Gender, Race/Ethnicity and Team Based Learning

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Abstract (250 words)

       This project explores how gender and race/ethnicity influence the collaborative learning process in a team based learning (TBL) environment. There is a large body of literature evaluating the effectiveness of TBL. Most of it, however, focuses on preparing faculty or students for TBL or on TBL outcomes. Surprisingly, there is little research on the actual collaboration that forms the basis of TBL. This project collects observational data on students' behavior during collaborative learning activities and uses it to explore how two status characteristics, gender and race ethnicity, influence the collaborative learning process. Specifically, this project will explore whether there are gender and racial/ethnic differences in:

- students' behavior during collaborative learning activities
- the peer evaluations of performance that students receive
- a student's final grade.

The data for this research will be collected during Spring and Fall 2014 in a section of LBST 2101 taught by Dr. Coral Wayland. Graduate research assistants will collect observational data on student interactions during the collaborative learning process. Specifically, they will code 12 types of behavior identified in the Bales Interaction Process Analysis. In addition, the course utilizes a program called CATME to have students conduct peer reviews of their team members' performance. The research team will have access to the CATME scores. Finally, grades will be extracted from Banner. After identifying binary relationships between variables using correlations, we will conduct multi-variate analyses utilizing the full range of the coded behavior to determine whether TBL is equally effective for multiple elements of the student population.

Budget Request for SOTL Grant
Year   2014

Joint Proposal?   XX   Yes   No

Title of Project   Gender, Race/Ethnicity and Team Based Learning

Duration of Project   Spring 2014-Fall 2014 (1 year)

Primary Investigator(s)   Coral Wayland and Lisa Slattery Walker

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UNC Charlotte SOTL
Grants Previously
Received (please names
of project, PIs, and dates)   None

Allocate operating budget to Department of   Anthropology

Account #	Award	Year One January to June
Faculty Stipend	Transferred directly from Academic Affairs to Grantee on May 15	$ -
911250	Graduate Student Salaries	$9500
911300	Special Pay (Faculty on UNCC payroll other than Grantee)	
915000	Student Temporary Wages	
915900	Non-student Temporary Wages	
920000	Honorarium (Individual(s) not with UNCC)	
921150	Participant Stipends	
925000	Travel - Domestic	
926000	Travel - Foreign	
928000	Communication and/or Printing	
930000	Supplies	
942000	Computing Equipment	
944000	Educational Equipment	
951000	Other Current Services	
	GRAND TOTAL	$ 9,500

Account #	Award	Year Two July to June
Faculty Stipend	Transferred directly from Academic Affairs to Grantee on May 15	$ -
911250	Graduate Student Salaries	$9500
911300	Special Pay (Faculty on UNCC payroll other than Grantee)	
915000	Student Temporary Wages	
915900	Non-student Temporary Wages	
920000	Honorarium (Individual(s) not with UNCC)	
921150	Participant Stipends	
925000	Travel - Domestic	
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928000	Communication and/or Printing	
930000	Supplies	
942000	Computing Equipment	
944000	Educational Equipment	
951000	Other Current Services	
	GRAND TOTAL	$ 9,500

Attachments:

1. Attach/provide a narrative that explains how the funds requested will be used.

2. Has funding for the project been requested from other sources? ___ Yes   __XX__ No. If yes, list sources.

Budget Narrative:

This proposal seeks a total of $19000, ($9500 for Spring 2014 and $9500 for Fall 2014). All of the money will be used to compensate graduate research assistants.

- *One full time graduate research assistant at $4,500 per semester for 2 semesters*: We will hire 1 graduate research assistant to work full-time on the project during the Spring and Fall 2014 semesters. This graduate research assistant will serve as the project coordinator. Their responsibilities include managing four part-time graduate research assistants, coordinating the observation schedule, collecting structured observational data, extracting peer observation data from CATME, and overseeing data entry and analysis. The going rate for full-time graduate research assistants in the Department of Anthropology is $4500 per semester. Since this project seeks funding for Spring 2014 and Fall 2014 this totals **$9,000** for 2 semesters.

- *Four part-time graduate research assistants at $1,250 per semester for 2 semesters*. We will also hire 4 part-time graduate research assistants who will work 5 hours a week conducting structured observations during class meetings. These will be conducted when the class meets twice a week as an entire group (i.e. all 96 students). The part-time graduate research assistants will also observe the breakout sessions, where approximately 1/3 of the class meets. There are 3 scheduled breakout sessions, which yields a total of 5 50 minute observations each week. Each part-time observer will receive $1,250 per semester. Since this project seeks funding for Spring 2014 and Fall 2014 this totals $10,000.

