5-2022

Disparities in response, motivations, and self-efficacy to Entrepreneurially Minded Learning within underrepresented students' groups

Kaitlin Hall
University of Arkansas, Fayetteville

Disparities in response, motivations, and self-efficacy to Entrepreneurially Minded Learning within underrepresented students' groups

An Honors Thesis submitted in partial fulfillment of the requirements for Honors Studies in Biomedical Engineering

By

Kaitlin Hall and Mostafa Elsaadany, Ph.D.

Spring 2022

Department of Biomedical Engineering

College of Engineering

The University of Arkansas

Abstract

Systemic racism in the United States is embedded within the policies that have created oppression for certain groups. Women, people of color, and those from low-income families have less access to entrepreneurial knowledge due to the education gap. It has been determined that less than 20 percent of US patents entail a female inventor. Black and Hispanic college graduates also lack this access as fewer than half as many individuals hold patents. Ensuring that these populations are educated in inventor knowledge can facilitate greater inclusion. The historical Brown vs the Board of Education intended to end unequal public schooling. It was clear that pre-established policies limited underrepresented minorities (URM) in self-advancement. Education between represented and underrepresented groups within society has consistently followed a diverging trend despite these efforts. These disparities often lead to less minority representation within the inventor population. This is especially shown in engineering education. Although engineering education has evolved in order to adhere to the constant changes in society, the lack of diversity causes limits in creativity, innovation, and economic growth. STEM degrees are usually awarded to White and Asian males, thus several groups of society are not exemplified within the STEM field. It is crucial to enhance the underrepresented groups' availability to entrepreneurial learning to increase progress in the industrial, medical, and academic environment. Previously, a semester-long project-based on Entrepreneurially Minded Learning (EML) was developed and implemented by our group into a sophomore-level biomechanics course. The objective of this project was to increase student curiosity, connections, and value creation as defined by the Kern Foundation KEEN program during the problem-solving process in 3 modules. Based on the positive outcomes obtained from this project, the current study aimed to investigate the motivations, self-efficacy, and responses to EML skills from those in underrepresented groups. Likert-scale and open-ended

survey questions were utilized to identify the effectiveness of the EML project in fueling entrepreneurial skills within minority student groups. It was hypothesized that URM students exhibit less motivation to conduct entrepreneurial activities as well as possession of a sense of lower self-efficacy compared to well-represented student populations. After a comparison was made between the represented and underrepresented groups and the statistical difference is confirmed, revision steps were determined to ensure that the gap between groups was reduced. These steps included the addition of a mentor program and a workshop focused on instilling entrepreneurial skills into URM groups.

Introduction

Although the engineering curriculum has evolved in response to world advancements, fewer individuals from minority groups are represented within the inventor population. To provide more inclusion in the industry, the classroom, and the healthcare environment, students from underrepresented groups must have access to entrepreneurial-minded learning (1). As society progresses, problems become more diverse that require well-rounded solutions. Any advancement in technology, medicine, or policy is based on the researchers' access to supporting knowledge. To gather varied solutions, there must be an increase in the representation of diverse engineering students. Greater industrial and educational inclusion ensures a variety of perspectives intended to problem-solve, thus society's development is influenced by minority group representation. Generally, the non-Hispanic white and Asian males comprise the majority of stem degrees (2,3), therefore the scope is currently limited. Biomedical engineering education especially tends to consist of biases due to the lack of diversity (4). Some unchecked biases have even led to design issues for medical devices because populations were not considered. The lack of minority representation raises inquiries on the source and potential solutions for combating the norm.

The educational policies of society have been influenced by systematic racism. The inequalities present limit certain groups from advancing. Specifically, there tend to be disparities regarding racial minorities and women in the entrepreneurial environment. Patent holding is an indication for emerging inventors or entrepreneurs. Currently, studies show that there are at least three gaps in patent issuing. Women, especially Black and Hispanic women, hold significantly fewer patents than men. Racial minorities hold patents at lower rates than whites. Lastly, those from lower-income families hold fewer patents than individuals from wealthier homes (1). This gap between represented and underrepresented groups also limits the nation in performance.

