelligence as opposed to an entity (fixed or rigid) view of intelligence

Carol Dweck and other researchers at Stanford University discovered a relationship between implicit theories of intelligence and academic performance (Dweck, 1999). Individuals who follow entity theories believe that intellectual abilities are innate and immutable (unchanging), whereas individuals who follow incremental theories believe intelligence is malleable and can be developed. Research has found that entity students are more likely than are incremental students to dis-identify with their academic studies following negative feedback (Dweck, 1999). Entity students are more vulnerable to negative stereotypes because they do not believe their intellectual abilities can change (Dweck, 1999). Although many studies have treated these theories of intelligence as individual personality variables and as unchangeable,

Classroom Interventions	Institutional Interventions
• Remove Cues That Trigger Worries About Stereotypes	• Remove Cues That Trigger Worries About Stereotypes
• Convey That Diversity is Valued	• Convey That Diversity is Valued
• Create Fair Tests, Present Them as Fair and as Serving a Learning Purpose	• Create a critical mass of minority students
• Value Students' Individuality	• Create Fair Tests, Present Them as Fair and as Serving a Learning Purpose
• Improve Cross-Group Interactions	• Present and Recruit Positive Role Models from Diverse Groups
• Present and Recruit Positive Role Models from Diverse Groups	• Support Students' Sense of Belonging
• Help Students Manage Feelings of Stress and Threat	
• Support Students' Sense of Belonging	
• Promote a Growth Mindset About Intelligence	
• Value-Affirmations to Reduce Stress and Threat	

Derived from Empirically validated strategies to reduce stereotype threat by Walton, Cohen, & C. M Steele (2012). Used by permission.

Table 1 Classroom vs. Institutionally Focused Stereotype Threat Interventions

studies have shown that these beliefs can be altered (at least on a short-term basis) by modifying how abilities are described and the specific nature of praise (e.g., by praising effort rather than ability). Incremental students tend to be more focused on *improving* rather than *proving* ability to themselves or others (Dweck & Leggett, 1988; Dweck & Sorich, 1999; Mueller & Dweck 1998).

Aronson, Fried, and Good (2002) had undergraduates write a letter of encouragement to a younger student who was experiencing academic struggles. Black students who were encouraged to view intelligence as malleable, "like a muscle" that can grow with work and effort, were more likely to indicate greater enjoyment and valuing of education, and they received higher grades that semester. Good, Aronson, and Inzlicht (2003) showed similar effects with 7th grade students who received mentoring from college students. Mentoring emphasizing expandable intelligence and external attributions for difficulty produced higher reading scores and eliminated gender differences in mathematics performance. Learning in an incremental manner involves emphasizing the importance of effort and motivation in performance and de-emphasizing inherent *talent* or *genius*. Individuals who are encouraged to think in incremental terms will tend to react more effectively to challenge and are less likely to fear confirming negative stereotypes of their group. Creating a malleable (incremental) view of intelligence has also been shown to improve grades in all students, not only minorities and females (Blackwell, Trzesniewski, & Dweck, 2007).

2. Encourage values affirmation and affirmation of self (Miyake et al., 2010)

It is important for students to affirm themselves through writing about their characteristics, skills, values, and roles that they view as important (Frantz, Cuddy, Burnett, Ray, & Hart, 2004). Self-affirmation has been shown to be important for women to overcome threats to their mathematical skills in the lab (Martens, Johns, Greenberg, & Schimel, 2006) and for overcoming stereotype threat in a group of minority 7th graders (Cohen, Garcia, Apfel, & Master, 2006). Other researchers have achieved particularly impressive results by asking people to consider what is important to them, be it popularity or musical ability, and write about why it matters. The quick exercise acts like a drug that boosts students' self-confidence, helping them combat stereotype threat (Walton & Cohen, 2011; Cohen at al., 2009). Aguilar, Walton, and Wieman (2014) call this writing technique *saying-is-believing*, and found that it make the students feel as though they are a valued part of the classroom. To alleviate the effects of stereotype threat on stigmatized groups, Martens, Johns, Greenberg, and Schimel (2006) also encouraged students to think about what they value most before an exam. They also suggested that self-affirmation might serve as a buffer against stigmatization and its threatening effects. Schmader, Forbes, Zhang, and Mendes (2009) found that priming students before a test with self-confidence as opposed to doubt, known as positive reappraisal, not only reduced the effects of threat, but also increased performance. This finding was true for both minority and majority students.

3. Teach students about stereotype threat (Johns, Schmader, & Martens, 2005), allow them to discuss social class differences and deemphasize threatened social identities (Stricker & Ward, 2004)

An open dialogue about the threat that female students experience in mathematics courses is a valuable way to begin a new course. In raising the topic with students, teachers should consider asking the students to write down their thoughts about girls, boys, and mathematics and then talk about what they wrote. Teachers should feel free to ask students about the stereotypes that exist about girls' mathematics abilities and assess the degree to which the students believe these stereotypes (Johns, Schmader, & Martens, 2005). It is important to discuss stereotypes and how they are incorrect assumptions. However, do not focus too much on the stereotypes themselves to avoid making minority students feel uncomfortable, thus causing them stand out. This includes interventions in testing situations, such as asking them their ethnicity or sex at the end of a test instead of at the beginning, to reduce their salience, or self-awareness, as a minority (Stricker & Ward, 2004).

Interventions that encouraged individuals to consider themselves as complex and multifaceted (Gresky, Ten Eyck, Lord & McIntyre, 2005) and unique (Ambady, Paik, Steele, Owen-Smith & Mitchell, 2004) have been shown to alleviate stereotype threat. In some cases, it is important to highlight social identities that are not linked to underperformance (McGlone & Aronson, 2006), such as their accomplishments in school or out of school. There is much variance in the African American population as it relates to stereotype threat. Interestingly, one study showed that students who are biracial are less likely to experience stereotype threat (Shih, Bonam, Sanchez, & Peck, 2007) because they believe that race is socially constructed instead of internal. Although some well-meaning teachers make the statement, "I am colorblind; I see all students the same way," that is an inaccurate statement. African American students and other minorities want to know that their race and culture are respected. Colorblind sentiments should be avoided at all costs (Derks, VanLaar, & Ellemers, 2007; Purdie-Vaughs et al., 2008). African American students can be successful even in a predominantly white environment with proper support and encouragement (Sparks, 2013).

4. The teacher should give feedback that is mindful of stereotype threat, emphasize high standards and assure the students that they have the capabilities to meet those standards (Cohen, Steele, & Ross, 1999; Yeager et al., 2014)

Constructive feedback appears most effective when it communicates high standards for performance but also assures the student that he or she is capable of meeting those high standards (Cohen, Steele, & Ross, 1999). Such feedback reduces perceived evaluator bias, increases motivation, and preserves domain-identification, in this case the domains of mathematics and science. However, trust is something that must be earned. If a minority student does not trust the teacher's feedback, feeling it to be cold, biased, or indifferent, it could be dismissed (Yeager et al., 2013). Yeager et al. (2013) calls this feedback, which allows the student to trust the teacher and not feel judged or stereotyped, wise feedback. Wise *feedback* communicates to the student that the teacher has high standards but feels the student is more than capable of reaching those standards.

Teachers should avoid: (1) overpraising mediocre work, or (2) withholding criticism to not damage a student's self-esteem. Both are ineffective, especially for minority students (Yeager et al., 2013). Overpraising students with too many phrases like "What a smart comment" can have a negative effects as well. These convey a fixed intelligence mindset and should be avoided. It is also important that teachers pair critical feedback with excellent teaching strategies and do not simply rely on praise to help the students succeed. Students still need effective instruction, scaffolding, and extra practice to learn effectively (Aguilar et al., 2014). Students who continue to struggle while being continually praised will receive mixed messages and think the praise is not important or helpful. Aguilar et al. (2014) also found that warning students the first day of class that many of them will fail is ineffective and counterproductive; it is especially not motivational to African American students.

5. Expose students to positive role models who debunk negative stereotypes (Blanton, Crocker, & Miller, 2000; Marx & Goff, 2005). Although it is not always possible, having more minority teachers would be beneficial (Dee, 2004; Massey &Fischer, 2005)

Role models that are the same sex and ethnicity can help relieve students fears, increase performance, and reduce threat (Blanton, Crocker, & Miller, 2000). Studies by McIntyre, Lord, Gresky, Ten Eyck, Frye, & Bond Jr., (2005) and McIntyre, Paulson, & Lord (2003) showed that even reading essays about successful women can alleviate performance deficits under stereotype threat. Invite female guest speakers in mathematics fields to class. Consider a team-teaching approach with a female colleague. Include famous women in mathematics-related fields (mathematics, science, architecture, engineering, etc.) in the curriculum (Marx, 2002; McIntyre, Paulson, & Lord, 2003).

Studies find that having older (e.g., high school or college) students mentor younger (e.g., middle or high school) students eliminated gender differences in mathematics scores for the younger students (Good, Aronson, & Inzlicht, 2003). A female mentor who is relatively close to the younger student's age may be more likely to garner the younger student's attention and respect, therefore having a substantial effect on the student's learning, values, and habits. Students not only find out about role models, but they become the role model to a younger student. A teacher should also decorate their room with examples of minority scientists and doctors and show the students that science and mathematics is not an exclusively White male endeavor.

6. Reframe tasks to make them less threatening (McGlone & Aronson, 2006) and provide external attributions for difficult tasks, especially during testing (Johns, Inzlicht, & Schmader, 2008)

It is important to be honest with African American students and share with them that it is perfectly natural to be anxious before a test. Teachers do not have to go into specifics about stereotype threat or focus on the importance of the test. They should merely stress that all students have anxiety before a test and that it is a natural reaction. It is also important to assure females that the test is gender fair (Quinn & Spencer, 2001) and address the specter of gender-based performance differences within the context of the examination (Good, Aronson, & Harder, 2008). McGlone and Aronson (2006) found that priming students with positive aspects of their social identity (e.g., being enrolled in a private school or university or being a member of elite organization) can have positive benefits for overall test performance. Shih, Pittinsky, and Ho (2012) found that positive stereotypes presented to African American students could limit the effects of stereotype threat and even enhance performance through a process called stereotype boost.

Good, Aronson, and Inzlicht (2003) had mentors emphasize to young students that the transition to middle school is often quite difficult and that challenges can typically be overcome with time. Encouraging students to attribute struggle to an external, temporary cause also eliminated typical gender differences in mathematics performance. Johns, Inzlicht, and Schmader (2008) showed that telling individuals under stereotype threat that their performance will not be hindered and might even be improved by the anxious feelings they might be experiencing eliminated the performance decrements associated with stereotype threat. These studies indicate that providing individuals with effective strategies for regulating anxiety and arousal can disarm stereotype threat. Although it sounds counter-intuitive, you can even attribute a student's text anxiety to another source, such as an inaudible noise (Ben-Zeev, Fein, & Inzlicht, 2005), or an equipment failure (Brown & Josephs, 1999). The process of shifting blame and anxiety to an external attribute rather than the negative stereotype can ease anxiety and lead to better performance.

It is also important to provide students with positive stereotypes that counter commonly held negative stereotypes about their race or gender. Research has shown that providing girls with positive stereotypes about their mathematics performance effectively offsets the negative effects of stereotype threat (McGlone & Aronson, 2007). Every female student should know that, contrary to the stereotyped view that boys are more academically talented than girls, girls get better grades than boys as a group (Buchmann & DiPrete, 2006). Girls educated in all-girls mathematics courses have higher levels of mathematics achievement than girls in co-educational mathematics courses (Shapka & Keating, 2003). Research also demonstrates that stereotype threat is heightened for girls taking tests in rooms in which there are more boys than girls (Inzlicht & Ben-Zeev, 2003; Sekaquaptewa & Thompson, 2003), so they should be evenly distributed if possible during testing situations.

Intersections of Race and Gender

Studies have shown that female students in STEM fields are more likely to experience stereotype threat (C. M. Steele, 1997) and have higher rates of attrition (Brand, Glasson, & Green, 2006; Massey & Fischer, 2005) than their white peers. Female students of color

(e.g., African American, Asian American, and Hispanic) must negotiate both their status as a minority and as a female in the STEM world. Their *double negative* or *double bind* (McGee & Martin, 2011) status may contribute to lower numbers of female students of color entering and staying in STEM fields. Understanding this *intersectionality*, including how the individual chooses which identity to focus on in which situation, is a field of study in its infancy (Purdie-Vaughns & Eibach, 2008). Although some studies have looked at this intersectionality in Latinos (Gonzales, Blanton, & Williams, 2002) and Asians (Whaley & Noel, 2013), only a few studies were found that connected it to Black STEM students (Massey & Fischer, 2005) or Black students in general (Settles, 2006).

In the science or mathematics classroom, African American females, like the one mentioned in the fictional story at the beginning of this report, have twice as many hurdles to jump. Teachers must recognize that these students face the stereotype threat of being a female and a minority. One could even say that they face a third threat, or *triple jeopardy*, if they express interest in a STEM field where they are both small in number and have few examples of black female role models that they can follow. It is important they are not singled out and made to be the representative for *all* African American females. They must be nurtured and valued for their diversity and made to feel a part of the community of the classroom. It is even more important for them that they are exposed to African American female engineers, computer specialists, astronauts, doctors, and scientists through posters, reports, videos, or guest speakers to validate their interests and future presence in STEM fields (Farinde & Lewis, 2012). While the number of African American females in STEM majors is low, research has found that their potential is unmistakable. Riegle-Crumb and King (2010) found that African American females were more likely than were White females to declare a STEM major when academic preparation in high school was held constant. They were also more likely to succeed when given adequate support. Due to cultural beliefs regarding womanhood and family structure, African American women in particular should be ideal candidates for survival in STEM programs (Hanson, 2004). Specifically in the African American community, gender is constructed somewhat differently from that of the white (non-Hispanic) community. Many characteristics that are considered appropriate for African American females (e.g., high self-esteem, independence, assertiveness, and high educational and occupation expectations) are consistent with characteristics that contribute to success in science and mathematics (Hanson, 2004).

Conclusions and Cautions

The psychological interventions mentioned in this report are exciting in their implications for the classroom and for the future of mathematics and science. If implemented slowly and cautiously, they can make a big difference in the life of individual African American students. The interventions should be taught to classroom teachers, given to them as tools to effectively guide and mentor students of color. However, there are a few cautions to consider when implementing these techniques in the classroom. First, the methods will seem counterintuitive. In other words, it may seem natural to single out minority students for afternoon tutor sessions, or tell the students that a certain number of them may fail if they do not work hard, or give feedback that includes "You are so smart." However, the research has shown that these practices are exactly the opposite of what teachers should do (Aguilar et al., 2013). Minority students do not like to be singled out, told they will fail, or given praise that promotes a static view of intelligence (e.g. you are either smart or you are not). It is not the fault of teachers for ineffective classroom practices that have been passed down from generations, but there is a better way to interact with African American students, and the research conducted in the last twenty years is revealing that better path.

A second concern of teachers is that these techniques will take away precious instructional time and get in the way of their required curriculum. Yeager and Walton (2011, p. 293) ease those fears:

> Social-psychological interventions complement—and do not replace—traditional education reforms. They do not teach students academic content or skills, restructure schools, or improve teacher training. Instead, they allow students to take better advantage of learning opportunities that are present in schools and tap into existing recursive processes to generate long-lasting effects.

By recursive processes, they mean to say that these effects are long-lasting and cumulative. These interventions will hopefully increase the confidence of students, which could encourage them to take more advanced mathematics and science courses, which in turn could push them to consider mathematics and science as future career choices. In a sense, these stealthy interventions (quiet, not forced, easily implemented) calmly affirm students' value, push them to higher standards, and encourage them to belong in a diverse group of students. The most exciting possibility is that these interventions, combined in multiple administrations and implemented easily within day-to-day classroom interactions, could have a cumulative effect on raising African American student performance (Yeager & Walton, 2011).

The greatest cautions are believing that these interventions are a "magic bullet" or that they can easily be scaled to a school, district, or state level. They do not erase poverty, bad teachers, sloppily designed curricula, or change the socioeconomic situation of the students. However, they do give the student more confidence in the face of those hardships (Cohen, Garcia, & Jabr, 2013; Walton et al., 2013). It is also important that these strategies are implemented at crucial educational junctures to have the best chance of success. These include the beginning of the school year, during an important transition such as when a student enters a new school, when students are tracked into upper level mathematics or science courses, and before high-stakes exams.

The second caution is never to scale up these interventions to a larger level without considering the specific culture, population, and politics of the local school. The interventions need to be discussed by a group of teachers, counselors, and school administration. Simply sending this information to the teachers in a memo and telling them they must implement it is ineffective. These strategies should not be introduced without proper training. Schools may wonder if there is a problem with stereotype threat and if these interventions are needed, which in many cases is hard to determine. Three indicators that these interventions are needed include if African American students are (1) struggling in mathematics and science courses and standardized test scores, (2) having an unusually disproportionate number of discipline issues, and (3) being underrepresented in Advanced Placement mathematics and science programs (Walton et al., 2013).

In the big picture of social and psychological interventions, research on stereotype threat and its effects on students of color is scarcely twenty years old. Much has been learned, but there is still much to know. The psychological intervention strategies mentioned in this report, compiled from the recommendations of leading experts in the field, are a great place to start. Institutional practices were barely mentioned because the research on them is particularly sparse. The starting point for *all* significant progress in the field of stereotype threat is the classroom teacher. They are the gatekeepers. They hold the keys to making students of color feel welcome, accepted, and capable in the fields of mathematics and science. Combining these strategies with effective teaching methods and caring teachers who are well-prepared in mathematics and science instruction, has the potential to revolutionize the education of African American students in this country. Our future as an innovative nation and leader in mathematics and science depends on a diverse set of future workers, confident and inspired by the realization that they have much more value than the stereotypes they hear and receive from society. A classroom safe from these negative identities is a wonderful place for them to start.

Recommended Reading (Books):

1. *Whistling Vivaldi: How Stereotypes Affect us and What We Can Do* by Claude M. Steele
2. *We Can't Teach What We Don't Know: White Teachers, Multiracial Schools* by Gary R. Howard
3. *Identity Safe Classrooms: Places to Belong and Learn*, by Dorothy M. Steele
4. *Why are All the Black Kids Sitting Together in the Cafeteria and Other Conversations about Race* by Beverly Daniel Tatum
5. *Stereotype Threat: Theory, Process, and Application*, by M. Inzlicht and T. Schmader (Eds.)

Recommended Reading (Blogs/Websites):

1. Shielding Students from Stereotype Threat: A Guide for Teachers by Lisa Damour and Larry Goodman Fall 2009, National Association of Independent Schools, http://www.nais.org/Magazines-Newsletters/ISMagazine/Pages/Shielding-Students-from-Stereotype-Threat.aspx
2. What Can Be Done to Reduce Stereotype Threat? on www.reducingstereotypethreat.org/reduce.html
3. Countering Stereotype Threat on Dynamic Ecology Blog by Meghan Duffy on http://dynamicecology.wordpress.com/2014/04/29/countering-stereotype-threat/
4. Stereotype Threat www.stereotypethreat.org
5. How to Expel Hurtful Stereotypes from Classrooms Across the Country in *Scientific America* http://www.scientificamerican.com/article/stereotype-interventions-expel-from-classrooms-across-country/

Recommended Watching (Videos):

1. Stereotype Threat: Social Psychology in Action http://www.youtube.com/watch?v=nGEUVM6QuMg
2. An Interview with Claude Steele http://www.youtube.com/watch?v=failylROnrY
3. Stereotypes: Stossel in the Classroom http://www.youtube.com/watch?v=ASDzcvyatgw
4. The Anti-Racism Experiment That Transformed an Oprah Show Audience | Where Are They Now? | OWN https://www.youtube.com/watch?v=5NHeFgaVWs8

Intervention Example:

PERTS https://p3.perts.net/about#team

Table 2 Resources for Stereotype Threat Reduced Classroom

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Reducing Statistics Anxiety in Undergraduate Business Students

— Keith Starcher

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Abstract

Statistics anxiety has been shown to have a harmful effect on the academic performance of students at the post-secondary level. This case study shares the use of course and assessment design and peer instruction to reduce statistics anxiety in a small sample of traditional undergraduate business statistics students at a private Midwestern university. The study has implications beyond business students as the "[a]ppreciation of the importance of statistics literacy for citizens of a democracy has resulted in an increasing number of degree programs making statistics courses mandatory for university students" (Chew & Dillon, 2014, p.1). This study used a pretest/posttest design with 23 traditional undergraduate students completing the Statistical Anxiety Rating Scale (STARS) instrument at the beginning and end of a business statistics course taught in a traditional classroom environment. Results show that the overall median statistics anxiety decreased from the beginning to the end of the course.

Keywords

statistics anxiety, immediacy behaviors, peer instruction, self-regulated learning

Introduction

As one who has taught statistics to undergraduate business students for nine years, I find that the most often used self-description for the student entering my statistics class is summed up in one word: terrified. Statistics anxiety has been defined simply as anxiety that occurs as a result of encountering statistics in any form and at any level (Onwuegbuzie et al., 1997). Because of fear of failing, students delay enrolling in statistics courses for as long as possible (Onwuegbuzie, 1997). Statistics is seen by large numbers of students (including college students) as being a very rigorous and anxiety-inducing subject to study (Beurze, Donders, Zielhuis, Vegt, & Verbeek, 2013; Sgoutas-Emch & Johnson, 1998).

In recent years there has been an increasing interest in students' anxiety when taking a statistics course (Chew & Dillon, 2014). At the same time, "[a]ppreciation of the importance of statistics literacy for citizens of a democracy has resulted in an increasing number of degree programs making statistics courses mandatory for university students" (Chew & Dillon, 2014, p. 1). Empirical evidence and anecdotal data suggest that statistics is one of students' most disliked subjects (Sciutto, 1995). Up to 80% of students experience "statistics anxiety" (Onwuegbuzie & Wilson, 2003). Some studies have demonstrated a negative relationship between statistics anxiety and performance (Tremblay, Gardner, & Heipel, 2000) while others have not seen a correlation between statistics anxiety and academic performance (Hamid & Sulaiman, 2014). Many students do not enjoy the thought of taking a statistics class and instructors are frustrated in regards to finding effective methods of teaching this subject (Garfield & Ben-Zvi, 2002). Garfield and Ben-Zvi (2004) wrote that although there is a great deal of statistics instruction taking place, the research to support statistics instruction is not well known.