Because Dr. Wayland is the instructor of the class and the project PI, the research can only be conducted using graduate student researchers. Dr. Wayland cannot participate in data collection nor can she see the data nor know which students consented to participate until after final grades have been submitted. This is why we are hiring a project manager. This type of real time observation requires multiple observations of each group doing different types of activities across each semester, and thus necessitates a total of 5 observers (the project manager and the four part-time observers).

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November 1, 2013

SOTL Grants Committee
Center for Teaching & Learning
ctl@uncc.edu

Dear Committee Members:

I am writing in support of the SOTL proposal submitted by Drs. Coral Wayland (Anthropology) and Lisa Walker (Sociology) entitled "Gender, Race/Ethnicity and Team Based Learning." As the title suggests, they are concerned with how students' gender and race affect learning in team based learning environments. Among the many benefits of a liberal arts education that employers seek from our students is the ability to work in teams and there is considerable support for the effectiveness of team based learning approaches. Therefore, I see potential for this research on multiple levels. I was somewhat surprised to learn from this proposal that the questions raised here have not been thoroughly investigated to date.

The proposal seems to me to combine good social science with good pedagogy and to offer the potential for publication in a number of different areas. An added advantage of the proposed research is that the class that is being observed is a Prospect for Success (QEP) course. Therefore, the results potentially contribute to the assessment and continuous improvement of this important undertaking. It is my pleasure to recommend support for this project.

Please let me know if you require further information. Thank you.

Sincerely yours,

Nancy A. Gutierrez, Dean
College of Liberal Arts and Sciences

Gender, Race/Ethnicity and Team-Based Learning

Aims, Purpose, Objectives and Rationale

This project will explore how gender and race/ethnicity influence collaborative learning in a team-based learning (TBL) environment. TBL is an instructional strategy where students work in permanent teams of 5-7 students throughout the semester. The model "flips the classroom." For each unit in the course students are expected to learn course content (e.g. readings, videos, etc.) outside of class. Class time is then spent making sure students have correctly understood the content via the administration of individual and team quizzes. After the quizzes are finished students continue to work in teams to actively engage with the course content through a variety of application exercises (Fink 2002; Michaelsen 2002; Michaelsen and Sweet 2008, 2011).

There is a large body of literature evaluating the effectiveness of TBL. Most of it, however, focuses on preparing faculty or students for TBL (e.g. Cestone et al. 2008; Lane 2008; Parmelee and Michaelsen 2010) or on TBL outcomes (e.g. grades, the products of team work, student attitudes) (e.g. Carmichael 2009; Su 2007; Zgheib et al. 2011). Surprisingly, there is little research on the actual collaboration that forms the basis of TBL. It appears that the collaborative aspect of TBL is still a "black box". We have studied what goes in and what comes out of the box, but we know very little about what goes on inside the box.

This lack of research on collaboration within teams is surprising. Perhaps the emphasis on the team part of TBL has lead researchers to ignore the ways that individuals (and their status characteristics) influence the collaborative process. Research on status processes from sociology tells us that characteristics of the individuals (e.g. gender and race/ethnicity) working in these groups may affect how and to what degree learning occurs (Ridgeway 1997; Webster and Rashotte 2009).

This project will peer into this black box to explore how two status characteristics, gender and race/ethnicity, influence the collaborative learning process. The project will explore whether there are gender and racial/ethnic differences in: students collaborative behavior; the performance evaluations that students receive from their team mates; and a student's final grade.

The specific aims of this study are:

- To determine whether there are gender and/or racial/ethnic differences in behaviors during collaborative learning activities. The questions we seek to answer are:
  - Do male and females engage in different patterns of behavior during collaborative work?
  - Do white and non-white students engage in different patterns of behavior during collaborative work?

- To determine whether a student's gender and/or race influence how their team members evaluate their contributions to the team.
  - Are the behaviors of male and female students evaluated in the same way? In other words, when males and females engage in the same type of behaviors (e.g., consistently making task suggestions during collaborative learning exercises) are they evaluated in the same manner? What consequences do these behaviors have for learning and team satisfaction? Do those consequences vary by gender?
  - Are the behaviors of white and non-white students evaluated in the same way? In other words, when whites and non-whites engage in the same type of behaviors are

they evaluated in the same manner? What consequences do these behaviors have for learning and team satisfaction? Do those consequences vary by race/ethnicity?

- To determine whether peer reviews influence a student's subsequent behaviors during collaborative work.
    - Do students decrease certain behaviors when they are reviewed negatively by their peers?
    - Do students increase certain behaviors when they are reviewed positively by their peers?
    - Are there gender and/or racial/ethnic patterns to the ways that students change their behavior in response to peer reviews?

- To determine whether gender, race/ethnicity, student behaviors and peer reviews are correlated with final grades.
    - Is there a correlation between the behaviors a student engaged in and their final grade?
    - Is there a correlation between a student's peer review scores and their final grade?
    - Is there a correlation between a student's gender, race/ethnicity and their final grade?