Companies with higher diversity tend to compete at a higher rate than those with less diversity (5). As a whole, if racial gaps were diminished 20 years ago, there would be a 16 trillion dollar increase in GDP (2). As technology and global competitors advance, problems arise that demand diverse solutions. The scope of these solutions is dependent on the researchers in these progressive fields. Unfortunately, the cultural barriers that these minority engineers face include limited awareness of enterprising opportunities (6).

Several institutions have recognized the importance of familiarizing minority groups with entrepreneurial skills. The push for more inclusive entrepreneurial education has influenced over 3000 universities to alter STEM curricula (7). For instance, researchers examined the impact of gender-sensitive education combined with a peer mentoring program for female engineers and computer science students at a Canadian university over two years. They aimed to understand the relationship between gender, entrepreneurial self-efficacy, and entrepreneurial intent. Women in engineering and computer science were recruited as mentors. The first phase of the program entailed a classroom instruction of a gender-sensitive curriculum to educate the student mentors on entrepreneurship and the impact of gender. Mentors were taught the processes of venture creation and business ownership and in the later phase, used this knowledge to serve as peer mentors for less experienced women engineers and computer science majors. Qualitative results determined that the female mentors gained increased perceptions of entrepreneurial self-efficacy and intent after the program implementation (8). In another study, a five-week program based on social entrepreneurship and technology was incorporated into community colleges. Participants were required to complete online self-paced modules and facilitated discussions that influenced entrepreneurial skills connected to their communities. Specific domains (entrepreneurship, technology, critical consciousness) were investigated for culturally underrepresented students.

After the program, it was reported that minority students claimed a higher social-cognitive, critical consciousness, and technical preparedness (7). From previous literature, it was determined that interventional programs have beneficial qualities for increasing entrepreneurial knowledge within minority groups.

In the last academic year, projects based on Entrepreneurially Minded Learning (EML) were incorporated into a sophomore-level biomechanics course. These projects highlighted creativity, connections, and value creation when problem-solving realistic situations that the modern engineer may face. For this study, a comparison between the students' responses, motivations, and self-efficacy levels regarding EML-based projects was used to determine possible disparities in engineering education that can be identified and studied. Pre-and post-survey questions were generated in order to identify differentiation between represented and underrepresented groups. The student groups were specifically compared by race, gender, and classification of first-generation college students. The survey questions each emphasized one focus point: feedback, motivations, and self-confidence. Afterward, solutions such as programs and/or workshops intended for underrepresented groups were considered in order to indirectly increase diverse perspectives in industry, academia, and inventor populations.

Experimental Methods

In the previous semesters, EML projects were produced to be implemented into a second-year Biomechanics course. The projects were designed for students to utilize the entire semester. The project essentially consisted of 3 modules, each focusing on different skills. It was intended for the modules to improve the "3 Cs" associated with EML skills: connections, curiosity, and value creation within a student. It was observed that after the implementation, students had enhanced EML skills.

For the recent semesters, the project was used as a foundation for determining how minority students respond in comparison to the others. By using students' self-evaluation in surveys, possible disparities were identified. The presurvey was administered before the 1st module while the post-survey was assigned after completion. The post-survey consisted of the same questions with some additional wording. Item response Likert-type scales targeted either the students' response, motivation, or self-efficacy levels. Students were prompted to provide demographic information at the beginning rather than the end of each survey as there tends to be a higher response rate (3). This information included their name, university email address, race, gender, and whether they classify as a first-generation college student (FGCs). Table 1 below depicts scale-based survey questions that were gathered from previous literature (3,9). Based on the survey questions, students rate their confidence level in response to certain activities and their views on claims. These questions will focus on understanding the self-efficacy, motivation, and response of students from minority backgrounds especially. Open-ended questions were also included. These questions are listed below in Table 2. Some questions were discarded when administering the post-survey. Some questions were recycled from the EML survey administered in the previous semesters. The IRB approval for this experimentation with human subjects was exempted since an IRB was previously obtained for the incorporation of the EML project.