Previous research has presented several ideas on how to reduce statistics anxiety (D'Andrea & Waters, 2002; Edelman, 2007; Giraud, 1997; Schact & Stewart, 1990; Wei & Tang, 2004; Williams, 2010). Schact and Stewart (1990) surmised that once students in statistics classes relax, the learning environment would improve. The authors used humorous cartoon examples and reported that students believed that the cartoons reduced the anxiety they felt. But the students believed the cartoons were less helpful for understanding and retaining the material presented in the course.

Williams (2010) indicated that instructor immediacy is significantly related to statistics anxiety, with immediacy explaining between 6% and 20% of the variance in students' anxiety levels. *Immediacy* refers to a set of communicative behaviors that influence the perception of physical and psychological closeness. Typical immediacy behaviors include smiling, engaging in eye contact, and being relaxed and vocally expressive. The author hypothesized that peer instruction might also help reduce statistics anxiety because these immediacy behaviors should appear relatively natural to students working with other students. Researchers have explored the mediation link between immediacy and cognitive learning, demonstrating that the mediating variable is motivation (Frymier, 1994): Students are motivated to learn when under the instruction of teachers who demonstrate immediacy.

Crouch and Mazur (2001) define *peer instruction* as instruction that engages students during class through activities that require each student to apply the core concepts being presented, and then to explain those concepts to their fellow students. Crouch and Mazur (2001) found improved student learning (as measured by standard tests) as a result of peer instruction. Wei and Tang (2004) provided empirical evidence to support that innovative teaching methods (in this case application-oriented teaching combined with instructors' attentiveness to students' anxiety) have the potential to effectively reduce statistics anxiety. The most troubling result of the study by D'Andrea and Waters (2002) was finding that there was high anxiety associated with asking other students or the professor for help in understanding the material covered in the course.

This suggests a need to develop and promote a structure for obtaining help starting on day one of the course. Kesici, Baloglu, and Deniz (2011) concluded that students who use a "help seeking" learning strategy experience lower levels of computational anxiety in statistics as well as more positive attitudes toward statistics. In addition, Keeler and Steinhorst (1995) found that use of small groups promoted active learning in an introductory statistics course. The purpose of the present study was to investigate if the use of small groups in class, each led by a student peer tutor, and adjustments of course and assessment design can reduce statistics anxiety in a sample of traditional undergraduate students taking a business statistics course at a small, private Midwestern university.

Methodology

According to Onwuegbuzie (2003), the Statistical Anxiety Rating Scale (STARS), developed by Cruise, Cash, and Bolton (1985), is the most utilized measure of statistics anxiety. STARS uses a 5-point response scale and consists of 51 items representing 6 subscales: Worth of Statistics, Interpretation Anxiety, Test and Class Anxiety, Computational Self-concept, Fear of Asking for Help, and Fear of Statistics Teachers. Table

1 lists the number of items per STARS subscale along with an example of an item from each subscale.

The first 23 items represent situations associated with statistics anxiety and require a response ranging from "No Anxiety" to "Considerable Anxiety". The remaining 28 items are statements related to a student's attitude toward statistics (e.g., "Statistics takes more time than it is worth") and require a response ranging from "Strongly Disagree" to "Strongly Agree". There are a total of 51 items. A total scale score, the sum of the six subscale scores, varies between 51 (all items scored "1") and 255 (all items scored "5"); the higher the score, the more statistics anxiety is reported.

The STARS instrument has been subjected to validity studies (Baloglu, 2002; Hanna, Shevlin, & Dempster, 2008; Mji & Onwuegbuzie, 2004). In statistics, Cronbach's Alpha is a coefficient of internal consistency. It is commonly used as an estimate of the reliability of a psychometric test for a sample of examinees. A scale is considered sufficiently reliable if Cronbach's Alpha is at least 0.7 (Nunally & Bernstein, 1991). As seen in Table 2, in each case of the current study (except for the pretest's: Fear of Asking for Help and pretest: Fear of Statistics Teachers) Cronbach's Alpha exceeds 0.7.

As explained below, various course design innovations were incorporated in an attempt to reduce the anxiety associated with each subscale.

The Worth of Statistics subscale is designed to measure the perception of the relevance of statistics (higher scores refer to more negative perception of the usefulness of statistics). Action: To address this, early in the course, students read *Super crunchers: Why thinking-by-numbers is the new way to be smart* (Ayres, 2008) and then wrote a reflective paper on why it is important to become statistically literate. Wei and Tang (2004) provided empirical evidence to support that innovative teaching methods (in this case application-oriented teaching combined with instructors' attentiveness to students' anxiety) have the potential to effectively reduce statistics anxiety.

The Interpretation Anxiety subscale is assumed to measure anxiety experienced when trying to interpret statistical results (higher scores indicate high anxiety in interpreting statistical results). Action: To address this, use of in-class group work problem solving with student peer tutors was used, based on Schact and Stewart's (1990) surmised that once students in statistics classes relax, the learning environment would improve. I hypothesized that the use of student peers would provide a more relaxing classroom environment.

The Test/Class Anxiety subscale is assumed to assess anxiety experienced while taking statistics courses and/or exams (higher scores indicate higher levels of anxiety). Action: In response to this, open-note exams were used to reduce any student anxiety associated with not being able to recall necessary concepts during an exam.

The Computational Self-concept subscale is related to the anxiety experienced when calculating statistics (higher scores indicate higher levels of anxiety related to computations). Action: To address this, use of in-class group work problem solving with student peer tutors was used, again, but also along with instructor immediacy behaviors. Williams (2010) indicated that instructor immediacy is significantly related to statistics anxiety, with immediacy explaining between 6% and 20% of the variance in students' anxiety levels.

The Fear of Asking for Help subscale is designed to assess anxiety experienced when a person asks for help in statistics-related problems (higher scores indicate higher anxiety). Action: Use of in-class group work problem solving with student peer tutors again addressed this.

The Fear of Statistics Teachers subscale is supposed to measure students' perceptions of statistics teachers (higher scores indicate higher anxiety). Action: In response, the instructor used immediacy behaviors.

This statistics class was made up of seventeen males and six females (one sophomore, eighteen juniors, and four seniors). Prior to the first day of class, the author divided the students up into small groups (six groups: five groups of four and; one group of three). Each group had a volunteer student tutor. The student tutor led the group and provided a sounding board for questions from the group. The groups sat together during each class. On the first day of class, students were asked to volunteer to complete the STARS instrument (which had been approved via the author's Institutional Review Board process). They were told that their participation would not affect their grade in class. The pretest consisted of the STARS instrument in order to obtain a baseline of statistics anxiety level before any statistics instruction was given. During a class in the final week of the semester the students were given the same questionnaire.

In each class the students were presented with a statistics problem based on the statistical concepts covered in that class. They would work on the problem individually and then discuss their problem solutions within their group asking clarifying questions of other group members. The instructor roamed the classroom checking in with each group as they wrestled with each problem solution. After all six groups had completed the problem, the instructor would walk through the problem solution for the entire class. Based on the author's experience in teaching this class over several years, the in-class group work problem solving required students to be significantly more actively involved and independent in learning than they would have been in a conventional lecture class.

Results

The author scored the responses per the instructions provided by the STARS developers. A grand total for all factors was obtained resulting in the total STARS score. In this case study, the researcher used Table 4 in Cruise et al. (1985)—a norm table generated from a population of 734 undergraduate students. In this norm table developed by Cruise et al., the total STARS score for a student at the 50th percentile in statistics anxiety (from the 734 undergraduate students in the Cruise study) would total 109 (addition of the 50th percentile score from each subscale). Students whose total STARS score exceeded 109 were said to exhibit "statistics anxiety."

In this case study, the first administration of the STARS instrument (1st day of class) suggested that 14 (61%) of the students had statistics anxiety (total STARS score above 109). The second administration of the STARS instrument (middle class of last week of classes) suggested that 9 students (39%) exhibited statistics anxiety (total STARS score above 109). Thus, five students' scores had fallen from above a total STARS score of above 109 to below 109 (median decrease among these five students was 20%). There were no pretest scores below 109 that increased to above 109 in the posttest. There were no posttest scores that were higher than the pretest scores. The class median total STARS score decreased from 120 (pretest) to 101 (posttest), a decrease of almost 16%. This reduction in total STARS score is comparable to the reduction in statistics anxiety reported by D'Andrea and Waters (2002).

Table 3 lists the percentage decrease in the median score for each subscale (from the largest to the smallest decrease). Appendix A displays boxplots to visually depict the distribution of the average response for each subscale. The boxplots were created by generating the average response from each student for a subscale. The boxplot visualizes a five-number summary of the data. As an example, for the Worth of Statistics subscale, the minimum average response was 1.0, the first quartile was 1.6, the median was 2.1, the third quartile was 2.4 and the maximum was 3.4. Comparing the maximum average response to the minimum average response (that is the range) for each subscale, it is noted that the largest reduction in the range of average response was for Interpretation Anxiety (29% reduction in range) while the Worth of Statistics range of average response dropped 27%. This indicates less variation in the posttest average response versus the pretest average response for these two subscales. That is, students tended to more consistently agree on the posttest than the pretest in regards to Interpretation Anxiety and Worth of Statistics. The change in spread in the other subscales was less than 15%.

Discussion

This case study investigated the effects of course and assessment design and peer instruction to reduce statistics anxiety in a sample of traditional undergraduate business statistics students at a private Midwestern university. For this group of students, median statistics anxiety decreased from the beginning to the end of the course. In particular, certain elements of course design (in-class group work and peer instruction), course assessments (open-note exams), and intentional instructor immediacy behaviors are identified as possibly reducing statistics anxiety.

Open-note exams may have led to the 31% decrease in median Test and Class Anxiety (this subscale is assumed to assess anxiety experienced while taking statistics courses and/or exams: with higher subscale scores indicating higher levels of anxiety). Use of in-class group work problem solving with student tutors and instructor immediacy behaviors may have also led to this decrease in median Test and Class Anxiety.

Use of in-class group work problem solving with student tutors may have led to the 24% decrease in median Interpretation Anxiety (this subscale is assumed to measure anxiety experienced when trying to interpret statistical results with higher scores indicating high anxiety in interpreting statistical results).

Use of in-class group work problem solving with student tutors may have led to the 10% decrease in the Fear of Asking for Help subscale score.

The small (9%) decrease in the Fear of Statistical Teachers subscale score may be attributed to the fact that many of the students in this class had already taken other classes with the instructor prior to taking this statistics class and, therefore, were somewhat comfortable with the instructor.

In-class group work problem solving with student tutors and verbal encouragement by the instructor may have led to the slight 5% decrease in Computational Self-concept (this subscale is related to the anxiety experienced when calculating statistics with higher scores indicating higher levels of anxiety related to computations). Cruise et al. (1985) suggest that a "person scoring high on this factor might not mind statistics per se, but experiences anxiety because it involves mathematical calculations, and he/she feels inadequate to comprehend statistics" (p. 93).

Having the students read *Super crunchers: Why thinking-by-numbers is the new way to be smart* (Ayres, 2008) and write a reflective paper on what they learned from the reading seems to have only slightly (5%) improved the students' perception of the relevance of statistics.

Here is a sampling of the student feedback at the conclusion of the course regarding the use of peer instruction (student tutor) in this class:

> "Usually I don't like to talk a lot, so when I was stuck, the tutor asked me, 'Do you get it?' That helped me."
>
> "I am glad I had one. She has helped me understand the material better and has been a good leader."
>
> "I think it went well and benefited me. I was able to get help and work through any problems I had."
>
> "Peer instruction provided a more comfortable environment to ask questions. It allows for more learning to take place."
>
> "It is sometimes hard to always meet with a professor when you have questions and having a tutor to ask was very helpful."
>
> "It just really helps students really understand. Sometimes you don't want to disrupt the entire class with a question so you can just ask your tutor."
>
> "I think it allows for accountability for all students and helps students that don't feel comfortable approaching the teacher."

Change in Instructor Behavior

The following observations are anecdotal at best but may provide more insights into why the median STARS scores decreased over the semester. I displayed a much more humble attitude in this class than in any prior business statistics class that I had taught. That is, I felt it was my responsibility to meet the students where they were and help each one of them "move the dial" and increase his or her basic knowledge of statistics. In prior classes I know I was guilty of the "I'm smarter than you" syndrome. In addition, because of the in-class group work and my expectation for more independent learning, I had the time to focus "in real time" on those students who were struggling (based on student remarks) rather than having them perform miserably on a test before I knew they needed help.

In this class, I adopted a mantra that I repeated often: "No one gets left behind." We agreed that as a class, we would not move onto the next topic until each person in the class had at least a working knowledge of the current material. As a result, we did not cover all of the material that I had planned to cover in this course. However, based on my evaluation of the final papers (where student groups selected a data set and completed an analysis of the data), I believe the students, as a whole, developed a confidence in their ability to analyze data—at least perform meaningful descriptive statistics—and report the results in a coherent and persuasive manner.

Limitations

Not having a comparison group is a limitation of this case study. It is possible that the decline in anxiety could be explained by reasons not addressed in this study. Although the sample size is small, the results from this case study—that the innovative instructional methods discussed may have provided an effective way to reduce students' anxiety in learning statistics—warrant further empirical study.

Future Research

Future research should examine each of the practices mentioned in this paper separately to understand the potential individual causal relationships as well as compare these results to those from other statistics courses and other instructors. How could study of current applications of statistics, both inside and outside the academic literature, impact the Worth of Statistics subscale? For example, Big Data has become a very popular topic in the popular press, even reaching the masses through the medium of motion pictures such as the movie *Moneyball* (based on a popular book by the same title) (Lewis, 2003). Would the use of technology (online quizzing with technology tutors) help reduce Interpretation Anxiety? Does the use of open-note exams not only lower Test/Class Anxiety, but also improve academic performance? Would the use of group work not only improve Computational Self-concept but also improve academic performance? Would the use of peer tutors help decrease the Fear of Asking for Help? Are there specific instructor immediacy behaviors that tend to reduce the Fear of Statistics Teachers? What behaviors tend to make a statistics teacher more approachable?

Conclusion

In conclusion, this case study presents the use of course and assessment design and peer instruction to reduce statistics anxiety in a sample of traditional undergraduate business statistics students at a private Midwestern university. It would appear from the anecdotal data presented that certain elements of course design (read and reflect on the book read *Super crunchers*), course assessments (open-note exams), and peer instruction (in-class group work) are identified as possibly reducing statistics anxiety. However, the use of instructor immediacy behaviors may have also contributed to the statistics anxiety reduction.

This research has opened my eyes to the fact that every student can learn basic business statistics. I, as an instructor, must continue to explore innovative teaching methods that will reduce statistics anxiety so that I may better serve my students in helping them become more competent creators and consumers of statistics.

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Subscale	No. of items	Example of an item from the subscale
Worth of Statistics	16	Statistics takes more time than it's worth. (Agree scale+)
Interpretation Anxiety	11	Reading a journal article that includes some statistical analysis. (Anxiety scale++)
Test and Class Anxiety	8	Walking into the classroom to take a statistics test. (Anxiety scale++)
Computational Self-concept	7	I don't have enough brains to get through statistics. (Agree scale+)
Fear of Asking for Help	4	Asking a fellow student for help in understanding a printout. (Anxiety scale++)
Fear of Statistics Teacher	5	Statistics teachers talk a different language. (Agree scale+)

+ 1=Strongly Disagree to 5=Strongly Agree (1 means Low Anxiety; 5 means High Anxiety)
++1=No Anxiety to 5=Considerable Anxiety

Table 1 - Number of items per STARS subscale

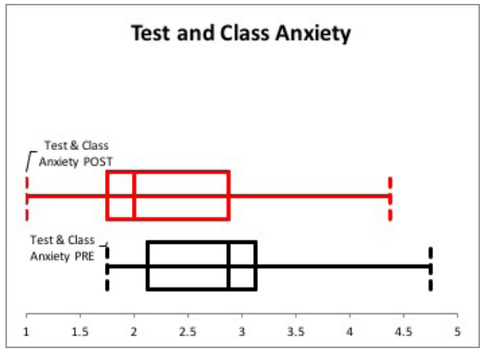
Subscale	Baloglu (2002)	Hanna (2008)	Joliffe (2004)	Current Study (Pretest)	Current Study (Posttest)
Worth of Statistics	.94	.94	.85	.92	.91
Interpretation Anxiety	.89	.87	.86	.88	.79
Test and Class Anxiety	.87	.87	.82	.86	.91
Computational Self-concept	.80	.87	.70	.85	.87
Fear of Asking for Help	.62	.83	.47	.61	.75
Fear of Statistics Teacher	.78	.83	.69	.60	.74

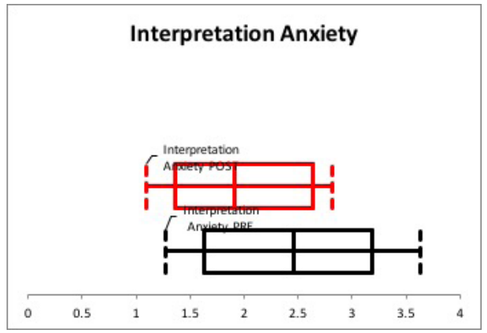
Table 2 - Internal Consistency (Cronbach's Alpha) of the Statistics Anxiety Rating Scale

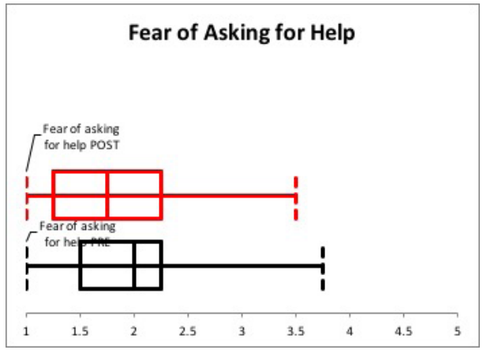
Subscale	Median Score - PRE	Median Score - POST	Decrease (Lower scores equate to Lower Anxiety)
Test and Class Anxiety	2.9	2.0	31%
Interpretation Anxiety	2.5	1.9	24%
Fear of Asking for Help	2.0	1.8	10%
Fear of Statistics Teachers	2.2	2.0	9%
Worth of Statistics	2.1	2.0	5%
Computation Self-concept	2.0	1.9	5%

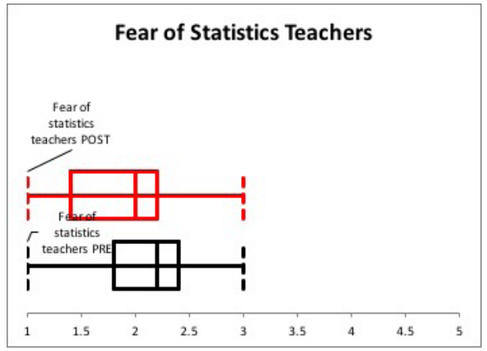
Table 3 - Percentage Decrease in Median STARS scores (pretest – posttest)

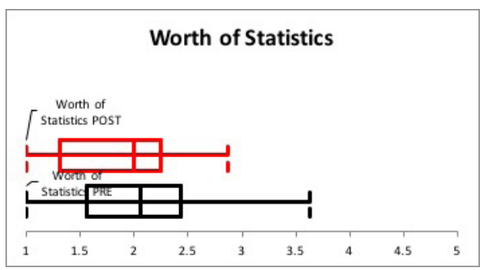
Appendix A

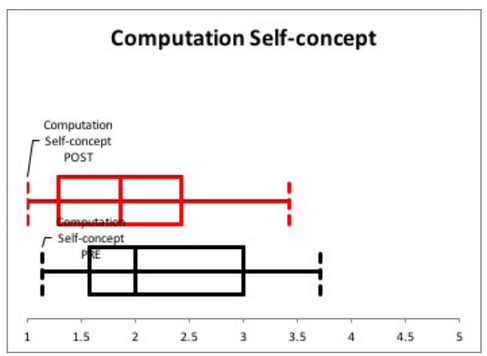












Fostering Interdisciplinary Understanding and Skills

— Michele C. Everett

Michele C. Everett, Ph.D., is a lecturer of interdisciplinary studies at Coastal Carolina University. She teaches interdisciplinary studies, first-year seminar, and peer mentoring courses. Her research interests focus on teaching and learning strategies for student engagement and well-being in a variety of educational settings.

Abstract

This article reports on a study that explored student learning outcomes from an introduction to interdisciplinary studies course. A qualitative approach was employed to investigate the development of university students' understanding of interdisciplinary studies and their perceptions of learning outcomes from the course. The findings illustrate the potential interdisciplinary studies courses have in providing students with a unique opportunity to develop the knowledge and skills required to effectively meet the increasingly complex challenges of the 21st century. The study's findings have implications for interdisciplinary teaching and learning and for promoting the value of interdisciplinary studies courses and programs.

Keywords

teaching interdisciplinary studies, learning outcomes, skill development

Introduction

The increasingly complex nature of issues facing today's global society has placed greater emphasis on the need to foster interdisciplinary thinking and research in higher education. This renewed attention has stimulated interest in the area of interdisciplinary teaching and learning (Burgett, Hillyard, Krabill, Leadley, & Rosenberg, 2011; Spelt, Biemans, Tobi, Luning, & Mulder, 2009). Today, universities offer a variety of interdisciplinary programs including majors and/or minors, courses, and research institutes or centers (Rhoten, Boix Mansilla, Chun, & Thompson Klein, 2006). The number of undergraduate degrees conferred in multi/interdisciplinary studies continues to show significant growth; 38 percent between 2005-6 and 2010-11 (National Center for Education Statistics). Factors contributing to this growth include the flexibility these programs provide students, opportunities for active and engaged learning, and the focus on developing the interdisciplinary skills needed to succeed in today's workplace (Henry, 2005). These skills include critical thinking, complex problem solving, the ability to apply knowledge to real-world settings, and to work effectively as part of a diverse team (American Association for Colleges and Universities, 2013).