Because this project evaluates how gender and race/ethnicity influence student experiences with TBL in a large (96 students) LBST class it addresses the following needs identified by UNC Charlotte in the SOTL RFP:

- Restructuring large courses
- Increasing student engagement through curricular innovation
- Diversity
- Increasing cooperation among students
- Encouraging active learning

This project also contributes to University College's mission to deliver the Quality Enhancement Plan (QEP). The section of LBST 2101 that is being observed is a "QEP-ized" Prospect for Success class. As such, this research contributes to the Prospect for Success Initiative by collecting data that address one of its student learning outcomes: Self and Cultural Awareness. As part of this student learning objective students should, "Recognize their responsibility as a member of a community(s)" and "Navigate the differences between self and others successfully" (UNC Charlotte 2013). Both of these outcomes should occur during team based learning as students learn to work together as a team. This research will explore how gender and/or racial/ethnic identity mediate these experiences.

Finally, while this project evaluates the experiences of 96 students per semester it has applicability beyond the class being studied. It seeks to answer a fundamentally important question: How does a student's gender and race influence their learning experience in collaborative learning environments. While there is an extensive literature documenting the rewards and challenges, best practices, and student learning outcomes for various collaborative learning techniques, almost none of it examines how the actual group process that makes up collaborative learning is influenced gender and race/ethnicity (for exceptions see Hughes 2010; Lockheed and Harris 1984). Most of the literature that does exist focuses on the role of gender in collaborative STEM classrooms (e.g. Goldstein and Puntambekar 2004) or on the use of technology (e.g. Hsi and Hoadley 1997; Jeong and Davidson-Shivers 2006). This project moves the discussion beyond gender and STEM/technology to focus on the type of class that most

students will take at some point during their college career, large general education classes.

Literature Review

Numerous studies demonstrate that active learning produces deeper, more enduring learning (Bickman 2003; Bok 2006; Meyers et al. 1993; Nilst and Holschuh; Walker 1996). Active learning requires students to actively engage in the learning process, acquiring knowledge and applying it in diverse situations. While there are a number of pedagogical techniques that promote active learning, this proposal focuses on one strategy, TBL (Fink 2002; Michaelsen et al. 2002; Michaelsen et al. 2008; Michaelsen and Sweet 2011).

TBL practitioners utilize research on group processes to develop best practices for team formation. One of the key recommendations to emerge from the literature is the importance of maximizing diversity within teams. This ensures that teams have a variety of skills, perspectives, and experiences to draw from. Two student characteristics that are repeatedly cited as being important to diversify are gender and ethnicity/race (Birmingham and McCord 2002; Lim and Zhong 2005).

Social loafing (not preparing for or participating in group work) is one threat to the effective use of any group based teaching strategy. Recognizing this, the literature makes a number of suggestions to reduce the likelihood of social loafing. One of these is the early and frequent use of peer evaluations. This allows each student to see how their team members assess their performance and contributions to the team. The early and frequent use of peer evaluations is supposed to encourage positive behaviors in group settings and discourage negative ones (Birmingham and McCord 2002; Cestone et al. 2008; Meyers 1997; Shimazoe and Aldrich 2010; Topping 2009)

Two of the dependent measures in our study, group collaborative behaviors and peer evaluations, occur regularly as a part of TBL, but little research has been done on whether these processes work in the same manner for all students. Existing research on group processes (but not TBL) has found that gender and ethnicity/race influence the expectations that group members have for one another's behaviors (Ridgeway 2007; Webster and Rashotte 2009). Women and minority individuals are often perceived as being less effective leaders (regardless of their actual performance). Instead, they are expected to take on socio-emotional roles in groups (e.g. encouraging the team, smoothing over hurt feelings, breaking tension). These socio-emotional behaviors are often viewed as being incongruous with leadership roles. When these expectations do not align with women and minority individuals' actual performance, the peer feedback they receive may be negative. In a TBL environment this could affect the experiences and performance in the group of women and minority students. It could also influence the team's overall performance (e.g. effective leaders are discouraged from taking leadership roles). In the long term, this could serve to discourage women and minority students from engaging in leadership behaviors (because they are evaluated negatively when they do) and encourage them to engage in less prestigious socio-emotional behaviors (that are not as highly valued).

Methods

The data for this research project will be collected during Spring and Fall 2014 in a section of LBST 2101 taught by Dr. Coral Wayland. This class enrolls 96 students per semester. This class is taught exclusively using TBL so students work in teams during every class meeting. Students in the class meet 3 days a week, for 50 minutes at each meeting. Two of these meetings are common meeting times where the entire class meets. One of the class meetings is a breakout

session where only 1/3 of the class meets. As such, there are a total of 5 days (2 common meeting times and 3 breakout sessions) when observers will collect structured observations. There will be 16 groups each semester. In order to achieve sufficient statistical power for group-level analyses, we will need to collect data from two semesters, for a total of 32 groups.