Table 1. *Likert-Scale survey questions were obtained from published literature and edited* (3,9).

Survey question	Items	Target
I can design products to solve real-world problems.	Ratings of agreement	Self-efficacy
I can think creatively to solve problems.		
I feel as smart as others.		

I can improve products based on testing.		
I definitely could become an engineer.		
I definitely could become an inventor.		
I am motivated by the similarity I share with other students in my major	Ratings of accuracy	Motivation
I am motivated by my family nationality and/or nationality origin.		
I am motivated by my gender group.		
I am motivated by the membership I have as part of a student organization.		
I am motivated by my racial group.		
[I chose my major] Because with only a high-school degree I would not find a high-paying job later on.	Levels of correspondence	
[I chose my major] Because I think that a college education will help me better prepare for the career I have chosen.		
[I chose my major] For the pleasure I experience when I discover new things never seen before.		
[I chose my major] For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.		
I can understand the motivations and perspectives of customers.	Rating of agreement	Connections
I know how to make connections with what I learn in class and the real-world engineering problems.		

I am sure in my ability to create value for a customer	Rating of agreement	Value creation
I am sure in my ability to provide relevant solutions as an engineer		
I wish to learn beyond the course content curriculum	Rating of agreement	Curiosity
I show more curiosity about the worldly engineering problems		

Yes or No questions described by (*)

***Table 2**. Qualitative survey questions asked in pre/post surveys* (10).

Open-ended questions	***Pre-Survey***
Do you have an interest in developing an invention or device?*	
How much do you understand about the invention process? i.e. documentation, the Food and Drug Administration (FDA), applying for patents...	
Have you taken a course (at any time previous) that emphasized problem-solving skills connecting to the real-world? If yes, please provide brief information about this course.	
How does your perception of entrepreneurship knowledge factor into your current and future career goals?	
How has your familial background influenced your knowledge of the value of entrepreneurial skills?	

What kind of programs/ events would you like to see offered by the department/college/university?	
Please list a few examples of what you would consider entrepreneurial skills.	
	Post-Survey
How has this project impacted your mindset?	
Have you gained any new mental habits?	
How has the project impacted your engagement to your major?	
How has the project impacted your confidence in your major?	

Based on students' responses to the implemented projects, the effectiveness of the project in including diverse populations was determined. After transferring the data from Qualtrics, the responses were filtered according to race, FGCs, and gender. Averages and standard deviations were collected and compared in specific categories: self-efficacy, motivations, and the 3Cs. Data analysis included converting the survey data into Excel where it was organized. Other studies utilized 3 different types of software to analyze the survey questions (3). In those cases, each software targeted a different section, yet for this study specifically, one software was used for all questions. F-tests were conducted within Excel to recognize sample variances and T-tests were used to identify statistical differences between the represented and underrepresented groups. A significance value of 0.05 was utilized when comparing the obtained p-values for each test. A lower p-value signified a statistical difference between the samples. Any difference meant rejecting that a cultural gap was minimized in the access to entrepreneurial knowledge. No difference suggested otherwise. Analysis of open-ended questions included making general deductions based on trends in populations. This was to further or disprove conclusions made from scale question results.

Results

From the obtained data, graphs were created based on the filtered responses from the race, gender, and FGCs. Collective graphs were made and then separated according to the highlighted skill. Based on each set of graphs, conclusions can be made on specific minority populations and their feedback on entrepreneurial tasks**. Figures 1-6** demonstrate the average ratings to grouped survey questions when comparing White students and underrepresented minority (URM) students. Statistical analysis showed significant differences in motivation levels between racial student groups with unequal variances. The observed p-values in motivation for the pre-and post-surveys were 0.03 and 0.0001, respectively.