Although there is growing support for the view that students may derive significant benefits from interdisciplinary educational experiences, little attention is given to the role interdisciplinary studies degree programs can play in helping students achieve these positive outcomes. To build on the growth and demand for interdisciplinary programs, and to establish credibility for it as a field of inquiry, it is essential to document the ways in which interdisciplinary courses are uniquely positioned to provide students with the knowledge and skills required to succeed personally and professionally in the 21st century. To date, little published research has investigated the effectiveness of interdisciplinary studies courses in meeting instructional goals and objectives. Because little is known about the outcomes, it is unclear what students are taking away from these learning experiences (Lattuca, Voigt, & Fath, 2004). Do they leave with an understanding of what interdisciplinary studies is? Do they understand what interdisciplinary thinking and practice requires? Do they understand the value in developing interdisciplinary skills? Do they understand the benefits derived from engaging in interdisciplinary thinking and research? This study answers the call for additional research in the area of interdisciplinary teaching and learning (Kinnick, 2004; Krometis, Clark, Gonzalez, & Leslie, 2011; Lattuca et al., 2004; Rhoten et al., 2006; Spelt et al., 2009) by reporting findings from a study that investigated student learning outcomes from an introduction to interdisciplinary studies course.

In this study, student learning outcomes are viewed through the lens of constructivist learning theory. As such, learning is viewed as an active process of meaning-making. Factors that influence learning include students' prior knowledge and the interaction between students and the learning environment (Lattuca et al., 2004). The role of the instructor in the constructivist classroom is as facilitator, shaping student-centered learning experiences that encourage active engagement and discovery. What sets interdisciplinary pedagogy apart is its aim to develop the whole student, focusing on intellectual development as well as the "intrapersonal and interpersonal" dimensions of learning (Haynes & Brown, 2010, p. 647). The intended outcome of interdisciplinary instruction is not for students to achieve mastery of content (Holley, 2009), but to gain the skills and "practice for the work they will need to do as members of their generation" (Boix Mansilla, 2008, p. 31). Because the focus of interdisciplinary teaching and learning is on developing a range of skills and abilities beyond content knowledge, this study adopts a broader view of what constitutes learning, one that encompasses a variety of cognitive, personal, and social outcomes.

Description of the Study

Participants and Course Description

Research was conducted during the spring 2014 semester at a medium-size, four-year public liberal arts institution located in southeastern US. Participants for the study were the 20 students enrolled in a 300-level three-credit "Introduction to Interdisciplinary Studies" (IDS) course. Although an upper-level course, it is open to all students—all majors and academic levels. It fulfills an IDS major core requirement and serves as a cognate course for non-IDS majors. Consequently, the class was made up of a diverse range of students: 13 IDS majors, 3 history majors, 2 music majors, 1 sociology major, and 1 political science major; 8 seniors, 7 juniors, 4 sophomores, and 1 freshman. University procedures and policies for conducting research with human participants were followed.

The course was delivered face-to-face, two 75 minute class meetings per week, for 15 weeks. The spring 2014 semester was my first time teaching this course and the first time it was taught in its current iteration as a 300-level course. Repko's (2014) *Introduction to Interdisciplinary Studies* was used as the required course textbook. The overarching goal of the course was to provide students with an introduction to interdisciplinary studies. My personal goal was to have students leave the course with a better understanding of and appreciation for interdisciplinary studies as a major and as a way of thinking.

Specific instructional objectives were:

- To provide students with an introduction to the field of interdisciplinary studies,
- For students to develop skills and traits of an interdisciplinarian,
- To provide an overview of the theoretical foundations and practical applications of interdisciplinarity in today's world, and
- To engage students in the interdisciplinary research process.

Specific student learning outcomes were for students to:

- Demonstrate a sound understanding of the foundational principles of interdisciplinary studies and the interdisciplinary research process (IRP).
- Identify and critically analyze a complex (interdisciplinary) real-world problem.
- Demonstrate higher-order thinking and research skills as they apply to interdisciplinary studies.
- Demonstrate a sound understanding of outcomes from engaging in the interdisciplinary research process.

The first half of the semester was designed to provide students with the foundations of interdisciplinary studies and to lay the groundwork for the process required to complete the main assignment—an interdisci-

plinary research and design project. Students were given weekly reading assignments from the textbook. Instruction took the form of lectures and in-class individual, small group, and whole class activities. Constructivist pedagogies were employed; students were encouraged to actively participate in discussion and hands-on learning. In week 1, students were provided with the Repko (2014) textbook definition of interdisciplinary studies:

> Interdisciplinary studies is a cognitive process by which individuals or groups draw on disciplinary perspectives and integrate their insights and modes of thinking to advance their understanding of a complex problem with the goal of applying the understanding to a real-world problem (p. 28).

Over the course of the 15 weeks, an expanded definition of interdisciplinary studies was adopted.

> Interdisciplinary studies is: 1) a major; 2) a field of study; 3) a process—a cognitive process of integrating insights from two or more disciplines; and 4) a product—a more comprehensive (interdisciplinary) understanding of a complex real-world problem.

In addition to providing students with a definition of interdisciplinary studies, early on in the semester, students were introduced to the traits of an interdisciplinarian. These traits include abstract and holistic thinking, perspective taking, ethical consciousness, appreciation of diversity, and empathy (Repko, 2012).

Each week students were given understanding checks (UCs) to assess their understanding of concepts presented in the textbook and in class. The understanding checks took the form of in-class quizzes; each quiz contained 4-5 short answer questions. The one question that was included on nearly all of the understanding checks over the course of the entire semester was, "How would you answer the question, 'IDS, what's that?'"

The second half of the semester was devoted to project-based learning (Markham, 2011). In small groups (2-4 students) students worked on a "Research & Design" (R & D) project to develop a museum exhibit proposal for a display that showcased an interdisciplinary understanding of a complex real-world problem. The project consisted of five stages: conceptual, immersion, analytic, design, and dissemination. Students selected their own topics. They completed this project by engaging in the interdisciplinary research process as described in the course textbook (Repko, 2014). Assessment of the project was based on the written proposal, oral presentation, and level of participation.

At the end of the semester, students were required to write two reflection papers: a reflection on the group R & D project, and a final reflection on the course. The instructions for the final reflection paper were to: "Write a paper (2-3 pages) in which you reflect on new understandings about the principles and applications of interdisciplinary studies. Discuss the ways in which these new understandings relate to your personal, academic, and career development."

Data Generation and Analysis

A qualitative approach was employed in the study to generate and analyze data (Creswell, 2014). Data were generated from two sources: understanding checks (UCs) and reflection papers. Two methods of qualitative analysis were used to assess student learning outcomes: content analysis (Berg, 2001) was used to analyze data generated from understanding checks; reflection papers were read and re-read to identify emergent themes (Patton, 2002). Analysis of these data sets served to meet a central aim of the study—to investigate student learning outcomes from an introduction to interdisciplinary studies course.

Findings

The study's findings are presented in two sections: 1) The development of students' understanding of interdisciplinary studies, and 2) students' perceptions of course outcomes.

Development of Students' Understanding of Interdisciplinary Studies

Table 1 presents a sample of the definitions students provided for interdisciplinary studies at the beginning, middle and end of the semester. The data illustrates the refinement of students' understandings of IDS over the 15-week period. The definitions students provided during the first week of the course, before they were given the textbook definition, demonstrated a limited understanding of IDS, ranging from not knowing "anything about interdisciplinary studies," to thinking of it only in terms of a major. At the mid-point of the semester, before they started the R & D project, students' definitions reflected a broadening in their understanding of interdisciplinary studies. Definitions included words and concepts from the textbook definition such as "integrated," "two or more disciplines," "complex real-world problem," and form something "new."

Students' final definitions reflect a deeper understanding of interdisciplinary studies. The end of the semester definitions included elements from the expanded definition of interdisciplinary studies. Many definitions included the term "cognitive process." Even though interdisciplinary studies as a major was mentioned, more emphasis was placed on the process and product of interdisciplinary studies—to "integrate insights" for the purpose of gaining "a greater understanding." Overall, thoughts expressed in final definitions were considerably different from thoughts expressed in the initial definitions. In some cases, final definitions reflected subtle changes from the definitions provided at the mid-point of the semester. For example, student #15's used the word "process" in place of "study"; "gain knowledge" was replaced with "solve."

While the definitions suggest that students' understandings of interdisciplinary studies changed over time, some definitions suggest a partial or limited understanding of the expanded definition of IDS. One student (#10) continued to view it as "a field of study / major merged together." Other students' final definitions (e.g., #5 and #6) included the term "cognitive process," but it is unclear if they understood 1) that the cognitive process involved critically analyzing and integrating discipline-specific insights, and 2) that through this process they were generating new knowledge—an interdisciplinary understanding of a complex real-world problem. Additionally, while this data suggests that many students developed a greater understanding of interdisciplinary studies, it is acknowledged that some definitions may in part reflect memorization of the definition provided in class. Qualitative analysis of the reflection papers (discussed below) provides additional insights about the degree to which and ways students developed new understandings about interdisciplinary studies.

Student	Beginning	Middle (before project)	End (after project)
#1 IDS major	IDS is a combination of different majors that create a new major that may focus on things that aren't part of other majors.	IDS is a combination of different disciplines, integrated together to form something new to solve a problem.	It's a major, field of study and a way of thinking. It's where you combine multiple perspectives and integrate them to find something new that couldn't be defined by one of the perspectives alone.
#2 IDS major	It involves different research tactics & strategies to therefore have a broad understanding of different studies.	Process by which individuals or groups draw on disciplinary perspectives.	It is a cognitive process by which individuals or groups draw on disciplinary perspectives & integrate insights. It is also a major & a field of study.
#4 IDS major	IDS helps students explore possible career choices and how to grasp a better concept of the future and what's out there.	It is the blending of two or more disciplines to gain better insight to help solve the complex problems in the world today and to gain a better understanding with a much wider and open-minded view.	It's a major, a field of study (association, scholars), process, and a product. Blending of two or more disciplines that help solve real world complex problems to form a greater understanding of a particular topic.

Student	Beginning	Middle (before project)	End (after project)
#5 History major	I really don't know anything about interdisciplinary studies.	The process of integrating two disciplines to make a totally new one or process.	It's a major, cognitive process of 2 or more perspectives, a field of study, a product.
#6 IDS major	IDS involves a mixture of studies all grouped together to form one interpretation.	IDS is the integrating complex knowledge from 2 or more disciplines.	Interdisciplinary studies is a cognitive process of two or more disciplines that integrate insights into a new way of thinking.
#8 IDS major	IDS is a way I can organize my class schedule for my degree so it will help me get into a Master's program in social work.	Interdisciplinary studies is the use of two or more disciplines together to make or find something new. For example, "blending" education and business to create or discover something new. Being open-minded on topics from other disciplines.	A cognitive process that requires in-depth thinking to bring different perspectives (two or more) and integrate insights to create something new!
#9 IDS major	I honestly have no clue.	IDS is the integrated study of different concentrations to obtain 1 goal.	It is a major, a field of study, a cognitive process.
#10 Sociology major	It involves things surrounding laws and so forth.	The ability to make your own major in a way. It allows you to become whatever it is that you want to become if there is not a specific title to what it is.	IDS is a field of study / major merged together.
#11 IDS major	Different concentrations of liberal arts areas of study.	IDS is the integration of disciplines and perspectives to approach the norms and harsh reality of modern society.	The integration of insights from two or more academic disciplines to define and resolve a social issue. IDS is not limited to social problems, it can be applied to everyday situations and change your entire perspective on a topic.
#13 IDS major	It's a major where you select various classes to take that are specific to a field of study that might not be offered at the college.	Interdisciplinary studies is a major for people who know exactly what job they want to do. It is where you combine a number of majors / classes in order to study a specific field that has to do with the desired profession.	It's when one source combines insights from multiple disciplines in order to solve a greater problem.
#15 IDS major	IDS allows students who feel that the specific majors offered at the university don't fit their career path to take different courses to obtain all the necessary knowledge they feel they need to continue on that career path.	It is the study of drawing from two or more disciplines in order to gain knowledge to answer a complex-real-world problem.	It is the process of drawing from multiple disciplines in order to solve a complex, real-world problem or issue.
#16 History major	IDS is pulling information from different fields of study to gain a better insight; a more expanded base of knowledge.	IDS is the ability to gather information from different aspects (disciplines), critically analyze it, be able to bring everything together (intertwine), and apply it to real world situations.	IDS is the ability to think critically and being able to solve a complex problem by drawing on multiple disciplines. It is also a major, but being a major comes second to what IDS actually is.

Table 1 - Student Definitions of Interdisciplinary Studies

Students' Perceptions of Course Outcomes

The most revealing findings concerning students' perceptions and understanding of interdisciplinary studies emerged from the second data set, student reflection papers. Although students received points for these assignments, they understood that assessment was based on the level of reflective thinking demonstrated, not the point of view expressed. Thematic analysis of this data set identified three key themes related to learning outcomes: greater understanding of IDS, skill development, and self-discovery and personal growth. Minor edits have been made to excerpts from student reflection papers to increase readability.

Greater understanding of IDS

One theme that emerged from analysis of student reflection papers was gaining a greater understanding of interdisciplinary studies as a major and as a way of thinking and problem-solving.

> I went into the semester thinking that IDS was a "copout" or "basket weaving" degree that was designed to get students like me who were struggling in their previous major to graduate. I couldn't have been more wrong and misguided. Interdisciplinary studies not only turned out to be a great major, but also a great way to solve complex real world problems. I was blown away each day as I learned more and more about the major and field of study.
>
> Before the class began, I thought of IDS simply as a major and nothing else. Little did I know, as I learned immediately from the first day of class, that it is much more than a major. What interdisciplinary studies means is the ability to combine two or more disciplines and think critically in order to solve a complex, real-world problem. Overall, my understanding of interdisciplinary studies changed completely over the course of the semester.

One student identified the variety of teaching strategies used in the course as a factor that contributed to higher levels of understanding: "We constructed things, drew things, and even ate things that made us really understand what IDS was."

Students' expanded understanding of interdisciplinary studies included an appreciation for the cognitive requirements of engaging in interdisciplinary research and thinking.

> The thing I understand the most about interdisciplinary studies after this semester is that it is complex. I learned that you can't just put different insights next to each other to generate new information; they have to be blended the same way different fruits are in a smoothie. [Reference to the metaphor used in the textbook.]
>
> It is not easy to use several viewpoints from several different disciplines in order to solve a problem. You need to be creative in order to truly think in the IDS way. I'm thankful that I am truly able to tell people how important and challenging my interdisciplinary studies major really is.

Students' comments suggest the course served to change misconceptions about IDS as a degree; modifying their view of the degree from "a copout" to something that is "great" and "challenging." This is critically important, particularly for students who are IDS majors who may have a difficult time explaining and communicating the value of an interdisciplinary studies degree.

Although students recognize that interdisciplinary thinking and research involves bringing together two or more disciplines, integration of insights was a challenging concept and process for some students to comprehend and express. Words such as "combine" and "make connections" were used to describe the integration process.

> What interdisciplinary studies actually mean is the ability to combine two or more disciplines and think critically in order to solve a complex real-world problem.
>
> I was able to make connections with information from several disciplines which gave me a better understanding of the problem.

This suggests the need to provide students with opportunities for extending, refining and deepening their understanding of integration—the central concept in the IRP.

Many students expressed the view that their new understanding of interdisciplinary studies has affected their thinking and the way they analyze problems, specifically in the context of their own lives. One student wrote:

> After taking this class I now see problems differently than I did before. Not just huge complex problems, but problems I face from day to day. Instead of making quick irrational decisions when faced with a problem, now I kind of step back and look at the situation and see if I can address the issue by taking different perspectives on the issue into account.

The way students related what they were doing in class to their daily lives illustrates the additional benefits derived when learning experiences have personal relevance (Freeman & Wash, 2013). This demonstrates why it is important for instructors to make sure students understand how the learning directly connects to their lives outside the classroom.

Skill development

A second theme that emerged from the reflection papers is students' perceptions that they derived many benefits from the course in terms of interdisciplinary learning and skill development. In their reflection papers, students identified the R & D project as the primary activity through which they gained new understandings and skills.

> The research process that the class engaged in really put everything into perspective for me. By participating in the research process, I gained a better understanding of what IDS really is.

> Although I learned from all the different exercises, I feel I was challenged the most by the museum exhibit project, and in turn, I also feel I learned the most from it.

Many students identified skills related to thinking: "higher order," "problem solving," and "outside the box." Other outcomes identified by many students related to gaining skills in the areas of teamwork, perspective taking, and ethical consciousness. In their reflection papers, students provided a variety of reasons for why engaging in the research and design project was viewed as an important part of the learning process.

> In the beginning weeks of class, I knew the textbook definition of what interdisciplinary thinking was, but it was still a hard concept for me to understand because I hadn't fully applied this way of thinking to an actual real world problem. … The project, for me at least, changed the way I look at interdisciplinary thinking and interdisciplinary studies. ... When we were writing the last bit of our project, we actually came up with an interdisciplinary solution to the problem. This was pretty exciting for our group because after trying to figure out ways to blend our disciplines together, we were able to formulate a solution using what we learned throughout the semester.

> All of the things I learned led up to completing our Research and Design project. This is where I learned a majority of my skills in the class. While completing the R & D project, I learned how to use databases correctly and decide what information to use from scholarly journals, working with people in a group that were not from the same academic background, and combining insights from different academic disciplines to create a possible solution to the problem, and a new way of looking at it.

A view expressed in many reflection papers, was the perception that the skills developed in the course will help them in the future, in their professional lives.

> IDS will also affect my career. Though my goals are still the same, I now have a more complex thought process for achieving them. Innovation and creativity are huge factors in being successful in today's world and they can both be used to the fullest with an IDS approach. Employers would rather hire employees who can problem solve over employees who can only do exactly what they are told or shown.

> IDS has brought out the creative side in me that I never thought I had. [It] enhanced my ability to "think outside the box." … Creative thinking is something that I can use to my advantage, as it will set me apart in the competitive job market.

> The skills I learned in this class will help me in whatever I choose to do. By learning to work well with others who had different views and were from different disciplines, it will help me to one day work closely and more efficiently in the [workplace].

These data reveal not only a wide range of outcomes, but highlight the importance of reflection in the learning process (Dewey, 1933; Kolb, 1984). Having students reflect on the project and the course helped them recognize learning outcomes from their experiences, and identify how these outcomes may help them in the future.

Self-discovery and personal growth

The third theme that emerged from the reflection papers is the notion that through their participation and engagement in the course, students experienced personal growth.

> As I learned more about the IDS research process, I in turn learned more about myself. I began to see that the way you approach the IRP is the same way I live my life. For instance, I have always tried to be unbiased when approaching situations or when dealing with other people. I try to view the world through the eyes of others based on their experiences and try to understand why they feel the way they do. Then I compare their views to mine and try to combine them to have a better understanding of the person or our relationship.

> Out of everything I gained in the IDS class, I mostly enjoyed learning about myself. I am now more open and willing to make an effort to try to understand how other people think. Before, if I did not like what I was hearing, I would automatically shut down and lose interest. Up until this semester I learned because I had to; now I'm just thirsty for knowledge and can't seem to get enough.

> The most important thing interdisciplinary thinking has done for me is make me a better listener. When hearing someone speak about an issue, sometimes we just tune out because we want to get our point across. I feel that now just by listening and really trying to understand what people say to me, I have become more compassionate because I try to understand and respect different perspectives and points of view that differ from mine. I think that's a pretty big concept to take away from a college course, because it is a trait that will help me throughout my whole life no matter the circumstance or situation.

These students' comments suggest that being receptive to other people's points of view was a concept that resonated with them. Although perspective taking is a central feature of interdisciplinary work, this study shows how exploration of this concept may have important implications for students' lives beyond the context of interdisciplinary studies.

Discussion and Conclusion

Findings from this study have implications for interdisciplinary teaching and learning. First, this research highlights the need to provide quality learning experiences that broaden and deepen students' understanding of interdisciplinary studies. This study suggests that students may have a very limited understanding of and hold misconceptions about interdisciplinary studies. The findings illustrate the ways in which a greater understanding of interdisciplinary studies can affect students' perceptions of the major and the nature of interdisciplinary thinking and research. Students' expanded views of IDS provided new understandings about how interdisciplinary studies promotes innovative thinking and problem-solving, and intellectually challenging work. This perception is critically important, especially for interdisciplinary studies students who should feel proud of their major and be able to explain to everyone, including potential employers, that IDS is not an easy degree, but rather a hub for big thinkers. While increasing students' understanding of interdisciplinary studies is central to the process of changing perceptions about IDS, building support for interdisciplinary studies programs will require that all members of the university community (administration, faculty, and staff) have a

full understanding of the program, as a degree program and as an important field of study.

Second, the findings support and extend what is currently known about best practices in interdisciplinary teaching and learning. Many of the best practice approaches identified in the interdisciplinary issue of the ASHE Higher Education Report were employed in the study, including student-centered pedagogies, collaborative learning, and engaging students the process of constructing an interdisciplinary understanding of real-world problems (Holley, 2009). A variety of student-centered constructivist pedagogies such as hands-on activities, discussion, and reflection were used to encourage active participation and meaning-making.