The independent variables in this study are gender and race/ethnicity. Gender is a nominal variable with the values male, female and other. The values for race and ethnicity are:
- White, Hispanic origin
- White, not of Hispanic origin
- Black/African American
- American Indian or Alaskan Native
- Mixed Heritage or Other.

It is very likely that we will recode race/ethnicity into white/non-white for the purposes of analysis due to small cell size for some values. Both of these variables are self-reported by students during a survey administered via CATME during the first week of class.

The dependent variables for this project are behaviors during collaborative work, peer review scores, and final grades. The data for each of these variables will be collected as follows:

- *Student behaviors*: One of the strengths of this research is it looks at actual student behaviors during collaboration. Structured observations will be used to collect this data. During each class period each a research assistant will observe one team. During this observation they will code and count distinct interactional behaviors for each student on the team. Specifically, they will code 12 types of behavior identified in the Bales Interaction Process Analysis (Bales 1950). These behaviors fall into the four general categories of positive task behaviors, positive socio-emotional behaviors, negative task behaviors, and negative socio-emotional behaviors. These behaviors will be used as predictors of group and individual level outcomes, such as peer evaluations and final course grades. The process for collecting structured observation data is being piloted this semester.

- *Peer Review of Group Contributions*: During the semester all students will be required to complete 3 peer reviews of their team members. They will complete the first review 5 weeks into the course, the second review 10 weeks into the course and the third review at the end of the course. They will use the online program CATME to complete these reviews. CATME asks students to rate each of their team members in the following areas: contributions to team work; interactions with team members; ability to keep the team on task; and command of relevant knowledge, skills, and abilities. CATME averages the scores in each of these areas for a given student. These results are then released to students so they know how their team members view their contributions. The research team will have access to these scores in CATME.

- *Grades*: After final grades are turned in they will be extracted from Banner.

Evaluation

The primary goal of TBL is to improve student learning. What we are proposing with this project is to determine if that goal is met equally well for all students. Thus, our analyses

regarding student learning (with dependent variables final grades) and gender and race/ethnicity (independent variables) will allow us to examine is TBL is an equally effective strategy for multiple elements of the student population.

In particular, the classroom observations will allow us to dig in and understand the higher-level processes through which group dynamics are affecting individual level outcomes. Thus, after identifying binary relationships between variables using correlations, we will conduct multi-variate analyses utilizing the full range of the coded behaviors. Since, ultimately, we will nest individuals in groups using hierarchical linear modeling, we need to collect data from at least 25-30 groups (two semester's worth) in order to have appropriate statistical power.

Knowledge Dissemination

The results of this research will be disseminated on and off campus. Given the amount of data we are collecting we anticipate being able to publish and present a number of papers. Some of the specific venues for dissemination include:

- UNC Charlotte:
  - Participation in UNC Charlotte's annual SOTL Showcase
  - Discussions with the Center for Teaching and Learning
  - Discussions with the Top 40 Learning Academy Faculty Learning Community
  - Discussions with the QEP implementation team
- Professional Conferences: Papers or posters will be presented at:
  - The National Women's Studies Association Meeting
  - The Team Based Learning Collaborative Annual Meeting
  - The American Sociological Association Meetings
- Manuscripts: We anticipate submitting manuscripts to the following venues:
  - Active Learning in Higher Education
  - Assessment and Evaluation in Higher Education
  - Feminist Teacher

Human Subjects

This project has received IRB approval (protocol 01-13-32).

Extramural Funding

This project will serve as a pilot project to test our methodology. We will use the results to support a request for funding from the Institute of Educational Sciences.

Timeline

- January:
  - Research assistants (RA's) begin conducting structured observations (SO's) the first week of class.
- February:
  - RA's continue SO's.
  - Students complete 1st peer review in the 5th week of class.
- March:

- o RA's continue SO's.
- o Students complete 2nd peer review in the 10th week of class.
- April:
  - o RA's continue SO's.
- May:
  - o RA's finish SO's the last week of class.
  - o Students complete 3rd peer review.
  - o PI's begin initial data analysis after grades are submitted.
- June & July:
  - o Data analysis continues.
- August:
  - o RA's begin conducting SO's the first week of class.
- September:
  - o RA's continue SO's.
  - o Students complete 1st peer review in the 5th week of class.
- October:
  - o RA's continue SO's.
  - o Students complete 2nd peer review in the 10th week of class.
- November:
  - o RA's continue SO's.
- December
  - o RA's finish SO's the last week of class.
  - o Students complete 3rd peer review.
  - o PI's begin final data analysis after grades are submitted.

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