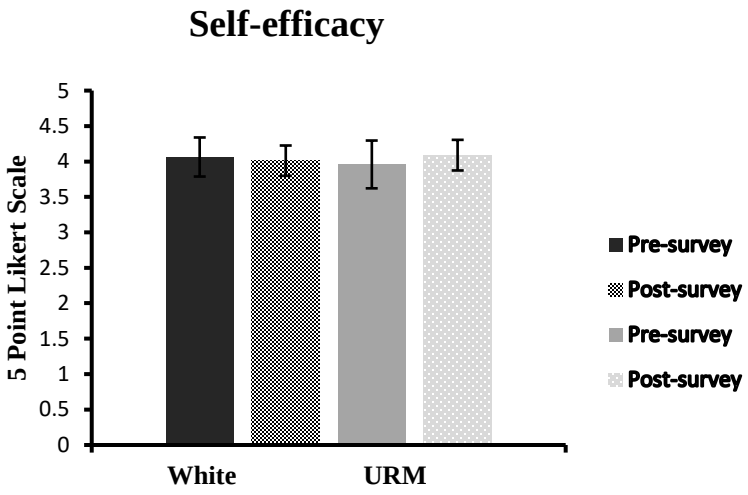

Figure 1. Average self-efficacy levels for racial student groups.

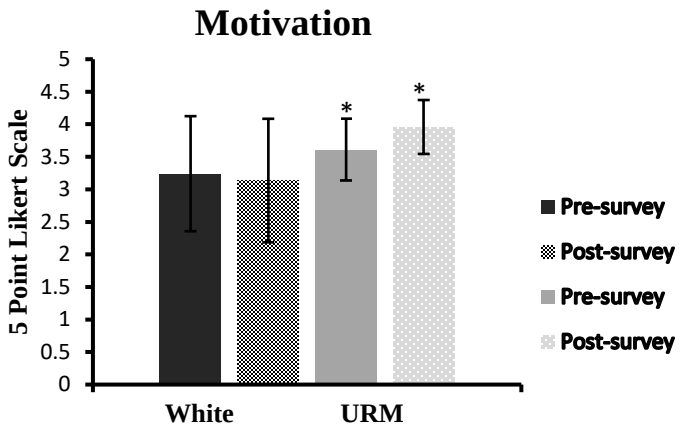

Figure 2. Average motivation levels for racial student groups. Significant difference indicated by (*).

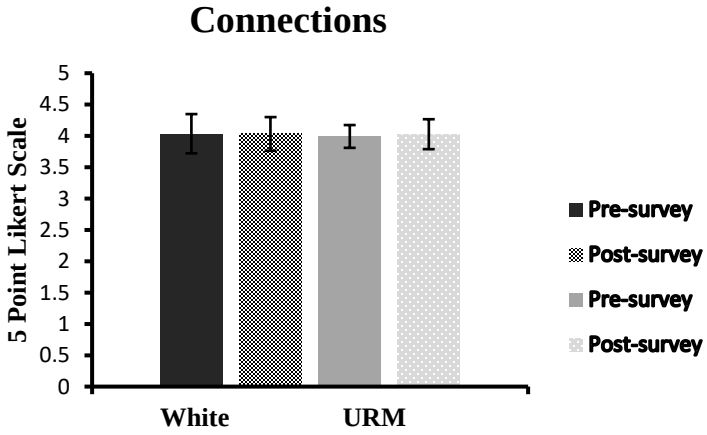

Figure 3. Average response levels in making connections for racial student groups.