The second half of the semester was devoted to project-based and collaborative learning. Findings from the study provide support for the use of these instructional methods as effective strategies for facilitating interdisciplinary thinking. Many students reported that the project was the primary means through which they derived the most benefits in terms of interdisciplinary learning and skill development. Features of this assignment that increased levels of engagement and therefore may have affected student performance (Kuh, 2008) include having students choose their topics, making the learning experience relevant to their lives (Freeman & Wash, 2013), providing opportunities for social interaction, and engaging students in challenging work (Zepke & Leach, 2010). The project also encouraged learning by providing students with an opportunity to put interdisciplinary theory into practice in a real-world context. Thus, addressing a central tenet of interdisciplinary teaching and learning—to provide students with the skills and knowledge needed to effectively address the increasingly complex modern day issues facing society (Holley, 2009; Newell, 2010; Repko, 2014). The findings not only provide support for using these teaching strategies, but illustrate the significant role engaging students in the interdisciplinary research process can play in shaping meaningful learning outcomes.

This study also draws important attention to the fundamental role instructors play in shaping outcomes from learning experiences. There are many ways, in addition to employing best practice approaches mentioned above, that instructors can affect student learning outcomes. For example, in this study, having clear goals and objectives, selecting resources that enhance instruction, building in opportunities for ongoing assessment of students' understanding, conveying a love of learning, and reflecting on the teaching experience.

Third, perhaps the most significant contribution of this study is to document learning outcomes from an interdisciplinary studies course. Although this research reports outcomes from one instructor's experience with one group of students, the findings illustrate the potential interdisciplinary studies courses have in providing students with the knowledge and skills required to meet the challenges of the 21st century. Student comments reveal that through the course they developed specific skills, including the ability to use "out-of the-box" thinking to solve complex problems, to apply new understandings to real-world settings, and the ability to work with people from diverse backgrounds—the same skills listed on employers' priority lists (American Association for Colleges and Universities 2013).

The skills students developed during the course are skills that will not only help them professionally, but personally. Students reported developing personal skills such as active listening, perspective taking and empathy—skills that are critically important given the level of incivility in today's society. Other personal skills developed, for instance, a desire to learn, have been found to contribute to personal well-being and fulfillment (Seligman, 2011). The value of interdisciplinary courses is the broad range of cognitive, social and personal skills and traits fostered (Haynes & Brown, 2010; Newell, 2010). Unfortunately, many people are not aware of the potential these courses have in helping students develop the knowledge and skills needed for personal and professional success. To build support for interdisciplinary studies programs it is imperative that faculty, students, and staff make a concerted effort to continue to document and communicate the positive outcomes from interdisciplinary courses to the broader university community and beyond. Support for these programs will only be achieved when their true value is recognized.

In conclusion, following Repko's (2014, p. 258) assertion that "Interdisciplinarity is an idea whose time has come," the time for interdisciplinary teaching and learning has arrived. This is the moment to show how interdisciplinary studies programs are uniquely positioned to help universities work towards achieving missions that aim to empower students to become civically responsible and engaged citizens (Harrington, 2014). Accomplishing this end, however, will require employing effective teaching and learning strategies that promote the development of interdisciplinary understanding and skills.

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Involving Students in Interdisciplinary Faculty Research Teams: Benefits and Limitations

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Abstract

Increased student retention has been linked to high-impact educational practices such as participation in research projects. In this paper, the experiences of undergraduate and graduate students working with a group of faculty members from different disciplines who collaborate on research projects at a public, non-R1 institution are discussed. The backgrounds of the faculty members shaped the interdisciplinary nature of these research studies, which focused on determining the predictors of language delays in internationally adopted children. There are numerous benefits for students and faculty members in various stages of their education and careers, respectively. The limitations are minimal and are outweighed by the benefits.

Keywords

interdisciplinary research, undergraduate research experience, graduate students and research, collaboration, faculty-student research teams

Introduction

It is well established that research training is a component of graduate programs (Gelso, 1993). More recently, undergraduates are participating in research with faculty at large research institutions and at liberal arts colleges. The Association of American Colleges and University (AAC&U) encourages higher education institutions across the country to adopt an undergraduate liberal education that advocates for "higher levels of learning and knowledge as well as strong intellectual and practical skills to navigate this more demanding environment successfully and responsibly" (AAC&U, 2014). The AAC&U labeled this concept as Liberal Education and America's Promise (LEAP). LEAP institutions meet specific criteria in their curriculum: essential learning outcomes; authentic assessments; high-impact educational practices (HIEPs); and inclusive excellence. HIEPs are active learning components that are included in the undergraduate curriculum. They include but are not limited to experiences such as first year seminars, internships, writing intensive courses, and participation in undergraduate research. These experiences are important for undergraduate education because they increase student engagement and retention (Kuh, 2008).

Of particular interest in the current report is the HIEP of student research, both at the undergraduate and graduate levels. Student engagement in research has benefits for the institutions, the faculty members, and the students. Students who are actively involved in research with faculty members are more likely to make connections and complete their degree at that institution (Lopatto, 2009), thus increasing retention. The faculty-student relationship has benefits specifically for faculty members who can increase their research productivity. At universities with graduate programs, benefits for the triad of the institution, faculty members, and students are well documented (e.g., Dolan & Johnson, 2010).

Interdisciplinary Research Teams

Interdisciplinary research provides opportunities for undergraduate and graduate students to broaden their knowledge and their skills. According the National Academy of Sciences, interdisciplinary research is defined as "a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice." (NAS, 2004). Faculty members across disciplines are in a position to give students focusing in one discipline the opportunity to expand their education beyond a single subject. In addition, several professional fields of study have stressed the need for students to be trained with interdisciplinary problem solving in mind (AAC&U, 2011).

Interdisciplinary Team Research at a non-R1

In many non-R1 institutions, faculty members are expected to conduct research. However, with heavy teaching loads at these institutions, faculty members may not be able to find the time to pursue their scholarship, especially in their first few years as a new faculty member. Overall, it is difficult to balance their teaching and service responsibilities with research expectations. Faculty members often are required to teach a nine to twelve-credit course load each semester and are expected to advise students, participate in service to their departments, the university, and the community, as well as engage in scholarship. Faculty members and students can benefit from working in an interdisciplinary research team.

One way that faculty members can engage in scholarship is through interdisciplinary research teams. Such a collaborative team afforded opportunities for three faculty members to engage in continued research while using their diverse backgrounds to inform the research as well as mentor students in the research endeavors. The authors' interests overlap and are complementary; the first author is trained as a cognitive psychologist with a focus on psycholinguistics and is a faculty member in the Psychology Department, the second author is an audiologist with a focus on hearing evaluation and aural rehabilitation, and the third author is a speech-language pathologist with a focus on language development and disorders in children. The last two authors are members of the Communication Sciences and Disorders Department.

The Research Projects and Development of Interdisciplinary Teams

Over the past seven years, the authors have collaborated on research examining various aspects of language development in international adoptees (IAs). The research focus was the evaluation and early predictors of language learning disorders (LLD) in IAs or children learning English in an adoptive home where the parents do not speak the child's first language, often referred to as "second first language." These children are thought to be at a higher risk for LLD due to their early histories such as institutionalization or birth mother's health. In an initial case study, two researchers from different fields worked with speech-language pathology graduate students to analyze the sound and meaning structure of language of two IA children. This research highlighted atypical patterns of language development, which are possible early predictors of LLD (e.g., Larrivee, Meyer, Soltano, & Vine, 2011).

Therefore, to identify early predictors of language deficits in IA children in a longitudinal group study, the three authors and the graduate students studied the communication of these children over a six-month period. At this point, a third author from a different field joined the team because of her extensive experience in statistical analysis and experimental research design. Her training in language processing brought a different perspective to the research. Graduate students assisted with tasks such as data collection, analyses, and presentations. This teamwork led to new research in which speech language pathologists across the country were surveyed about their experience working with the IA population. Undergraduate students assisted with tasks such as development of the survey, data entry, analysis of data, and presentation of data.

In the Communication Sciences and Disorders Department, graduate students have a research requirement, but the interdisciplinary research described above exceeded it. Undergraduate students do not have a specific research requirement but can elect research as an independent study. Faculty members identified and invited undergraduate and graduate students based on their academic performance, potential to be successful working on the research projects, and ability to participate for at least 12 to 18 months (i.e., 2 to 3 semesters). The students had majors in social sciences and represented a typical cohort as described by Hu, Scheuch, and Gayles (2009). Once students agreed to work with the faculty members on the research projects, they were required to complete an institutional review board (IRB) ethics training in working with human participants in research. The research process included regular lab meetings with groups of students working on a project. Previous research indicated that regular lab meetings help researchers as well as students clarify their thinking (Garcia-Perez & Ayres, 2012). Lab meetings provided opportunities for clarifying thoughts, teaching, learning, and having rich discussions.

During lab meetings, the faculty members developed research questions collaboratively. The students were involved in all research discussions, literature searches, and development of the research protocol. Once IRB approval was received, students were involved in collecting data followed by compiling, analyzing, and interpreting data. When the project was completed, the students assisted in the development of posters and the presentations of the research at conferences.

Depending on the project, students were involved in all facets or selected facets of the research protocol. Some of the students working on research teams in the longitudinal study were not involved in the first stages of the project because they had joined the teams when the earlier group of students graduated and were no longer available to participate. The students in the longitudinal study overlapped for a short period of time so that the experienced students participated in the training of the new of students.

Student Perspectives on Interdisciplinary Research Teams

Participating in research had multiple benefits for students. Involvement in research develops and strengthens students' cognitive abilities including "acquisition of analytic and synthetic thinking, increased confidence in ability to make presentations or speak publicly, and assistance with employment and/or graduate school" (Webber, Nelson Laird, & BrckaLorenz, 2013, p. 229).

Undergraduate and graduate students who worked on these research projects with faculty members provided their perspectives on the benefits and the costs of their research experiences. To understand students' point of view, their observations were elicited informally using open-ended questions. The observations are discussed below on personal (interactions with peers and mentors), academic, and professional (professional tasks related to Communication Sciences and Disorders) levels.

Student Perspectives: Benefits

First, on a personal level both graduate and undergraduate students mentioned that they benefited from the collaborative research experience. Students stated that they developed better relationships not only with their research mentors, but also with their peers. Developing a close relationship with mentors is one of the factors students identified as an effective teaching practice (Finelli, Daly, & Richardson, 2014). The students' observations about their own improved social skills and abilities to relate to other scholars also have been identified as important by faculty mentors in their mentoring relationships (Lechuga, 2011). The graduate students reported that they developed confidence and learned how to cultivate interpersonal professional relationships. They also learned how to collaborate on an academic level with peers and mentors, built relationships with fellow students and professors, and gained confidence as graduate students. These observations are supported by Lei and Chuang (2009). Establishing professional relationships and portraying professional confidence are important skills for future professionals.

Second, on an academic level, undergraduate and graduate students diverged in their opinions regarding the benefits of collaborative research. Undergraduate students reported that they learned some of the basic processes of research. They learned how to develop a research protocol, conduct a literature search, obtain data, enter data, and report results. Learning these skills was achieved because students were involved and participated in the entire research process.

The graduate students already had basic knowledge about research, but they developed a hands-on understanding of research. In addition, they understood the importance of research in their field of study. Graduate students learned how to apply their research knowledge and understand how research molds knowledge. These realizations are important for future professionals to deliver evidence-based clinical services (ASHA, 2005) and may encourage the pursuit of research as a career in the future. The process and experience of participating in this research project also will be relevant throughout graduate school, as participation in research built a foundation for developing and investigating quality research questions. Processes such as organizing, analyzing and drawing conclusions from data, and reporting the findings in a professional manner are all parts of the professional realm.

All the students experienced the process of obtaining approval from the IRB to conduct the research. Working through the process and conducting the research within the guidelines illustrated clearly how to do research within institutional ethics guidelines. (Minifie, et al, 2011). Although students did not mention it explicitly as a benefit of the collaborative research, they experienced the academic and practical implications of the ethical practice of research. Faculty members observed students' awareness of these principles in the students' interactions with participants and handling confidential data.

Third, on a professional level, both the graduate and undergraduate students agreed that the research collaboration enhanced their resumes and that they developed experience in the oral presentation of research. All students had the opportunity to present the research results at a local or national conference. Therefore, they were able to collaborate with other professionals and peers and increase their confidence in presenting ideas and information to others. Presenting and articulating ideas clearly is important for many professions. Undergraduate students in Communication Sciences and Disorders developed a deeper insight into the responsibilities of speech-language pathologists and increased their resolve to gain admission to graduate school to prepare for a career as speech-language pathologists.

Graduate students had the opportunity to interact with research participants and the participants' parents. They reported that these experiences enhanced their professional interpersonal skills and confidence. The graduate students learned how to establish rapport, elicit communication, and obtain data using standardized and non-standardized tools. These skills are directly transferable to their future clinical practice (Retherford, 2007).

Students also had opportunities for additional clinical hours and supervision as part of the research experience, opportunities afforded only to students involved in this particular project. Therefore, participating in a research project during graduate school provided these students with opportunities that they would not have had if they were not involved in research. In retrospect, graduate students stated that they developed an understanding of the application of research in a clinical setting. This is a valuable awareness, as all clinical interactions must be supported by research (ASHA, 2005).

Student Perspectives: Costs

Students were also asked to state the costs of taking part in the research. They were asked to reflect on the personal, academic, and professional costs. According to the students, there were only two costs.

First, on a personal level, the cost or negative aspect for both graduate and undergraduate students was that the research took up too much of their time. Like many other students, these students had multiple demands on their lives, including jobs to help support them through graduate school and family commitments. The research commitment was in addition to a regular course load and consumed their personal time. Similarly, graduate students in Lei and Chuang's (2009) study reported that they felt over-worked and that faculty mentors could be unreasonably demanding.

Second, on an academic level, both groups of students felt that their lack of research knowledge was an obstacle. They experienced a sharp learning curve mastering research concepts while immersed in the process. This learning curve led to feelings of insecurity and inadequacy. The students perceived this as a cost.

Interestingly, on a professional level, students did not perceive any costs. Overall, the benefit-cost relationship of this collaborative research between students and faculty members was clear. From the students' perspective, the benefits far outweighed the costs. They felt only that their involvement in the research was too time consuming and intimidating. Similar observations were also reported by graduate students surveyed by Lei and Chuang (2009).

Faculty Perspectives on Interdisciplinary Research Teams

Faculty members involved in the interdisciplinary research projects also identified a number of benefits and costs regarding these projects (Siedlok & Hibbert, 2014). Overall this was a positive collaborative experience. Similar to the students' perspectives, faculty members found that the benefits outweighed the costs. Faculty members saw positive outcomes in both personal and academic-professional areas similar to Cooley, Garcia, and Hughes (2008).

Faculty Perspectives: Benefits

First, faculty members worked closely with both undergraduate and graduate students through the course of these projects. Faculty members felt a sense of accomplishment that the student researchers learned to apply research effectively and were inspired by their participation in the projects to continue their studies. Through mentorship, faculty members helped the students to learn both basic and applied research. Students were provided with information about the importance of both types of research and learned how they could contribute to and benefit from research (e.g., Brew & Jewell, 2012; Minifie, et al., 2011). For example, faculty members were gratified to know that after working on these projects, the students reported more comfort in reading research studies and knowing how to apply findings to their own professional practice. Students also were encouraged to further their education: undergraduates to Master's programs, and Master's-level students to Ph.D. programs.

Second, in regard to connecting to colleagues, many institutions of higher education can be quite insular for faculty members. Often faculty members from diverse disciplines work together only in cross-campus committee meetings. All three of the researchers were active across the campus. The interdisciplinary research had the benefit of stimulating scholarly endeavors. The interdisciplinary aspect of these projects has helped identify different perspectives and add richness to each member's own independent research.

Third, in regard to finding funding, which is tied to professional issues, as a group, the researchers were awarded several internal research grants to fund the research over and above the faculty members' individual grants. Two of these grants helped support the longitudinal aspect of the research and two supported an associated survey study of speech-language pathologists.

Fourth, in regard to professional issues, which include promotion and tenure, all of the researchers on these projects began the partnership as tenured faculty members. Two were able to use the research projects in promotion to full professor dossiers. In addition, WSU has a system of post-tenure review. Post-tenure review occurs for each faculty member every seven years after tenure is awarded. The Vice President of Academic Affairs checks the dossiers for four areas of accomplishments including teaching, advising, service to the university, and research. Working together resulted in 12 presentations at the local and national levels. In addition, one paper was accepted in a refereed journal. Thus, the research accomplished through this set of interdisciplinary projects was important in showing continued scholarly activity.

Finally, in regard to gaining motivation, being part of an interdisciplinary research team motivated each of faculty participants in a number of ways. Faculty members who work in a university whose primary mission is teaching may lose the motivation to design and complete research projects post-tenure. This loss of scholarly activity may be due to the high demands of teaching and committee work. In addition, during the interdisciplinary projects, two of the faculty members were department chairs, which in itself is time consuming. A third team member was on a large number of departmental and cross-campus committees. The interdisciplinary team helped to keep each team member on the research track.

Faculty Perspectives: Costs

There were costs associated with interdisciplinary associations. On the personal side, there can be some tension between students as well as a tension between students and faculty members. The tension often was associated with time (Tartas & Muller Mirza, 2007). Interdisciplinary teams could create tension between colleagues. In the case of this team, tension occurred only in scheduling. All of members of the team were over committed in both their personal and professional lives. Attempts were made at the beginning of each semester to schedule weekly meetings times for the faculty team members and for the students in lab meetings. However, during crunch times such as mid-term and advising times, it was easy to cancel. Another scheduling problem occurred during data collection. In the case of these projects, data collection involved scheduling times that were good for parents to bring their children, good for the students to come to interact with the children and parents, and good for the faculty researchers to be present to supervise and assist in data collection. In other words, scheduling one 2-3 hour meeting required the examination of at least six disparate schedules.

Conflict can arise between faculty members when it is time to submit collaborative work to conferences or journals. Interestingly, there was no tension regarding ownership or leadership of the projects between faculty members or students. Students who worked on these projects were always included as coauthors on papers or conference presentations. In addition, the faculty members each contributed specific ideas that led to follow-up projects. The faculty member who contributed the original idea was always the first author.

Often, the graduate students working on the project were paid through graduate assistantships. As soon as faculty members talked to students about their involvement in the research projects, the students were told that the assistantship involved working on research projects. All students agreed to the assignment and responsibilities. However, approximately one semester into a project, one student informed the faculty mem-

bers that she did not like research and never wanted to be a researcher. Although she performed her tasks and attended lab meetings, it did put a damper on the faculty members' enthusiasm with this student.

Although working with students on research projects was professionally rewarding, there were associated costs (Dolan & Johnson, 2010). First, faculty members had difficulty scheduling various aspects of the research projects and the labs because students had limited time themselves. Therefore, the faculty members continually recruited and retrained new students to work on the projects. For each new group of research students, the learning curve was steep. Each new student was required to learn the concepts associated with the research, the system of data collection, the tools that were used for data collection, the organization of the files, the flow of paperwork, the organization of the SPSS files, and the way to score tests. This steep learning curve led to frustration on both the parts of the students and the faculty members in that the faculty members needed to keep in mind which student needed specific levels of training at any one time. Recruiting undergraduate students in their sophomore year made for smoother transitions because such students were involved for longer periods.

Conclusions

Understanding students' perspectives on costs and benefits improved faculty members' ability to mentor students successfully. The faculty members who led the teams learned to be more specific in their expectations of the students, specifically the expectation about the time commitment. Faculty members' expectations were determined by the stage of the project and may not have been articulated to the students clearly.

As mentors, faculty members in any discipline should reassure students that they are "research learners" and that the connection to the research will help them learn about, but also contribute to the project (Wulf-Andersen, Holger Morgenson, & Hjort-Madsen, 2013). Regardless of the field of study, students should be made aware that research collaboration evolves and by its nature means negotiation (Tartas & Muller Mirza, 2007). Faculty members who work with students in research teams should encourage skills such as formulating one's own position and entering into a debate to negotiate participation. These skills will be invaluable in students' future careers.

Research colleagues from diverse but complementary backgrounds can find such a collaboration to be academically engaging and stimulating. In the case of the collaboration outlined above, research collaboration resulted in a widening of perspectives and an easy distribution of responsibilities. The faculty members developed appreciation of each other's strengths and it benefitted the development of the projects. Overall, this interdisciplinary research team has been and continues to be a successful, professionally and personally rewarding experience. Just as importantly, the research team has helped students to understand research, to learn to collaborate, and to develop team skills. All of these skills will help the students succeed in their chosen career paths.

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The Genesis and Evolution of Two Interdisciplinary Courses Focused on Global Learning

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Abstract

It has become increasingly important to encourage in students a sense of civic engagement and the realization that they are global citizens. Well-designed interdisciplinary courses can aid in these goals by bringing about an enhanced global understanding and a greater willingness to engage in the world beyond students' sometimes narrow boundaries. One such course addressed a range of global issues through the lenses of biology, history, education, and psychology. These fields were used to explore HIV/AIDS, the teaching of evolution, and the use of intelligence tests. This course underwent several revisions to ultimately focus on one specific topic; HIV/AIDS. The second course grew out of a realization that students often have little awareness of historical and contemporary genocides and their contributory factors beyond the Holocaust. Both the HIV/AIDS course and the Genocides course will be described and analyzed in terms of course design strategies, student learning, and ongoing curricular revisions.

Keywords

civic engagement, global learning, interdisciplinary, HIV/AIDS, genocide

Introduction

In the 21st century, the world has become a much smaller place. Technology, and its ability to put information literally at one's fingertips, has given everyone the chance to be part of events taking place anywhere in the world. As opportunities for engagement on a global stage expand, students in higher education are expected to be knowledgeable about what is happening far beyond their local communities. These expectations have been articulated by employers, politicians, and educators alike (AAC&U, 2008), and the challenge is being met in a number of ways. In general, universities and colleges have institutionalized the expectation of global learning in their mission statements, but it is the faculty who must address these expectations by designing courses and curricula that engage students in content and activities emphasizing a global perspective. Only with these educational experiences will broadly trained citizens be ready to engage in activities and discussions focusing on global issues.

How "global learning" is defined continues to be discussed, as there appear to be many different definitions of that phrase at colleges and universities in a variety of contexts (Hovland, 2014). Institutions may focus their efforts on foreign language instruction, travel abroad opportunities, or offerings of specific courses with international titles, such as "international business." Student exchange programs are also touted as global learning at some institutions of higher learning. While these activities may promote global awareness, questions about what exactly constitutes global learning and how it is achieved and assessed in the classroom remain (Hovland, 2014).

In a recent Association of American Colleges and Universities (AAC&U) report, Hovland (2014) points out the importance of identifying course outcomes that recognize the need for global learning. In particular, the outcomes identified in the Liberal Education and America's Promise (LEAP) document (AAC&U, 2013) seem to be particularly amenable to a course emphasizing global learning. In brief, the LEAP outline (as cited in Hovland, 2014) focuses on the following four areas of learning as key to preparing for 21st century challenges:

1. Knowledge of human cultures and the physical and natural world
2. Intellectual and practical skills including critical thinking, written and oral communication, and quantitative and information literacy, as well as team work and problem solving
3. Personal and social responsibility through active involvement with diverse communities and real world problems
4. Integrative and applied learning experiences demonstrated through application of new knowledge and skills to complex problems/dilemmas (p. 5).

While not specifically written for or addressing *global* learning, these learning areas may serve as a template for course design to achieve an awareness of the world beyond the student's narrow classroom and community.

The AAC&U VALUE (Valid Assessment of Learning in Undergraduate Education) rubric on global learning also provides tools to define, address, and implement learning outcomes related to global learning (AAC&U, 2009). This rubric highlights six specific areas to assist in curriculum design. These areas include:

1. Global Self-Awareness
2. Perspective Taking
3. Cultural Diversity
4. Personal and Social Responsibility
5. Understanding Global Systems
6. Applying Knowledge to Contemporary Global Contexts (p. 2)

Hovland (2014) also defines characteristics of the learning environment that promote effective global learning. And, while he argues that no one specific course can address all aspects of global learning, he emphasizes that students should move through their educational experiences using a sequential progression or scaffolded approach to course content and activities. He concludes by noting the importance of utilizing interdisciplinary inquiry in globally focused courses. Both a sequential approach to course material, as well as an interdisciplinary focus, framed the design of the HIV/AIDS and Genocides courses described in this paper.

Although these templates (LEAP and VALUE) are helpful in suggesting ways to address a global focus in the classroom, faculty often has local challenges that must also be addressed. Students, while not being monolithic in their backgrounds, nonetheless are often place-bound. Some students talk about not ever having left their own communities, let alone traveled further than the state boundaries. Students can be parochial in their thinking, but they are attending the university to expand their horizons. Faculty recognizes the need to help these individuals move beyond their place-bound understanding of the world into a more global understanding of how their corner of the globe intersects with events happening in other locations. Place-bound students, with limited opportunities for travel or personal interaction with those from other cultures or situations, informed the goals of the campus interdisciplinary teaching team. Essentially, the overarching goal of these courses was to expose students to global issues through globally-focused activities, projects, lectures, and casework; all contributed to well-designed interdisciplinary courses.

This paper will describe the initial globally focused and interdisciplinary course, entitled "Concepts, Controversies, and Catastrophes" through its development into its current format, entitled "HIV/AIDS: Science and Culture." In addition, the success of the first course inspired the development of a second interdisciplinary course, entitled "Genocides." In both course descriptions, there will be an exploration of how each course began, how it changed, and what is envisioned for the future. The initial interdisciplinary course has been offered for over ten years and the Genocides course is now in its second offering. Faculty continue to be committed to offering these courses, in part because of ongoing students' interest in global issues, and in part because the faculty involved remain committed to continuous revision and improvement of the curricula.

Initial Course: Concepts, Controversies, and Catastrophes

In the summer of 2003, the interdisciplinary team assembled with the goal of creating a course that encouraged students to think critically about controversial topics while challenging their own personal biases and assumptions regarding culture, science, and community beliefs. By fall 2004, the team was ready to offer the course, entitled "Concepts, Controversies, and Catastrophes." This course was interdisciplinary, problem centered, and integrative. A major teaching objective of the course was to view complex issues from the multiple paradigms represented by the four faculty members' disciplines: biology, psychology, education, and history. The initial course offering addressed three issues of contemporary interest: the global impact of HIV/AIDS, the measurement of intelligence and uses of intelligence tests, and the teaching of evolution in the United States. These three topics provided students with opportunities to address values and value systems, contextualize issues in national and global viewpoints, and to engage in multiple perspective discussions. Our course evaluation tool consisted of a writing portfolio, and students received a variety of writing assignments for each of the course topics. These were assembled into the portfolio, which also included a final reflective essay analyzing their experiences and learning throughout the term.

Upon completion of the semester, the team analyzed student feedback (including information provided in the reflective essay) to assess how well the course met its goals, and determined that a redesign was necessary due to a number of student concerns. Most notably, the course was perceived as addressing too many issues/perspectives in too short a period of time. Our students indicated a degree of discomfort with what they perceived as a lack of focus and coherence. In addition, the faculty members failed to explicitly connect learning experiences with a global focus by not requiring students to actively engage in the community beyond the classroom. Therefore, a redesign of the course sought to incorporate several new approaches with the specific goal of incorporating activities to promote a global focus and civic engagement.

Course Redesign One: HIV/AIDS, A Global Catastrophe

Goals and Activities

The major focus of the redesign was to limit the course to one topic, HIV/AIDS, while still utilizing multiple disciplinary perspectives. It was also a goal to increase students' engagement in the material with a variety of creative activities and assignments. For example, a poster project/conference required a global perspective on HIV/AIDS, and a weeklong discussion of the book *28 stories of AIDS in Africa* (Nolen, 2007) allowed for the course to be set in a geographical context. As students enrolled in the course discussed the book, they also partnered with art students who produced artwork that reflected their interpretation of the characters or situations in one of Nolen's *28 stories*. The book activity culminated with a reception uniting the HIV/AIDS course students and the art students and their works. At the reception, students from both courses shared their analyses of, and emotions related to, a particular story.

It also was imperative that the HIV/AIDS course include meaningful activities to promote civic engagement. Thus, planned activities included a number of ways with which students could engage with individuals in the community. For example, one course requirement involved students going into the community and interviewing an individual who had experience with HIV/AIDS. The definition of "experience" included: infection with the virus, informal caregiving for someone who was ill, professional health-care for patients with HIV/AIDS, counseling those with the virus, researching the illness or its effects, as well as a variety of other possibilities. Students worked on a series of questions to guide the interview process and followed up on their interviews with a reflective paper and a presentation to their classmates about what was learned during the interview process.

As a final activity in the course, students participated in campus events held in recognition of World AIDS Day. In this experience, they engaged with both campus and community members and had the opportunity to apply and share learned content knowledge about HIV/AIDS. All assignments and activities in the course were designed and assigned within the LEAP outcomes framework (see Table 1).

In summary, the second iteration of the course remained interdisciplinary, yet focused on the global nature of HIV/AIDS. Additionally, the course was refocused less on traditional extant knowledge and more on complex ongoing issues with global, regional, and local implications.

Assessments

Following the first course revision (HIV/AIDS: A Global Catastrophe), student learning was assessed using a two-pronged approach. Assessment tools included the SENCER SALG—Student Assessment of Learning Gains and a brief survey of content knowledge on HIV/AIDS. The SALG (http://www.sencer.net/assessment/sencersalg.cfm) is composed of 51 questions in four categories; scientific content, understanding the nature of science, self-efficacy, and classroom environment. Sample questions from the SALG "nature of science" component are included in Table 2. Content knowledge was assessed by surveying post-class comparisons of students enrolled in the HIV/AIDS interdisciplinary course and students enrolled in other undergraduate courses. While data indicated a significant improvement in content knowledge (see Table 3) and self-efficacy, particularly in the area of content and science process skills (see Figure 1), the team sought to further improve civic engagement and global learning by requiring participation in the civic sphere through community engagement and course activity design. The type of participation we desired "entails a deeper understanding of the obligations and opportunities for substantial, prolonged engagement … with like-minded citizens in concerted, specific activities" (Harward, 2014, p.17).

Current Course Design: HIV/AIDS: Science and Culture

The current iteration of the HIV/AIDS course is titled "HIV/AIDS: Science and Culture". As new strategies have developed in the medical and social communities to address the pandemic, the new title more accurately reflects the current focus of the course. In order to promote participation in civic engagement among students, more of the learning responsibility has been transferred to students. For example, students engage in teaching community members about HIV/AIDS topics in environments where their knowledge may be aggressively challenged by those community audiences.

Other activities designed to promote both civic engagement and participation vary from semester to semester, but one longstanding course requirement has students plan and staff World AIDS Day activities on campus, including:

- HIV testing (with the assistance of local health departments)
- Condom distribution
- Beads for Life® sales (proceeds to benefit Ugandan women)
- Public health presentations on various aspects of HIV/AIDS

Students are also encouraged to interact with local social service and health care providers, including a regional AIDS group, Planned Parenthood, city health departments, the state department of health, and the Red Cross. The class also plans an annual fund raiser, The Red Party, to benefit a local personal hygiene pantry for HIV positive individuals. Class members continue to conduct interviews with members of the HIV/AIDS community.

During the past two semesters, the course textbook has been *The Wisdom of Whores* (Pisani, 2008). This thought-provoking book examines HIV/AIDS in Indonesia and beyond (SE Asia region) and critiques the approach of bureaucrats and politicians in light of the reality of daily living, HIV/AIDS, and the commercial sex trade. The book challenges students to think about controversial topics (sex, drugs, gender, religion, crime) from cultural perspectives typically different from their own.

The HIV/AIDS course assessment centerpiece continues to be the writing portfolio, which is assembled by students at the end of the semester. The portfolio contains all graded work and includes a reflective essay on course components, as well as a reflection on each student's metacognitive progress as a global learner. It is also noteworthy that the current iteration of the HIVAIDS course addresses all six areas of curriculum design outlined in the VALUE global learning rubric (see Table 4) through a broad range of course activities and assessments.

Most recent student feedback through course evaluation reveals that students sense a greater self-awareness concerning their place and role in the global community. From the reflective essay, instructors have learned that, prior to the course experience, most of the students never thought of HIV/AIDS much, if at all. They now have a new perspective on the disease as well as its impact on society, both in the U.S. and abroad. Through the course experience, students have been motivated to question their own assumptions and previous knowledge of other cultures and cultural practices. Although issues are explored within the classroom and local community setting, upon completion of the course, anecdotal evidence and the reflective essays indicate that students see themselves as concerned citizens of the global community. Many of them indicate a commitment to educating others on the pandemic as opportunities arise.

Genocides

The Genocides class grew out of the first interdisciplinary course experience, and, like the HIV/AIDS class, it shares the same goals of encouraging civic engagement and a global sense of awareness in students. And, because global issues are often complicated and difficult to solve, another common goal was to have students grapple with difficult issues where resolution may not occur for decades, if ever. Understanding the complexities of genocide are necessary before effective solutions can be proposed. Students were encouraged to gain a deeper understanding of the underpinnings of issues associated with genocide throughout the semester.

The initial inspiration for this course was seeing how a course on the Holocaust benefited from a single lecture/discussion on the social psychological mechanisms that contributed to Hitler's rise to power and subsequent ability to change the course of world history. That experience started a train of thought. Current college students typically come to college having studied the Holocaust in high school, but their knowledge about related events is often very limited. In addition, while students often have knowledge of the horrors of the Holocaust, they often lack even rudimentary knowledge about the context that surrounded the events of WWII or a deeper understanding of the context in which the Holocaust occurred (Fox & Heaphy, 2013). It was an easy leap to work on the design of a course that examined the complex and value-laden topic of genocide from both a historical and psychological perspective.

The interest in a genocide class began with an interest in expanding students' knowledge of what genocide is (and what it is not). Beyond that, however, the goal was to place a number of different genocidal events in their particular historical context, which included knowledge of world governing bodies, strategic alliances, political events, and the psychological context that allows various genocidal conflicts to take root and flourish. In many ways, the class was structured with the belief that students could better work for justice, equality, and freedom in their lives if they had an understanding of the complicated forces that underpin injustice, inequality, and oppression. If students want a better world, they will need to understand conflict and be responsive to it.

Course Design - Foundations

While it was tempting to develop a syllabus that hopped from one genocide to the next, instead, the class was structured to develop in a somewhat more organic way. From the instructors' perspective, there were certain issues that had to be addressed early in the semester, in order to provide a framework on which to build an understanding of genocidal acts. These topics began with an exploration of the definition of genocide - for while the word is overused to describe many large-scale slaughters of human beings, the legal definition is grounded in the *Convention on the Prevention and Punishment of the Crime of Genocide* document adopted by the United Nations General Assembly in 1948 (United Nations General Assembly, 1948). Such documents are always a product of their time and place, which leaves the door open for vibrant discussions of whether what was intended in 1948 is applicable to the 21st century and beyond. Such discussions included the possible need for definitional changes and new technologies in the years since the original document was crafted (note: a description of the course mechanics can be found in Fox & Heaphy, 2013).

Other foundational exercises included an exploration of the *Universal Declaration of Human Rights* (United Nations, 2009) and examination of different ethical frameworks to explore whether committing genocide is ever a morally defensible position. Both of these exercises were useful to students, many of whom maintain the ethnocentric position that the position of the United States holds on individual rights is both the correct one and the one against which all other countries compare their own records. It was also enlightening to students to examine genocide through the lens of different ethical frameworks. Again, it is tempting for students to take the unambiguous position that all killing is wrong. It is difficult for them to move in the direction of a more nuanced understanding of the positions taken by those involved in genocidal conflicts, but these exercises were helpful in that regard.

The final brick in the foundation of the class was the perspective brought by an understanding of social psychological concepts and how such concepts can often be seen in the ways that genocidal conflicts begin and are maintained. There are a number of concepts addressed, but, in the beginning, the most important belief to instill in students was that perpetrators of genocide are often perceived as typical individuals in their culture e.g. "normal." The belief that such people must be evil or mentally unhinged is a powerful one. Introducing students to the idea that sometimes the situation is more powerful than the individual is a difficult concept for students to fully grasp. It involves students grappling with the possibility that perhaps they themselves, in the right (or wrong) situation, could find themselves participating in horrific events. Other psychological topics covered in class that were helpful included in-group/out-group dynamics, authoritarianism, prejudice, stereotyping and discrimination, conformity, competition, and the assumption that hatred is required for perpetuating genocide.

The historical and political underpinnings of different genocides were explored to accentuate the unique events that precipitated the horrors that followed. There was also a continuing focus on what psychological strat-

egies are used by those fomenting unrest to incite people to turn against each other, as well as the state of psychological "readiness" in people that allows them to be incited in such directions.

Course Development

Once the foundation of the class was in place, students were free to explore different issues, including genocidal events in the news and historical genocides in which they had a particular interest. This exploration was aided by an assignment involving student pairs familiarizing themselves with the details of a historical genocide of their choosing and then leading the class in a discussion. Essentially, each student was able to teach the rest of the class what they had learned through their research on a specific genocide. Since part of the assignment required them to prepare to lead a discussion for a thirty-minute period, the preparation for this assignment went beyond the superficial. It also allowed for robust class discussions where the class was able to make connections between foundational materials and both the particular genocide under examination, as well as conflicts that had been presented previously.

Perhaps the most helpful, and also most challenging, part of the course was that there are no definite conclusions to be found in this subject matter. Wrestling with the topic helped students to realize for themselves that the subject is difficult and painful. It also led to their realization that sometimes awful things happen for no good reason, sometimes awful things happen for some reasons that are perceived by the perpetrators as worthwhile, and sometimes, even when awful things happen, there are limits to what can be accomplished by outsiders wanting to intervene but having limited powers. Nonetheless, just because there may be limits to intervention does not mean that the interventions that do exist are of no value. This type of learning is difficult, both in terms of subject matter, and also because many students are more used to stories of heroic interventions and happy endings. Most genocides have neither. It is a struggle to continue to work with material that is often horrific.

The specifics of the structure of the course were deliberately arranged in such a way that they served as the scaffold on which the capstone assignment of the course was built. This capstone was designed to do two things. First, because the topic of genocides can seem so unrelievedly grim, the capstone was designed to help leaven feelings of hopelessness by having students use available tools to address the issue of genocide. Second, encouraging in students a sense of civic engagement in this class proved to be a challenge. In order to push them closer to the real-world, students were required to write a policy paper regarding some aspect of genocide for presentation to the UN Security Council. The topic was up to the students (who worked in pairs), although many of the resultant policy papers dealt with updating the language of the 1948 policy document (United Nations General Assembly, 1948).

The policy paper's requirements were detailed but could be summarized in two main parts. First, a 12-14 page, well-researched paper, with an additional executive summary and full documentation was required. Second, that paper served as the foundation for the actual UN-style presentation to the rest of the class, where each individual class member played the role of a UN-affiliated country. Presenters had to make the case for their recommendation. This involved providing some background for their request, explaining the logical analysis that led to their request, explaining alternative solutions that were considered, and, finally persuasively detailing why their proposal was worth consideration by the Security Council.

Even with the assignments leading up to the capstone, students struggled with this particular assignment. The struggle began with choosing an appropriate topic and continued through the stages of researching the topic and building a persuasive case for their UN address. Ultimately, however, the presentations included detailed proposals for changes, such as to the definition of genocide or the punishment of those involved in genocide, and including solid reasoning regarding why such changes would be beneficial. In addition, the UN "members" of the class were quite well-prepared with questions and comments about the proposals that spoke to very real concerns that various nations might have should these proposals be approved.

To make the UN scenario more realistic, once the proposals were finished and the UN member countries had asked questions, each proposal was voted on. If a proposal was voted down, detailed feedback about what would make the proposal acceptable was provided by class members after the proposal had been presented. Feedback had to include constructive suggestions revolving around course content. Students providing feedback were able to demonstrate their mastery of course material in a variety of ways, including their increased sophistication about topics such as the definition of genocide and the mechanics of the United Nations. They also demonstrated knowledge gained in understanding political relationships between countries and within a given country. For example, financial self-interest might trump a country's willingness to intervene in another country's emerging genocide. Proposals which received a lukewarm reception were also given feedback on how to change the proposal to garner a more enthusiastic reception if presented again. For example, one proposal suggested an educational campaign directed towards increasing knowledge about the topic of genocide. One of the suggestions to strengthen that proposal involved making explicit the criteria for selecting the educational materials to be used.

Assessment and Redesign

This initial offering of the Genocides class received positive feedback from the students on their course evaluations and in other, less formal, venues. All Genocides course activities fall within the framework of the VALUE rubric on Global Learning (see Table 5). From an instructor point-of-view, the class was successful, but incomplete. The biggest missing piece was an assignment that required civic engagement in a way that was appropriate both for students and for this topic. The most recent Genocides course incorporated an assignment designed specifically to encourage civic engagement and thinking about the issue of genocides in a way that transcends the classroom. Students designed a project that allowed them to make a difference in the world with regard to the topic of Genocide. The goal was to encourage in students the realization that they have the ability to take small steps. The choice of project and the choice of implementation were up to the students. Interestingly, the most recent semester's class chose to work as a whole to create an educational experience on the topic of genocides for their campus. Educational presentations on a number of genocides, complete with short geography and history lessons, along with details of the genocides themselves, were planned and implemented. Brochures with additional information, as well as flyers and posters, were designed to advertise the event (a 1-day event prior to finals week), and all class members were involved with researching, designing, and scheduling the day's events. T-shirts were also designed, ordered, and were sold in the campus center on several days with the expectation that funds were designated to benefit the organization Doctors without Borders. This organization was chosen because affiliated individuals go into countries that are experiencing genocide and provide healthcare to afflicted populations. It is also an organization that is sometimes one of the only allowed into countries riven by conflict. The initial modest goal was to raise $500.00.

Following the project's conclusion, the class summarized what they did, how it worked, and what they would do differently in the future with a similar project. In addition, each individual student summarized their analysis of the success of the project, their enjoyment of it, and the amount of effort they contributed to the end result. Preparations for the event were enthusiastic, and all signs pointed to a successful educational experience and fund-raising event. Funds in the amount of $822.00 were donated to Doctors Without Borders. More importantly, students were clearly interested in helping with the issue of genocides, even in ways that seem small. But, without small steps there are no big changes. Perhaps the two best lessons that students learned in this class are that they can make a difference - and that making a difference can begin in ways that are manageable for individuals. Not all activism requires an immense budget or time commitment.

Conclusions

While it is difficult to approximate the real-world in a classroom setting, that is the first step towards moving students out of a parochial way of viewing the world into a viewpoint that is more global and sophisticated. In order to encourage this transformation in worldview, classes can be designed to be more student-directed, with as many current examples as possible woven into the material and the assignments. In addition, it seems prudent to take an approach that scaffolds learning objectives, so that each step is a building block onto which additional steps can be leveraged. And while the scaffold approach is more overt in the Genocides course design, the HIV/AIDS course builds from an initial point of instructor directed learning and limited community engagement to eventual student directed learning and community immersion.

While the content of the two courses, HIV/AIDS and Genocides, described here are quite different, the objectives and process are similar. Both classes took difficult material about which students generally knew little and built a curriculum that gradually introduced extant knowledge, beliefs, and multiple perspectives to create a classroom that brought far-reaching world issues into classrooms at the campus. While both courses continue to evolve, the goal of making students conversant with global events remains focused on civic engagement and global citizenry.

The evolution of these courses continues to revolve around the philosophy that interdisciplinary courses can add to students' understanding diverse worldviews, even when those students are place-bound. Changes to the curriculum are made with the goal of greater student engagement in the material and more civic engagement in the world around them. One of the remaining issues in both classes concerns meaningful assessment of student learning. The HIV/AIDS class has used a variety of assessment tools, while the Genocides class initially relied on formal student evaluations and informal student comments. Going forward, both classes are likely to benefit from continued assessments that examine both mastery of course content coupled with ongoing attention to assessing the student experience and their perceived evolution into more engaged citizens of the world. Assessing experience and transformation are more difficult to do, but they will enable a better sense of whether these courses are worthwhile beyond what college courses offer more generally.

The journey has been both challenging and rewarding. Of the faculty involved in these projects, none were formally prepared to collaborate with peers in different disciplines. Nonetheless, it has been invigorating to develop classes that draw on both individual disciplinary expertise and the ability to see the connections between disciplines in a variety of domains. While work continues to improve both classes in terms of student learning, the ongoing learning of the involved faculty is certainly rewarding on a personal level.

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LEAP Outcomes	Targeted Course Activities
Knowledge of human cultures and the natural world	• Poster project-HIV/AIDS outside of the US • Summary and analysis of primary medical literature on HIV/AIDS
Written and oral communication/ team work	• Poster project- HIV/AIDS outside of the US • *28 Stories* analysis-collaboration with Art students • Course portfolio
Personal and social responsibility through involvement with diverse communities	• *28 stories* project: interactions with art students. • World AIDS Day activities on and off campus.
Integrative and applied learning experiences	• Participation in World AIDS Day Activities • Interview Project including class presentation and reflective essay.

Table 1- *LEAP outcomes and course activities: HIV/AIDS: A Global Catastrophe*

How **confident** are you about your ability to do the following tasks **now**?	***Scale**			
Using the scientific method to solve problems	1	2	3	4
Writing papers	1	2	3	4
Designing research experiments	1	2	3	4
Finding trends in data	1	2	3	4
Critically reviewing articles	1	2	3	4
Working effectively with others	1	2	3	4
Giving oral presentations	1	2	3	4
Using evidence (data) to support your own positions	1	2	3	4
Analyzing others' positions and policies	1	2	3	4

*Scoring scale: *1 = Not at all / A little, 2 = Somewhat, 3 = A lot, 4 = A great deal*

Table 2 - *Sample SALG Questions on the Nature of Science*

Content Statement	HIV/AIDS course	Others
HIV can be transmitted by mosquitoes	4.68*	3.27
HIV can be transmitting by kissing and other casual contact	4.53*	3.89
HIV testing is inexpensive and the results are quickly available	1.95*	3.07
HIV testing can be done anonymously (no name associated with the sample)	1.32*	2.38
Available drugs can cure HIV infection	4.89*	4.25
Someone who is HIV positive always has AIDS	4.89*	3.94
Abstinence only sex education programs are the best way to prevent the spread of the virus.	4.42*	2.92

Notes. Rating Scale**: 1** Strongly agree, **2** Agree, **3** Don't know, 4 Disagree,**5** Strongly disagree.
*p <.01

Table 3- *Content Survey: HIV/AIDS: A Global Catastrophe*

Global Learning VALUE Rubric	Course Activities
Global Self Awareness	• Wisdom of Whores readings and discussion
Perspective Taking	• Wisdom of Whores readings and discussion • World AIDS Day activities • Public health presentation on HIV/AIDS
Cultural Diversity	• Wisdom of Whores readings and discussion • HIV/AIDS in film review
Personal and Social Responsibility	• HIV testing • Red Party Planning • Community fund raising
Understanding Global Systems	• "Beads for Life" Sales
Applying knowledge/Global Context	• Local social service and government agency interactions • Community interviews

Table 4- *VALUE global learning rubric and associated course activities: HIV/AIDS: Science and Culture*

LEAP Outcomes	Targeted Course Activities
Knowledge of human cultures and the natural world	• Book review projects on a variety of world genocides
Written and oral communication/team work	• UN presentation to class • Book review presentation
Personal and social responsibility through involvement with diverse communities	• Campus-wide presentations on genocide* • Fundraiser for "Doctors without Borders"*
Integrative and applied learning experiences	• Participation in campus presentations on genocide • UN projects and presentations • In-class assignments, including one re: ethics involving guest presenter

Note. *denotes activities added to the Genocides course revision to better incorporate civic engagement

Table 5- *LEAP outcomes and Genocides course*

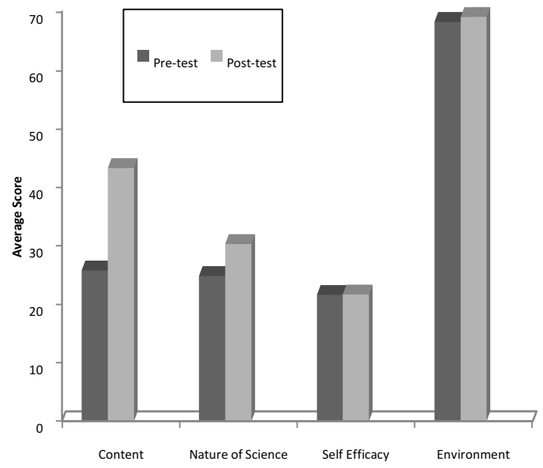

Figure 1. Pre and Post-test administration of the Student Assessment of Learning Gains (SALG) showing a significant increase in content and nature of science knowledge. Each category contains a different maximum point value, Content- 56, NOS-36, Self Efficacy-24, Environment-92. For Content and the Nature of Science, pre and post scores were significant at the p<0.01 level (two-tailed).

Tensions and Issues in Selecting a Book for a University Common Book Program

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Abstract

In this qualitative study, we outline the process through which a book was selected for a university common reading program. By observing committee meetings and interviewing committee members, we identified five issues and tensions that arose when selecting a book: academic rigor vs. student engagement; increasing student involvement in the process; issues of power on the committee; picking the selection criteria; and actually using the selection criteria to select the book finalists. Based on the findings of our study, we make recommendations for common book program selection committees and suggestions for future researchers who are investigating common book programs.

Keywords

common book, common reading, freshman reading, higher education and literacy, post-secondary literacy

What is a Common Book Program?

Common book programs (also called freshmen reading programs or common reading programs) ask incoming first-year college or university students to read the same book. While goals for post-secondary common book programs vary, such programs generally strive to gain "social cohesion and academic accomplishment by engaging incoming students in the reading of a single text" (Moser, 2010, p. 90). Most common book programs have a similar implementation process (Ferguson, 2006; Grenier, 2007). Prior to students arriving on campus, a committee selects a common book for all freshmen students to read. During orientation, there are usually a number of activities related to the book such as small group discussions, seminars, lectures, and visits to library. Often the culminating event of the program is a campus visit and lecture by the author of the book. In other institutions, there are additional culminating activities, such as a student anthology of writing (Moser, 2010) and a common book conference (Straus & Daley, 2002). Ferguson (2006) also reports that in some institutions, the common book program extends past orientation activities and is integrated into first-year classes, creating an integrated and interdisciplinary approach to learning.

Selecting a Common Book at Nipissing University

In 2010, Nipissing University, in Ontario, Canada, piloted a common book program with all first-year students entering the Faculty of Applied and Professional Studies reading the award-winning Canadian novel, *Three Day Road* by Joseph Boyden. There were two objectives for the program: to foster a sense of community and belonging through a common academic experience, and to introduce new students to the level of critical thinking, literacy and analysis necessary in a university environment. Because this was the first year of the program and the program needed to get up and running quickly, the faculty program coordinator and the Dean of Applied and Professional Schools selected the book. In the second year, a book selection committee was formed comprised of faculty, staff, and students interested in the continuation of the program. The committee members nominated the books, then read and discussed all nominations. Ultimately, the committee chose *The Immortal Life of Henrietta Lacks*, by Rebecca Skloot. In the third year, the program was expanded to include first-year students in the Faculty of Arts and Science and input from the campus community was solicited through a university-wide call for nominations. A selection committee short-listed the most frequently nominated books, then read, discussed, and voted on a book. *Feed*, by M. T. Anderson was selected for the program.

In an effort to make the book selection process even more democratic, a university-wide call for nominations was sent out again for the fourth year of the program. All nominated book titles were then brought to the committee, comprised of an administrator, staff who work daily with students, faculty members, and students. After two meetings to review nominations and discuss criteria for book selection, the committee whittled the choices to three: *The Fault in Our Stars*, by John Green; *Speaking My Truth: Reflections on Reconciliation & Residential Schools*, edited by Shelagh Rogers, Mike DeGagne, and Jonathan Dewar; and *World War Z*, by Max Brooks. The entire campus community voted on these top three books using an online survey. In total, 247 votes were cast (117 by students, 70 by staff, and 60 by faculty). *Speaking My Truth* received 152, *World War Z*, 71, and *The Fault in Our Stars,* 24 votes. *Speaking My Truth* was thus selected for Nipissing's common book for 2013 (see Table 1 for a breakdown of the voting results, and Figure 1 for a summary of the selection process).

Purpose of the Research

The book selection process at Nipissing has evolved over the four years of the common book program. Our study took place during the fourth year of the program, in which an attempt was made to make the process as democratic as possible. There is no research literature that investigates how a common book is selected in a post-secondary institution, a surprising lack for such a valued and costly program that has been adopted by colleges and universities across Canada and the United States. Nadelson and Nadelson (2012) and Moser (2010) outline the evolution of the program and the book selection process at their respective institutions, but do not collect any data about the process. However, Nadelson and Nadelson note, "the process by which differences in ideas for book selection are resolved or influence the selection of a common read is an excellent direction for research" (p. 64); we have taken up their call. The research question guiding our study is: what tensions and issues arose when selecting a common book at Nipissing University?

Research on Book Selection for Common Book Programs

Picking the right book is perhaps the most important decision for a common book program. If the book does not appeal to students, it is unlikely that they will read it. In our previous research (Ferguson, Brown, & Piper, 2014; 2105), we found that students need to read the book for the program to have an impact. Our results indicated that students who read the common book felt a greater sense of community by participating in common book events (Ferguson, Brown, & Piper, 2015) and those who read the book felt more positive about the program (Ferguson, Brown, & Piper, 2014). More-

over, book length and difficulty appear to have a significant impact on student satisfaction with common book programs. Stone, Higginson, and Liljequest (2004) report that student satisfaction with the common book program was negatively correlated to book length and reading difficulty. Further research in 2009 by Liljequest and Stone show that over the four years of the common book program at Murray State University, student satisfaction was the highest in the year the book was easiest and shortest.

Who chooses the common book varies by institution. In some cases, the university president selects the book, in others the book is selected by a committee, and in still others, there is a campus-wide vote (Moser, 2010; Nadelson & Nadelson, 2012; Straus & Daley, 2002). A number of institutions have guidelines for the selection of the common book (e.g. Queens Reads, 2014; Straus & Daley, 2002). Grenier (2007) surveyed colleges and universities about book selection for common book programs in the United States to see what books were being used and what the criteria were for selecting the books. He found the most frequently cited criteria for book selection were that the book must be readable, engaging, short (less than 300 pages), and inexpensive; stimulate discussion; and have an author who is available to visit the campus. Grenier (2007) also reports that there were few book titles that repeated among the 81 institutions, thus indicating a "healthy degree of institutional independence and academic freedom" (p. 78). However, selecting a common book can be difficult for institutions. Although the chosen book should stimulate discussion, there is a fine line between a non-offensive book and a boring one (Dempsey, 2009). Controversial book selections may even lead to the possible discontinuation of the program (Weise, 2009). Some institutions are also choosing to select different kinds of texts. For instance, Buffalo State College has opted to use a multi-media CD-ROM containing written text, visual images, and music for their common reading program (Sanger, Ramsey, & Merberg, 2008).

Picking one book that will please everyone is virtually impossible and common book programs have been widely criticized for their book selections. Most recently, common book programs have been heavily criticized by the National Association of Scholars (Thorne, Wood, Plum, & Carter, 2013), who state that they too often select current books rather than classics, books with overt political themes, and, following the crowd, books that other institutions are selecting (a different finding than Grenier, 2007). But the case against poor book selection by common book programs has been made for years. For example, Kean (2007) argues that common book programs in the United States are driven by student affairs programs rather than academic units and this may result in picking "lightweight books" to engage students rather than more scholarly texts. Kean (2007) also raises the issue of the popular common book event of author visits and how this event is often mandatory in selecting the book for the program. He argues that, as a result, many texts, such as classics, will never be selected for the program. The *New York Times* noted that classics "are largely absent [from Common Book programs], with most of the works chosen falling closer to Oprah than academic" (Lewin, 2007). Like the National Association of Scholars (Thorne et al., 2013), Lewin (2007), states that a "canon" of common books is emerging: "books that are readable, short, engaging, cheap. Often it helps if the book is a best seller dealing with some aspect of diversity, some multicultural encounter—and if the author will come to speak on campus" (p. B9). Publishing companies have realized that common book programs are big business. For instance, Random House has created a blog and Facebook site "dedicated to bringing you the latest in adoption news, program information, and resources related to common reading programs at high schools, universities, and within communities" (Random House, n.d.).

Methodology

Since we wanted to follow the process of book selection in a common book program and gain insights into the perceptions and reflections of the members of the selection committee, qualitative research methods were appropriate (Bogdan & Biklen, 1998; Lewin, 2007). We carried out our study in 2013, the year in which *Speaking My Truth* was ultimately selected. That year the selection committee consisted of two students, one administrator, four faculty members, two staff members, and the program coordinator (a faculty member and the third author of this paper), who chaired the committee and was a nonvoting member. The two book selection committee meetings were audio-recorded and the researchers observed and took notes at the meetings. Observations allowed the researchers to "understand the culture setting, or social phenomenon being studied from the perspectives of the participants" (Hatch, 2002, p. 72). After the book was selected, committee members were emailed and asked to participate in face-to-face interviews with the researchers on the book selection process. These interviews enabled each person on the committee to reflect on the book selection process and allowed us to collect rich data about the attitudes and experiences of the participants (Bogdan & Biklen, 1998; Gay & Airasian, 2000). Every member of the book selection committee agreed to participate in an interview (N = 10). Interviews were audiotaped and later transcribed. The observations at the committee meetings served as a useful source of background information for us as researchers. The interviews, however, provided us with the primary data to answer our research question: What tensions or issues arose when selecting a common book at Nipissing University?

Data Analysis

Data analysis was carried out inductively based on themes that emerged from the data. Data from interview transcripts were sorted by interview question. Each of the three researchers independently read the compiled data sorted by interview questions as well as the transcriptions of the committee meetings, and then identified themes and patterns that emerged (Bogdan & Biklen, 1998). We then discussed these patterns and themes as a group and agreed on five overall themes. Having multiple researchers explore the data and come to a consensus helps to increase the reliability of the data analysis (Patton, 1990). Data were then grouped together by theme.

Results

We identified five main issues and tensions that arose when Nipissing University selected a common book for 2014: academic rigor vs. student engagement; increasing student involvement in the selection process; issues of power on the committee; picking the selection criteria; and actually using the selection criteria.

Academic Rigor vs. Student Engagement

Throughout the book selection process there were tensions between choosing a book that was felt to be at a university level and a book that would engage students. The chair of the committee summed up this debate: "some staff and students wanted a book that was accessible to students, some staff and faculty wanted a book that resonated with them, and some faculty and administrative representatives wanted a "serious" book." One student member explained that she had thought the book selection would focus on "a book based on its readability". She thought that the committee would focus on "getting people interested in it [the common book]" and select a book with "an engaging topic, and an approachable writing style I guess so not too academic." A staff member explained her disappointment with the lack of concern for student engagement: "everyone has a different relationship to the student, whether you are a student or work in a capacity like me, or are directly teaching them. Everyone has a different relationship to the students, but I really thought that the word 'student' was going to be used a lot more in [building] trust and engagement." The fact that student engagement was not at the forefront of the book selection process concerned one staff member and she felt that the process did not fit within the university's mandate of focusing on the student experience: "the biggest thing for me in terms of suggestions would be keeping the students in mind over everything. Marketing is all like 'students are number one; students are satisfied' and I don't think that was at the forefront of this selection." For the students and staff, engagement and quality were not viewed as being mutually exclusive. According to one of the students, "Good writing doesn't have to be at a high level with all that jargon."

Faculty members, however, wanted a book with a serious topic that would challenge the students intellectually; for instance, as one faculty member stated, "I came in with the criteria that it had to be at a certain level. So that was one I wasn't willing to budge on. I was more willing to compromise on other things." For faculty, book theme and difficulty trumped readability: "I wanted a book that I thought was just a lot more academic. Some of the rationale they gave me that it would be too hard to read; I went, 'really'? Then why are they going to university?'" Another faculty member stated that the topic of Canadian Indian residential schools "should just be taught and it should be taught to everyone, in every discipline." One faculty member even admitted to not even having read the book but picking it based on topic alone: "I didn't read the Indian Residential Schools book; I just picked that because I loved the topic." This faculty member went on to state that students would likely feel "duty bound to read it."

There was an underlying tension about who the program was trying to engage—the faculty or the students? If faculty did not "buy in" to the book then they would not be likely to use the book in their courses and the program would not work. But if the students did not read the book, the program would not work either. This tension was well explained by the administrator on the committee:

> At the end of the day it is for the students, but it is also for the faculty, especially those first-year faculty; if they don't like it, they [the books] don't get there [into the classrooms]. I think this year was interesting because the student view was actually quite different than what the faculty view would be . . .I heard a lot of language, 'well I can't teach a zombie book", or "I can teach this but I can't teach that" as opposed to taking that other perspective: but if I was a student, what would engage me? I think trying to make an academic open to a variety of books [is a challenge]. Some can't get outside of their discipline even.

Increasing Student Involvement in the Process

Despite the tension between academic rigor and student engagement, the committee generally felt that increasing student engagement would benefit the program. One faculty member was curious to know how many students actually voted and felt the need to further engage the student population in the voting process. Both staff members felt that the students did not generally participate in voting and that if more students had voted, then a different book might have been chosen. One staff member stated that students needed to be aware and engaged in the voting for the process to be truly democratic:

> When the voting came out it was getting before exam time, all the emails were sent to [university] email addresses, and not many of them are checking them because it's exam time . . . That sort of ends democracy right there.

The issue of having more students on the committee was also raised in the interviews. One staff member was willing give up her seat in order to have more students' voices on the committee:

> Because we are [a] overly student-focused [university], making sure that [the student voice] has a more dominant role in what is going on in the committee, I think even at the expense of me being able to be on the committee... having another student rather than another faculty I think is more relevant, and I think you would get a better pulse of what they are interested in that way.

One of the four faculty members felt that more student representation on the committee would be a benefit. This faculty member had been pleasantly surprised with the book selected in the previous year:

> *Feed* came out of the students last year. . . I'm so glad we did it in the end because when we did the Skype-in of the author, it was an amazing experience. Wow, it was so worth it. The book is interesting, provoking as well. So it was just not my favorite choice in the beginning. But still lots of people voted on that one, and it turned out to be 'rock on', you know? It surprised us; so the lesson I am learning is why not more student input and see where that takes us? We might be surprised and in a good way.

The student committee members also agreed that students should be more involved at the committee level. One student felt that the students on the committee should not just include those who enjoyed the program: "Even grab students who hate it and pull them in. Give them a chance to rant in front of the professors about it. We always seem to grab the people who are interested, right?" Staff members felt that the students should feel a sense of ownership over the program; otherwise, the book becomes just another required course reading: "They don't have a say what their reading lists for classes will be; they don't have a say in that. This is one opportunity where they do have a say in what they could be reading."

Another suggestion given by staff members and students to increase student involvement in the program was to engage the students reading the current year's common book in selecting the common book for the subsequent year. It was also suggested that first-year students be surveyed or a focus group conducted to see if the program met their needs. Another faculty member suggested getting the student union involved to increase student engagement and help to entrench the program among the students.

Issues of Power on the Committee

The book selection committee was diverse and made up of an administrator, faculty, staff, and students. While our observations of the meetings indicated that they ran smoothly, interviews revealed that there were tensions regarding power on the committee. Staff members felt that they had little voice or value on the committee. One of the staff members felt uncomfortable and believed that the fact that she worked with the students did not matter:

> I just kind of felt like a fish out of water in some sense, like I didn't belong there. Like I am the one who works with students one on one, with students on a regular basis, they tell me what they think of things. They are not going to go up to a professor who holds their grades in their hands and say 'no, I don't like that book', because, ethically, a professor won't grade you differently, but sometimes they will.

The other staff member did not feel her voice had any value: "I didn't think that my perspective was necessary, not needed, but was going to hold any water." For staff members, it was intimidating speaking up during meetings. One staff member stated that she felt uneasy disagreeing with faculty: "being a young professional taking on a bunch of thirty-to-fifty- something professors, I didn't think that was something that I should be doing at that point of time. So [it was] kind of ominous." It was hard for the staff members to voice their opinions: "it definitely felt like I was walking on eggshells because I didn't know how to voice what I had to say. I didn't feel like it was an appropriate forum for that." The staff members had an overall sense of dissatisfaction with the process of the book selection. As one of the staff members explained, "There was no responsibility; I think [that] is what I came away with. I didn't feel like I had any responsibility at all. I was just there, got a free copy of the book to read. That's about it."

In contrast with the staff members, the students felt valued on the committee and expressed no concerns about issues of power. One student said,

> I felt like my voice was really heard when I went in, which was absolutely shocking because sometimes as a student you can get lost because people think you are just a student. So I felt totally valued as a member of the committee because they specifically asked, "What do you think about this?" Or, "What kind of evaluation criteria do you want for it?" I really felt that that was a strong point of the committee: they really valued every single member.

Interestingly, only one of the faculty members mentioned issues of power and it was in the context of the power professors had over students. This faculty member said that it could be a difficult setting for students

to voice their opinions, but felt that the students were comfortable. He went on to state that while the student voices on the committee were assertive this year, it might not always be the case, and could be a problem in the future. A staff member also brought up the same concern about picking students who were assertive enough to be on the committee: "it would be good to have students who are upper-year students who can handle themselves on a committee like that." To address this power imbalance, the faculty member who was concerned about students voicing their opinions suggested that a secret ballot to vote for the top books would be preferable over the raising of hands.

While only one faculty member raised the issue, the administrator on the committee was fully aware of the power imbalances. Reflecting on the committee meetings, the administrator stated, "If I were to do it again, I think I would be more passive." The administrator did not want an administrative voice to surpass any other committee members' voice. In fact, the administrator stated, "I wish they didn't listen to me."

Picking the Selection Criteria

The Common Book Coordinator decided to leave the selection criteria up to the committee to empower them while choosing the book and to allow for the possibility that new criteria might emerge, unencumbered by the criteria of previous years. By the end of their first meeting, the committee agreed on five specific selection criteria: relevance to current social issues; university-level language; potential access to author; availability of digital format; and applicability to a wide variety of disciplines. Interestingly, these criteria were identical to the criteria selected by committees in previous years. However, interviews with the committee members revealed that the lack of pre-set, selection guidelines made most committee members uneasy and even made them question the purpose of the program. One faculty member reflected on how this sense of uncertainty created tensions among the different members of the committee:

> I guess my one beef would be, what wasn't clear I think was what are we doing here. Like, what is the aim of this? [Knowing the answer to] This makes it a lot easier to choose the book. A lot of the students on the committee think it was just to get people to read, and it doesn't matter what. It could be a comic book, just that people are reading, and that is not how I was approaching it. Like, yes, that is part of it, but I am in [the] University, I presume people read . . . so I think that would [be] helpful to clarify [the goals of the program].

Staff and some students had a different interpretation of the program and, therefore, the book selection criteria. For instance, a student stated,

> I thought that it was going to be based a lot on getting students to read first and foremost, because working with new students coming in, giving them orientation to the University and hearing their experiences from high school, [I know] some of them haven't even read a book cover-to-cover yet.

One of the staff members wanted a formalized mandate and book selection criteria to match. The other staff member agreed, stating, "I think to do it again next year, I think there needs to be a lot more rigid criteria and have it be enforced a lot further."

One of the students, however, was pleased with how flexible the program and the criteria were, since the program was still evolving. He explained, "Everybody had different views and they were all good and we don't have a mission statement for our common book program, right? . . . this program is too young to commit to any idea, I think." When asked about setting formal criteria for book selection, this same student replied, "I think eventually it will develop. I don't think we need to force it yet." However, another student thought that if the criteria were decided upon beforehand, the nomination process would also improve. She said it would give "more direction to the people nominating books . . . and get a specific kind of book that may be better suited to students." The administrator on the committee agreed, stating that more time needs to be dedicated to nominating books and a set criterion could help with the nomination process. According to the administrator, "I think we should review the criteria every three years until we have the right ones."

Some committee members were looking beyond Nipissing University for validation for the books selected. For instance, one faculty member stated, "I was thinking that we were going to look at how [other] universities were choosing their books and what their lists were. So actually we could not only connect in a trans-disciplinary way, but also in a trans-university way." Instead of using an open nomination call, another faculty member suggested using finalists from the Canadian Broadcasting Corporation's Canada Reads contest or the Scotiabank Giller Prize (a Canadian literary award for fiction), while the administrator suggested perhaps looking at the *New York Times* best-sellers list as a way of vetting books.

Using the Selection Criteria

While there was consensus on the book selection criteria after the first meeting, in reflecting on the process during interviews, responses from committee members were mixed about whether or not the criteria were actually used in picking the top three books. According to one faculty member, "So when it came down to it, we could say, this doesn't suit the criteria that we all agreed on, because one of them was level of writing." Others felt that the criteria were simply tossed out and the top books were picked based on personal preference. When one of the staff members was asked if the selection criteria were used to pick the top books, her response was very blunt: "Not a chance in hell." Another staff member explained,

> I can't say we ever stacked any of the books against what we had deliberated as the criteria. I think it was thrown out in the end and it came down to what people liked. And I was guilty of that too . . . Because when you are sitting in a room of people talking about books...of course it is going to become a subjective process.

One of the students reflected that the whole process of using criteria to pick a book is flawed because reading is so subjective: "Nothing can meet that criteria because it comes from so many different views of what the program should be, and at best you can just get some that meets most of them."

There was a sense among committee members that much of the picking of the top three books came down to personal taste and what committee members were invested in. Faculty members in particular were very passionate in what books they liked and which ones they did not. For instance, in discussing the book *World War Z*, a faculty member stated, "I just finished it and hated it, I hated that book to my guts! I hated it . . . I would never read that book again and I would never recommend anyone to read that book." After reflecting upon the books nominated, another faculty member stated,

> The *Outliers* book, like I said to you, that is so far from academic and so…flawed in terms of methodological rigor, lack of logical argumentation. Like, how did that come to be nominated? So, I mean, that's what the committee is there for, to vet really crappy books? And I know he's really popular; I know the University is bringing him in to speak, so maybe that is just my opinion.

Another faculty member stated, "this year I'm all happy because my book won," but reflected that last year he did not like the book selected, although the experience with the common book program was still positive:

> It's confrontational with your own values because you invest yourself and you feel it is morally, ethically, the best book there is… to let that go, is sort of tough. You are feeling it's wrong—no! You're making a wrong decision! Of course, it's just fun right? In the end it's a book.

The administrator stated that for book selection, "at the end of the day, people just go back to what they like." This committee member went on to say that people may have motives for wanting a book selected, yet may be fearful of explicitly stating their reasoning and said that we need "more honesty about what we like or

don't like." The administrator explained that arguments such as, "the students would really like this" are used as a way for people to justify their personal tastes or to remain in a comfort zone.

Discussion

The issue of an academic text versus a text that might appeal to students was a major issue that arose during the book selection process. Faculty felt, as do Kean (2007), Lewin (2007), and Thorne et al. (2013), that the book should have significant scholarly merit. Students and staff, however, felt that student engagement should be at the forefront of text selection in a common book program, otherwise the book is simply another required course reading.

Despite the tension between student engagement and academic rigor, the committee generally felt that students should be more involved with the process of book selection both in terms of having greater student representation on the committee and encouraging students to vote for the book. Clearly with only 117 students voting at a university with a student population of approximately 5000, students are not engaged in the process of selecting the common book. Nadelson and Nadelson (2012) also note that a stronger student voice is needed in selection processes for common book programs and that there is little research that explores how student engagement is related to the book selection for common book programs. At their institution, Nadelson and Nadelson (2012) state that to increase student engagement, students are the ones who nominate the books. While this does empower students and increases student engagement, Nadelson and Nadelson (2012) note that increasing student involvement does have its downsides. Having students nominate the books creates a more cumbersome process and the selection committee is then limited to those nominations, some of which may not fit the mission of the program.

Staff felt intimidated to voice their opinions at the committee meetings while students did not. While there was a possible power imbalance on the committee, it seems paradoxical that the students were comfortable while the staff members felt it was "ominous." It is significant to note that one of the students was a fourth-year student and the other student was also an employee of the university. Also, both students had prior relationships with committee members that also played a role in their recruitment to the selection committee. It is possible that these two students were comfortable around faculty and administration while the two staff members from student services were not. Personality type may also play a role in comfort at committee meetings, with more vocal individuals feeling sufficiently secure to speak.

Some committee members liked the flexibility of selecting the criteria for the book selection process, indicating that it provided a sort of institutional academic freedom (Grenier, 2007) to select an appropriate book that was context-specific for an evolving program. Most committee members, however, wanted a fixed set of criteria that was linked to the mandate of the program, as other post-secondary institutions appear to have (e.g. Queens Reads, 2014; Straus & Daley, 2002). This committee felt that having stringent book selection criteria would increase the quality of the book nominations as well as give the program a specific purpose. Despite this desire to have stricter criteria, the issue of academic rigor versus student engagement seemed to polarize faculty, staff, and students and push them into picking what they liked, felt to be appropriate, or thought would be useful in their courses, rather than using the criteria. Most committee members were forthcoming in admitting that in the end, they picked the book they liked or the book that would suit their needs.

Limitations

Our study is limited in that the research took place in one institution and the results are indicative of the characteristics of our university. The way common book programs are implemented and the purposes of the programs vary from institution to institution. Nipissing University's common book model is different from the majority of common reading programs as the book is integrated into first-year courses as opposed to the more popular common book model of using the common book in orientation activities (Ferguson, 2007; Grenier, 2007). The composition of the book selection committee at Nipissing also changes yearly and it is likely that different personalities and representation from different groups could produce different results if a similar study on the book selection process were conducted in the future. The books nominated every year are also different. The conversations at committee meetings and the dynamics among individuals could be drastically different from year to year, based on the nominated books.

Practical Implications

Without overgeneralizing, our research at Nipissing provides us with a number of lessons learned that might be helpful for other institutions when selecting a book for a common reading program. First, students need to be more involved throughout the process. We recommend that first-year students who have just experienced the program be consulted about ways to engage students in the program, particularly in encouraging students to vote for the final book. We also feel that there needs to be more student representation on the book selection committee, including first-year students who bring a voice that can represent students who have actually experienced the common book program. In order to address issues of power on the committee, we feel that a secret ballot would be the most appropriate way to conduct voting in the committee meetings. In addition, if the student representatives on the selection committee are nominated or elected by the student body, they may feel more empowered. Staff members with some seniority who interact frequently with both students and faculty may feel more comfortable on a book selection committee. We also recommend that the criteria for book selection be developed and shared before the books are nominated. Having specific criteria to elicit book nominations that would suit the program might improve the quality of the nominations, align books to the program's goals, and guide the committee in picking the book finalists. The committee could still develop the criteria yearly as the program evolves, but this process would need to take place before the call for nominations.

Suggestions for Future Research

There are still a number of areas that are worthy of future research in regard to book selection for common reading programs. Studying the book selection process over time would provide rich data about how and why different books are selected to meet the needs of a particular institution. Studying how a committee's composition changes over time and how this impacts book selection would also be a valuable area of study. We feel that student involvement and engagement are critical to the success of common book programs. Thus, we agree with Nadelson and Nadelson (2012) that "the impact of student involvement in the selection process on levels of student engagement and interest in the common read program is an area ripe for empirical research" (p. 63). We hope more students become engaged in the book selection process at Nipissing by being further represented on the committee, increasing student nominations of books, and increasing student voting numbers. We are curious as to how this student involvement would impact the books nominated and selected, as well as how it would relate to student and faculty satisfaction with the program. Given the various goals of common book programs, it would also be interesting to examine the relationship between the mandate of the program, the book selection criteria, and the book selection process.

Final Thoughts

We have identified five issues and tensions that arose while selecting a common book at Nipissing University: academic rigor vs. student engagement, increasing student involvement in the process, issues of power on the committee, picking the selection criteria, and actually using the selection criteria. Our research is unique in that it is the first study that traces the process of book selection by observing committee meetings and interviewing committee members for their perspectives and reflections on the process. All post-secondary institutions are striving to pick the best book possible to meet the needs of their common reading programs. Our hope is that the research into our process at Nipissing will provide insight, ideas, and considerations for other institutions when selecting a common book.

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Results of the university-wide vote in 2013

Group	*Speaking My Truth*	*World War Z*	*The Fault in Our Stars*	Total
Students	75	30	12	117
Faculty	39	15	6	60
Staff	38	26	6	70
Total	152	71	24	247

Table 1

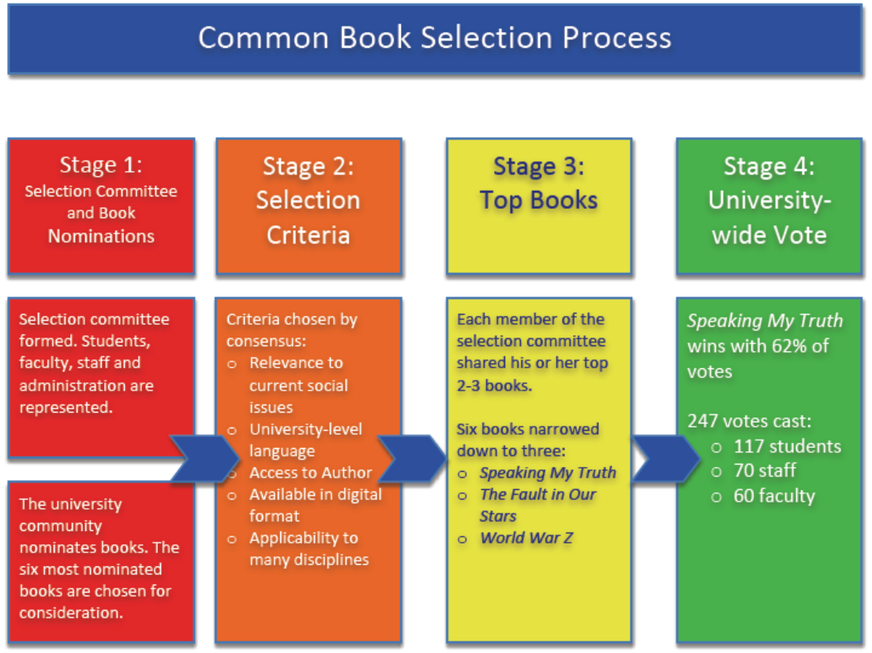

Figure 1

Volunteerism: Its Impact on Personal Development and Educational Experience

— Richard J. Harnish, K. Robert Bridges, and Andrea Adolph

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Abstract

Our goal was to explore how campus-related volunteer activities impacted personal and educational development. One hundred and two (102) respondents completed an online survey consisting of 14 items used in the National Survey of Student Engagement that assessed the extent to which students are engaged in educational practices that are associated with learning and development. Additionally, students reported their typical course grades and their volunteer activities. Results indicated that those who were engaged in campus-related volunteer activities tended to report higher levels of general knowledge, higher satisfaction with their educational experience, and higher course grades compared to those who were not engaged in volunteer activities. Limitations and directions for future research are discussed.

Keywords

volunteerism, personal development, educational development

Introduction

Volunteering is a planned, prosocial action that occurs in an organizational context which transpires over an extended period of time (Penner, 2002). The U.S. Department of Labor (2013) reported that approximately, 62.6 million Americans volunteered between September 2012 and 2013. It is strongly correlated with an individual's level of education and income, and, in the U.S., with gender and ethnicity (U.S. Department of Labor, 2013). More specifically, women, regardless of age, educational background, and race are more likely than men to be volunteers, while Americans of European descent are more likely to be volunteers than those of African, Asian or Hispanic descent (U.S. Department of Labor, 2013). On an individual level, empathy has been found to be related to one's willingness to become involved in volunteer activities (Atkins, Hart, & Donnelly, 2005; Davis, Mitchell, Hall, Lothert, Snapp, & Meyer, 1999; Penner, 2002).

Volunteering by young adults has been found to enhance their self-esteem and psychological well-being, to improve their social and career skills, and to strengthen their prosocial attitudes, values, and identities (Penner, Dovidio, Piliavin, & Schroeder, 2005). Although there is some support for the notion that volunteerism has a positive impact on self-esteem (Yogev & Ronen, 1982) and academic achievement (Osguthorpe & Scruggs, 1986), support is generally mixed (Penner et al., 2005). For example, Giles and Eyler (1994), Yates and Youniss (1996), and Astin, Vogelgesang, Ikeda, and Yee (2000) found educational programs that involve some form of community service had positive effects on personal efficacy, self-esteem, and confidence among first year college students; Lee (1997) did not. Similarly, some research has suggested that students who volunteer in their communities through service-learning attain greater academic achievement (Conway, Amel, & Gerwien, 2009; Harnish & Bridges, 2012); but other research has contradicted those findings (Billig, 2002; Eyler, Giles, Stenson, & Gray, 2001). More consistent are the research findings that have shown students who are engaged in volunteer activities report greater satisfaction with their academic experience than those who are not (Bringle, 2005; Gray, Feschwind, Ondaatje, Robyn, Klein, Sax, Astin, & Astin, 1996).

To better understand the impact community and campus-related volunteer activities have on collegiate quality, The Pew Charitable Trusts funded the creation and implementation of the National Survey of Student Engagement (NSSE) in 1998. Since its founding, the NSSE has assessed undergraduates' perceptions of their educational experiences. Although some studies have questioned NSSE findings and scale validity, longitudinal studies such as the Wabash National Study 2006-2009 have yielded strong correlations between student engagement and academic skills such as critical thinking. Similarly, a recent investigation into the validity of the NSSE reported it was a sound psychometric measure of student engagement as related to educational practices (Pike, 2013). Findings from the NSSE have suggested that students who were involved in community volunteer activities showed higher gains in several areas of personal development when compared to students who were not involved in community volunteer activities (National Survey of Student Engagement, 2011). That is, those who were engaged in volunteer activities indicated increased knowledge and skills which were related to the welfare of the community (e.g., solving real-world problems, voting, understanding people from other racial and ethnic backgrounds).

Despite the encouraging NSSE findings, NSSE data does not provide insight into how *campus-related* volunteer activities may impact personal and educational development nor do there seem to be many studies that specifically investigate this topic. Rather, researchers have examined the impact of *community service* on various educational, vocational, and social outcomes as well as the demographic characteristics of students who volunteer for such activities (e.g., Astin & Sax, 1998; Astin et al., 2000; Marks & Jones, 2004). Thus, our goal was to explore how involvement in *campus-related* volunteer activities (i.e., performed through student clubs and student government) impacted personal and educational development. More specifically, our study focused on campus-related activities through which students go beyond simple participation and invest their time and effort to move a project or organization forward, although not exclusively through leadership activities. Consistent with NSSE findings related to community-based volunteerism, we hypothesized that those who were engaged in campus-related volunteer activities would rate their general knowledge higher than those who were not involved in campus-related volunteer activities. We also predicted that those who were engaged in campus-based volunteer activities would rate their campus-related experiences more positively than those who were not. Finally, we posited that those involved in campus-based volunteer activities would report higher grades than those who were not.

Method

Sample and Procedure

Penn State University New Kensington, is one of 24 campuses that comprise the University. It is located approximately 18 miles northeast of Pittsburgh, and is surrounded by three, third-class cities[1] (New Kensington, Arnold, and Lower Burrell) and two second-class townships (Allegheny and Upper Burrell) that cover approximately 62 miles with a combined population of 41,500.

The campus primarily serves first-generation college students, offering 13 bachelor and associate degree programs. Students may graduate from these programs or transfer to another campus to complete their degrees.

To develop the sample, the campus registrar was contacted and asked to provide email addresses of all full-time students enrolled at the campus. Eight hundred and sixty-three (863) email addresses of currently enrolled full-time students for spring semester 2011 were provided to the first author. A direct email appeal was sent asking for participation in our research. The email invitation read:

> Hello, my name is Dr. Harnish, and I'm a professor of psychology at Penn State New Kensington. I'm conducting a survey to understand how community engagement shapes your understanding and participation in good citizenship/stewardship practices. If you decide to participate, you will be asked to complete a questionnaire that examines: 1) what volunteer activities you perform; 2) how your education at Penn State University New Kensington has shaped your personal development; and 3) a series of demographic questions (e.g., gender, ethnicity). The questionnaire will take approximately 15 minutes to complete. The study has been approved by Penn State University New Kensington Institutional Review Board ensuring the rights of respondents. Thank you in advance for your help! Click here to take the survey.

Three subsequent reminder emails were sent following Dillman's (2007) suggestions for developing and administering Internet surveys. We received 102 completed surveys.

Measures

Because our goal was to examine the impact volunteering for campus-related activities had on perceptions of personal and educational development, we asked students to complete 14 items from the National Survey of Student Engagement (NSSE; http://nsse.iub.edu), that assessed the degree to which the institution contributed to their personal development. Nine of the 14 items assessed general knowledge: "Acquiring a broad general education"; "Acquiring job or work-related knowledge"; "Writing clearly and effectively"; "Speaking clearly and effectively"; "Thinking critically and analytically"; "Analyzing quantitative problems"; "Using computing and information technology"; "Learning effectively on your own"; and "Solving complex, real-world problems." Cronbach's Alpha, a measure of internal consistency of the measure, was .90. Three of the 14 items measured knowledge of self: "Understanding yourself"; "Working effectively with others"; and "Understanding people of other racial and ethnic backgrounds." Cronbach's Alpha was .77. One of the 14 items assessed civic responsibility, "Voting in local, state, or national elections", and one measured psychological well-being and personal development, "Developing a deepened sense of spirituality." Each of the 14 items was rated on a four-point scale that ranged from 1 (*very little*) to 4 (*very much*).

Two items assessed perceptions of the student's educational experience. The first item asked students to "Rate your entire educational experience at (university)" using a four-point scale that ranged from 1 (*poor*) to 4 (*excellent*). The second item asked students to "Estimate the likelihood of attending (university) if starting over" using a four-point scale ranging from 1 (*definitely no*) to 4 (*definitely yes*). Finally, students were asked "What have most of your grades been up to now at (university)?" The response scale consisted of eight items: 1 (*C or lower*); 2 (*C*); 3 (*C*+); 4 (*B*-); 5 (*B*); 6 (*B*+); 7 (*A*-); and 8 (*A*).

Results

Demographics

One hundred and two (102) surveys were completed; however, four students did not indicate whether or not they were involved in volunteer activities and therefore were not included in the subsequent analysis. Approximately the same number of women (51) and men (47) participated in the survey[2]. All of the students indicated they were from the U.S. About one-fourth of students (21%) were in their first year of college, while 28% of students were in their sophomore year; 29% of students indicated they were in their junior year, and the remaining 21% of students were in their senior year of college. The majority of students were European American (93%), with African American (2%), Asian American (1%), and Hispanic American (1%) represented. Three percent (3%) of the students did not indicate their ethnicity. The demographics of the sample mirror those of the campus where European American (91%), African American (5%), Asian American (1%), and Hispanic American (2%) students are enrolled (i.e., there are no statistically significant differences between the sample and population; all *z*-tests for proportions[3] indicated *p*'s > .05). Because there are no statistically significant differences between gender of the participant in terms of volunteering, and because of the small number of minority students at the campus and in our sample, all subsequent analysis is performed using the total sample comparing those who volunteer to those who do not.

Volunteerism

Over one-fifth (27%) of the students indicated that they were currently volunteering in their community. Volunteering for hunger/food assistance programs, animal shelters or church-sponsored programs were the most popular volunteer activities among the students (see Table 1). In addition, students were also asked if they were currently performing volunteer service for the campus (e.g., student government). A little over half of the students (52%) reported that they had volunteered for campus-related activities. Involvement in clubs (officer or member), honor societies, and a student-run philanthropy that raises money for pediatric cancer research were mentioned most frequently (see Table 2). Because we were interested in assessing the impact that campus-related volunteer activities had on personal and education development, in the subsequent analyses, we used responses to the question of volunteering for campus-related activities (rather than community-related activities) to classify whether students were engaged in campus-based volunteer activities.

Impact of Volunteerism on Personal Development

A one-way between-groups multivariate analysis of variance[4] was performed to investigate differences between those who were engaged in volunteer activities on campus and those who were not on four dimensions of personal development as assessed in the NSSE.[5] There was a marginally significant difference between those engaged in campus-based volunteer activities and those who were not on the combined four dimensions of personal development, $F(4, 92) = 2.14$, $p = .08$, Pillai's Trace = .09; partial eta squared = .09. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of .0125, was general knowledge, $F(1, 95) = 7.29$, $p = .008$, partial eta squared = .07. An inspection of the means indicated that those engaged in campus-based volunteer activities reported higher levels of general knowledge ($M = 3.09$, $SD = .53$) than those who were not engaged in volunteer activities ($M = 2.74$, $SD = .73$).

Impact of Volunteerism on Educational Experience

To investigate differences in educational experience between those who were engaged in volunteer activities on campus and those who were not, a one-way between-groups multivariate analysis of variance was performed. The two educational experience items were used as the dependent measures. Preliminary assumption testing was conducted, and no serious violations were noted. There was a significant difference between those engaged in volunteer activities and those who were not on the combined dependent variables, $F(2, 95) = 5.40$, $p = .001$, Pillai's Trace = .10; partial eta squared = .10. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of .025, was the likelihood of attending the campus if starting over, $F(1, 96) = 10.92$, $p = .001$, partial eta squared = .10. An inspection of the means indicated that those engaged in volunteer activities were more likely to attend the campus if starting over ($M = 3.47$, $SD = .67$) than those who were not ($M = 2.96$, $SD = .86$).

Impact of Volunteerism on Reported Grades

An independent samples *t*-test[6] was conducted on reported grades for those who were engaged in volunteer activities on campus and those who were not. There was a marginal difference in reported grades such that those who were engaged in volunteer activities on campus ($M = 6.71$, $SD = 1.45$) tended to report higher grades than those who were not engaged in volunteer activities on campus ($M = 6.17$, $SD = 1.65$), $t(96) = 1.81$, $p = .09$, eta squared = .03.

Discussion

Our goal was to examine the impact volunteering for campus-related activities had on perceptions of personal and educational development. Cassidy and Eachus (2001) have noted the importance of student self-perception and perceived proficiency on actual knowledge bases and learning outcomes that include persistence and motivation, and their outcomes suggest that pedagogical and related interventions can impact student success at least as much as academic rigor. The examination of student self-perception is a key link in the ongoing discussions regarding how or whether student engagement positively impacts students' academic persistence and success. To that end, we found that those who were involved in campus-related volunteer activities rated their general knowledge higher than those who were not involved in campus-related volunteer activities. Those who were engaged in campus-based volunteer activities also were more likely to attend the campus if they were re-starting their academic careers compared to those who were not engaged in such activities. Finally, those involved in campus-related volunteer activities tended to report higher grades than those who were not.

Why did volunteerism impact personal development and educational experience differently? That is, those engaged in campus-based volunteer activities reported higher levels of general knowledge than those who did not. There were no differences between those who volunteered for campus-based activities and those who did not on the three other assessed dimensions of personal development (i.e., self-knowledge, civic responsibility and psychological well-being). This may be due largely to the types of campus-based volunteer activities in which students were engaged. Three-fifths of those who were engaged in campus-based volunteer activities were enrolled in our honors program, a program that strongly emphasizes academic achievement. Consequently, the finding suggests the need to expand the scope of the honors program by: 1) Providing students with the opportunity for self-discovery so that they better understand how to work efficiently with other who may be different than themselves; 2) Increasing the opportunities for students to become involved in civic responsibility activities (i.e., social participation and action); and 3) Offering more activities that promote psychological well-being and personal development. Embedding campus-based volunteer opportunities into the honors program may address these deficiencies; research suggests that volunteering aids in self-discovery, increases civic responsibility, and improves psychological well-being (Wilson & Musick, 2000).

Volunteering in campus-based activities also impacted students' educational experiences. Those engaged in campus-based volunteer activities were more likely to report that, if they were starting over, they would attend the same school, as compared to those who did not volunteer in campus-based activities. However, students who volunteered in campus-based activities did not rate their educational experience higher than those who did not engage in campus-based volunteer activities. This finding suggests the need to expand the scope of the honors program beyond working closely with faculty on independent study projects. The honors program, however, appears to be successful in developing social networks; research indicates that students who have individualized, sustained interactions with faculty like those afforded by the honors program, are more satisfied with their college life than those who do not (Rosenthal, Folse, Allerman, Boudreaux, Soper, & Von Bergen, 2000).

Future Directions

The appearance of significant findings in academic areas points to the potential for volunteerism on campus to impact positively student learning as well as graduation rates. Because of this, academic leaders should examine how many and what types of volunteer opportunities are available to students and what types of students are engaged in such activity in order to ensure that the impact of such activities can cut across a range of students, including those who might not typically be obvious leaders or engaged in typical forms of student life. If the examination reveals insufficient volunteer opportunities, or if one type of volunteer opportunity is not available to students, then actions should be taken to facilitate the creation of additional opportunities. Because the focus of the survey was on student activities beyond simple participation, institutional leaders must assess not only the number of activities that are available to students, but also, importantly, the number of opportunities that demand of students an increased level of investment. Student investment in their campus-based volunteerism correlated with their investment in the school, as evidenced in their interest in attending the same school if making that choice again; thus, there appears to be a relationship of investiture between institutional loyalty and campus-based service. In a related sense, if a review suggests that only high-achievement students are engaged in volunteer activities, then programs may be created that target academically at-risk students. Such efforts may result in benefits for students as well as the university.

Engagement in campus-related volunteer activities may improve academically at-risk students' learning and development as volunteer activities strengthen social and career skills (Penner et al., 2005). Students who have low levels of academic achievement but high levels of social engagement have been shown to persist at rates that rival those of students who achieve in both areas at high rates and have persistence rates that surpass those of students who are only high academic achievers (Hu, 2011). Such findings underscore the importance of a balanced academic experience as well as the significance of activities that maintain student engagement. For the university, campus-related volunteer activities may be another tool campus leaders and faculty can use to retain academically at-risk students. That is, by engaging academically in campus-related activities, at-risk students can begin to model the behaviors of others that result in academic success as well as increase the personal and institutional investment that correlates with persistence to graduation. Additionally, student affairs professionals, academic advisors, and faculty members need to work together to ensure that students are aware of campus-related volunteer opportunities and to encourage them to participate. Our own experience suggests that students are either woefully unaware of campus-related volunteer opportunities or believe that such opportunities exist only for students who are members of service-oriented clubs and organizations (e.g., Student Government Association). Based on the outcomes of our survey, a broader appeal to students, especially to those students who do not self-identify as leaders, will be important to creating an environment of success for all students. Finally, linking students' academic progress to the amount and type of volunteerism they are performing could yield promising insight into how to improve the structure of learning programs for students. For example, should participation in campus-based volunteer activities be incorporated into courses, or should volunteer activities be required for graduation? What kinds of service-based activities beyond those traditionally associated with service- or community-based learning are appropriate for course-based volunteerism, and how would a conversation that encompasses these sorts of volunteer behaviors change the ongoing discussions related to student engagement?

Limitations

This research has several limitations that should be acknowledged. First, our data is limited to self-report measures. Additional evidence is needed beyond self-report data to clearly demonstrate how campus-related volunteerism impacts personal and educational development. Further, there are problems associated with self-report measures: they are dependent upon the willingness of the participants to report private knowledge, and participants' ability to accurately report such knowledge (Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002). As well, students who become involved in activities such as those that we have investigated are almost always self-selected members of their organizational and social groups, and many actively seek out such opportunities through self-nomination or elections. A second limitation is the external validity of our findings: respondents were American undergraduates at a northeastern public university. Additional research is needed to understand the impact that multiple forms of student volunteerism has on personal and educational development among individuals at other universities inside and outside the U.S. A third limitation is that we did not directly assess involvement levels in service. Instead, we relied upon the type of activity to infer involvement levels. All of the activities identified by students in our survey require more than cursory attendance and participation. As an illustration, our hon-

ors program students must, among other things, help organize and participate in at least one honors cultural event each semester, attend the monthly campus honors meeting, and participate in the campus research and creative expo. Finally, longitudinal research is needed to determine whether what appears promising in our initial data has a lasting effect.

Conclusion

We explored the impact campus-related volunteerism has on perceptions of personal and educational development. Overall, our results support and contribute to a larger body of research that demonstrates the value of involvement in volunteer activities on personal and educational development.

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Community Volunteer Activities Indicated by Students

Activity	Percent of Cases
Hunger/Food Assistance Programs	30.8
Animal Shelters	23.1
Church Sponsored Programs	19.2
Homelessness Programs	7.7
Hospice Programs	7.7
Nursing Home Programs	7.7
Teaching/Literacy Programs	7.7
Alcohol/Drug Abuse Programs	3.8
Battered Spouse Shelters	3.8
Disaster Relief Programs	3.8
"Other" Programs	26.9

Note. n = 37 responses.

Table 1

Campus-related Volunteer Activities Indicated by Students

Activity	Percent of Cases
Honor Society	60.8
Club Officer	45.1
(Activity)	33.3
Peer Tutor	23.5
Club Member	21.6
Student Government	13.7
Chancellor Fellow	7.8
"Other"	3.9

Note. n = 107 responses.

Table 2

Notes

1 In Pennsylvania, a third-class city is defined as having a population below 250,000 people while a second-class township has a smaller population than a third-class city but a larger geographical footprint.

2 Prior research has suggested that women are more likely than men to volunteer (U.S. Department of Labor, 2013). To explore differences in volunteerism between men and women in our sample, a one-way between-groups multivariate analysis of variance was performed to investigate differences between men and women who volunteered in campus-based activities or did not on four dimensions of personal development as assessed in the NSSE. There were no significant differences for gender, $F(4, 90) = .60$, $p = .66$, Pillai's Trace = .03, partial eta squared = .03, or the interaction effect of gender and volunteerism, $F(4, 90) = 1.81$, $p = .13$, Pillai's Trace = .07, partial eta squared = .07.

3 A z-test of proportions determines whether two population proportions are different. The p indicates the probability of rejecting the null hypothesis when it is true. In the current case, the p's observed suggested that the null hypothesis should not be reject suggesting there was no different in proportions between our sample and the greater population of Penn State students.

4 A one-way between-groups multivariate analysis of variance is used to determine whether there are any differences between independent groups (i.e., those who volunteer or not) on more than one continuous dependent measure.

5 Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted

6 An independent samples t-test compares the means of two independent groups to determine if they are different.

Donna Wilson and Marcus Conyers' *Five Big Ideas for Effective Teaching: Connecting Mind, Brain, and Education Research to Classroom Practice*

— Nicholas J. Aieta

Five Big Ideas for Effective Teaching: Connecting Mind, Brain, and Education Research to Classroom Practice, by Donna Wilson and Marcus Conyers. Teachers College Press, 2013. 196 pp., ISBN-13: 9780807754252.

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Years ago while still teaching at a school in Los Angeles, a colleague of mine championed any professional development opportunities to make connections between neurological research and understanding how students learn. Many of the articles she encouraged me to read did, in fact, open my eyes to thinking more broadly about how my students might better acquire new knowledge.

Like my former colleague, authors Donna Wilson and Marcus Conyers clearly see connections between the brain and learning. This may seem like an obvious statement, yet, as the authors successfully argue, there is a need to explain kinship among the brain, its functions, research, and teaching. In addition, such connections need to be presented to pre-service and professional teachers in convincing and clear presentations. In many ways, Wilson and Conyers succeed on this front. The big ideas are discussed in detail in separate chapters organized around questions intended to help focus readers and including sections that provide emphasis on a variety of key points. In addition, the text includes chapters on the challenges and opportunities of education in the 21st century, myth-busting as an educator, and the nature of continuous learning. The five big ideas themselves focus on the nature of neural plasticity (flexibility of the brain in terms of learning), recognizing human potential, understanding the nature of intelligence, how body movement can link to learning, and understanding concepts of metacognition.

A particularly important idea to embrace in successful teaching is not to have a fixed mindset about human potential or the nature of intelligence. Modeling a "growth" mindset is important to show students how everyone can continue learning, including teachers. Such modeling can be seen in teachers who demonstrate high standards, nurture students, focus on ideas like mastery, use formative assessment, and emphasize development of thinking skills among other ideas. This third "big idea" for teaching is an essential component of successful teaching. The teacher whose mindset remains fixed cannot bend or grow with their class. If the teacher won't advance their own mind, why should the student?

A weaker aspect of the text is the "Perspectives on" dialogues that create conversations between fictional teachers in order to explain conflicting attitudes toward the big ideas (this is particularly true in the body-brain chapter). This method, while common in a number of texts about education, rings false. Perhaps reshaping these conversations as dialogue between real teachers presented with the concepts explained in the chapter might be more powerful. In addition, by using real people, the nature of debate and disagreement about teaching and learning could be viewed more clearly. I found the "from teachers to teachers" more helpful. These vignettes provide real case studies of how teachers are using some of the discussed strategies in practical, meaningful ways. I am also not convinced by some defenses of the Common Core standards that appear in the text (pp. 135, 143).

Overall, however, the text provides some useful links and suggestions for how to improve teaching. To this end, I found the section covering the idea of metacognition, or, "thinking about thinking" particularly fascinating. When assigning complex tasks to students (eg, interpreting documents or writing an essay), metacognition demands that students consider how they go about these tasks and in what order (pp. 117-119). Each step becomes possible to complete, building toward the end goal, and allows students to assess their progress along the way, seeing how and where they might improve. Such approaches allow teachers and students alike to see where structured support or perhaps research might aid learning. Finally, metacognition should work successfully in enhancing both student peer appraisal and teacher-directed suggestions and evaluation.

George Kuh, Jillian Kinzie, John Schuh, and Elizabeth Whitt's *Assessing Conditions to Enhance Education Effectiveness: The Inventory for Student Engagement and Success*

— Renee Scapparone

Assessing Conditions to Enhance Education Effectiveness: The Inventory for Student Engagement and Success, by George D. Kuh, Jillian Kinzie, John H. Schuh, and Elizabeth J. Whitt. Josey-Bass, 2005. 112 pp., ISBN-13: 978-0787982201.

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Mary Parker Follett, a human relations theorist, defines management as an art of getting things done through people (Graham, 1995). From my professional experience in corporate America, non-profit work, as well as being a proprietor of a small business along with my experience in academia as a professor of business, I have experienced first-hand what Follett was declaring. However, I also believe that there is also a science that supports her point. That being said, people learn from experience, by testing the principle. This theory is supported by the evidence that engagement leads to productivity based on learned knowledge. Today there is great discussion in academia as to whether the engagement of students will lead to the greater outcomes of the learning objectives. Researchers Kuh, Kinzie, Schuh, and Whitt (2005) provide academics a means to do such activities in their classroom as described in their book *Assessing Conditions to Enhance Education Effectiveness. The Inventory for Student Engagement and Success*.

Although this is a brief publication and a relatively quick read, the application of the concepts presented will take time to implement. Also a long-term commitment by the institution is required in order to become part of the Documenting Effective Educational Practice (DEEP) initiative. Schools that implement the tool of Inventory for Student Engagement and Success (ISES) as identified by Kuh et al. are considered to be more effective in developing the current and future success of their students.

Cooperrider and Srivastva (1987) state that experiences are intensely formed by what students do and their perceptions of their interactions with other students and those at the institution. The inventory assessment tool provided in this book is used as a supplement to an earlier publication by Kuh, Kinzie, Schuh, Whitt, and Associates: *Student Success in College: Creating Conditions that Matter* (2005). The ISES tool is a comprehensive, responsive template to assess and deeply analyze the institution, its culture, policies, programs, practices, innovation, and processes for change. As a school considers taking on such an initiative, they must be committed to the relevancy of engagement of students and its impact on their success. The institution needs to begin by implementing eight (8) guiding principles as noted by Kuh et al.

The first principle deals with scrutinizing the institution's physical (i.e. how space is used) and psychological (i.e. how students feel they are being treated) environments. This includes giving consideration to the geographical location, how the academic year unfolds, the campus culture, and the community. The second principle addresses the theory that the whole is greater than the parts. A synergistic approach or model of learning recognizes the need to integrate and complement other activities, relating parts of the learning process with the learning organization and to real world experiences (Saljo, 1979; Ramsden, 1992). Thus, if the activities of the institution are integrated and complement the activities of the students, greater outcomes can be expected (Kuh et al., 2005). The third principle is to gather the most data using mixed methods. This will help the institution provide better evidence that their efforts in engaging students will produce positive outcomes.

In order to bring about change, the fourth principle recognizes the significant impact that the role of the institution has on the expectations of its students; thus, the institution must test prevailing assumptions by focusing on the students' experiences and the institution's conditions (Kuh et al., 2005). An institution's culture can certainly be a strong influence on a student's success. If the organizational culture of the institution is clearly expressed and aligns with the shared values and beliefs of the student, there is greater possibility that the experience will prove for greater performance and satisfaction (Sadri, 2014).

The analysis of the data collected by the institution needs to be widespread. As noted in the fifth principle, the viewpoints and perspectives of not only the students, the admissions, and the faculty, but also the alumni and the community at large must be taken into consideration (Kuh et al., 2005). As part of any organization's social responsibility, the engagement and involvement of all stakeholders is essential in developing a long-term commitment to all those concerned with the success of the organizational outcomes. Organizations that take this approach with their stakeholders create a culture that is more apt to be open and inclusive in their relationships and often leads to growth, innovation, and performance (Doh & Quigley, 2014). This leads to the suggestion of the sixth principle to involve outsiders to ask the hard questions necessary to bring about creative change (Kuh et al., 2005).

The institution's efforts must be constant and consistently focused on what matters, that being the students' success. As a DEEP organization, Kuh et al. state that these types of schools focus on turning their weaknesses into opportunities by enhancing the undergraduates' experience. In order to have a competitive advantage, the strategic move for the institution is to assess and analyze their own performance to bring about changes. The institute will need to look at the issues and not compare themselves to the performance of other institutes (Weihrich, 1982).

Finally, the last principle emphasizes that the institution must be persistent with efforts in order to transform. This transformation takes time and commitment to fulfill the institute's ethos for improvement (Kuh et al., 2005). Kuh et al. provide a guide for institutions that choose to use ISES to assess properties and conditions common to educationally effective colleges. DEEP institutes need to assess their espoused (written) mission goals versus those acted upon. Faculty and students at these institutes need reverse roles; both need to be the learner and the teacher. Both perspectives can be labor intensive and may require the environment be adapted for educational enrichment.

As with any business, the physical, knowledge-based and psychological pathways can be used to motivate in order to bring about change. These pathways typically start with the organization's leaders; however, engaging others can also help to initiate change (Doh & Quigley, 2014).

The odds of improving students' success are increased by DEEP schools that clear the pathway. The settings where students live, work, and play need to support or reinforce (or contradict) the educational

mission, values, and philosophies of that of the institution. This includes teaching students about the culture. Social context plays a significant role in the acculturation process for the student (Samnani, Boekhorst, & Harrison, 2013). Also, educational resources need to be compatible and aligned with the educational mission and student characteristics. The success of the DEEP school is their "can do" ethic that permeates the institution's values and belief system and the willingness to take on matters of substance that also contribute to student success, empowering students by engaging them in a partnership with faculty to share responsibilities for the quality of education and students' success (Kuh et al., 2005).

Universities implementing more student-centered approaches, such as service-based learning, are viewed by students as offering rational and rigorous learning experiences (Redding, 2005). Kuh et al. demonstrate the uses of ISES to assess effectiveness: academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experience, and supportive campus environment.

Distinguishing characteristics of a DEEP institution are high quality programs and practices that include high expectations, rigorous academic work, accessible and responsive faculty; a large number of students are affected in a meaningful way by these initiatives of active and collaborative learning experiences combined with diversity, internships, community services, and senior capstones that help students to synthesize, integrate, and apply their knowledge. In addition, the institute is committed to review continually and evaluate which activities will be kept and those to be removed. They provide a supportive campus environment, encouraging better performance and satisfaction as the university is committed to student success and cultivating positive working and social relations among different groups on campus (Kuh et al., 2005; Williams, 2014). Additional characteristics of a DEEP institution include transition programs that welcome newcomers, support programs that provide safety nets, warning systems, advising, and supportive environments where students are trained to work with peers, provide peers help (Kuh et al., 2005).

Kuh et al. address the logistical issues, providing ways to launch the ISES process and methods presented in *Student Success in College* that support institutions seeking to improve efforts. Successful implementation must start with cultural changes, development of strategic missions, transformational change by initiating student engagement in their learning experience (Williams, 2014). For successful outcomes, there must be institutional-wide support and implementation as well as control. The institution applying the ISES principles must identify human and financial resources needed to take on such an initiative (Kuh et al., 2005). The reculturalization of any institution needs to start by cultivating an ethos of continuous improvement with the goal of student success (Fullan, 2001).

In business there is an art to getting people to work synergistically in order to accomplish set goals. In academia, this is no different; institutions that impart experience, engagement, and empowerment to the students are more apt to be successful in achieving their goals. Kuh et al. have proven this in their publication *Assessing Conditions to Enhance Education Effectiveness. The Inventory for Student Engagement and Success*. As noted, implementing programs that engage a student leads to greater success in achieving personal (student) goals as well as the goals of the institution. However, this does not happen immediately; implementation requires long-term commitment by the institution. This long-term commitment by the institution and implementation of the Inventory for Student Engagement and Success (ISES) tool as identified by Kuh et al. are considered to be more effective in developing the current and future success of their students.

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