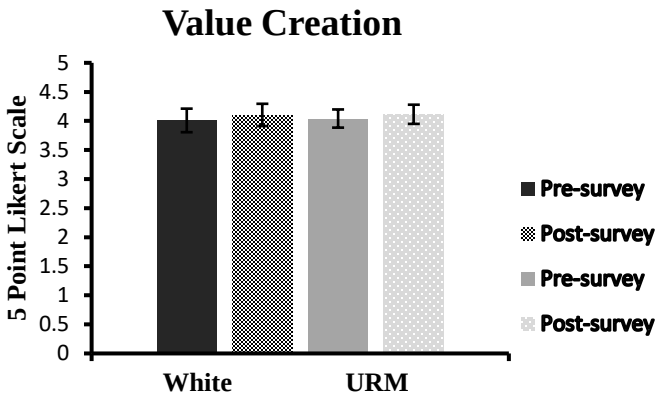

Figure 4. Average response levels in creating value for racial student groups.

Figure 5. Average response levels in curiosity for racial student groups.

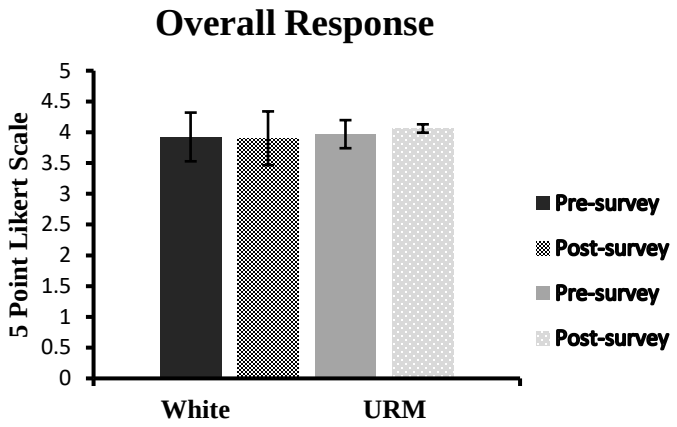

Figure 6. Overall survey scale averages for racial student groups.

Figures 7-12 describe the average survey ratings obtained before and after project completion for gender groups specifically. Unequal variances were determined for all samples. When observing the male and female populations, statistical analysis showed a significant difference in self-efficacy levels with p-values of 0.048 and 0.007.

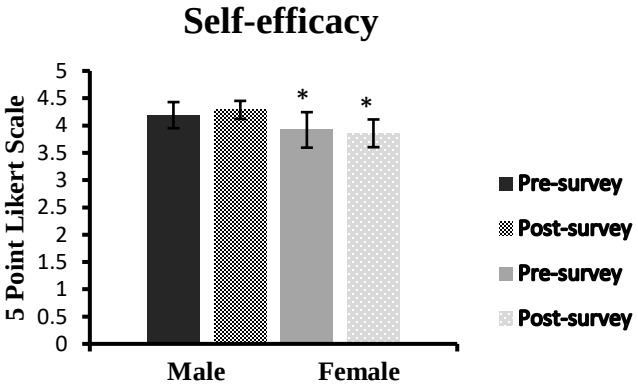

Figure 7. Average self-efficacy levels for gender groups. Significant difference indicated by (*).

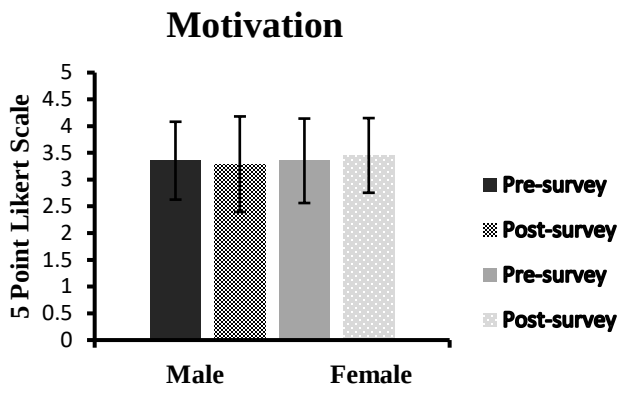

Figure 8. Average motivation levels for gender groups.

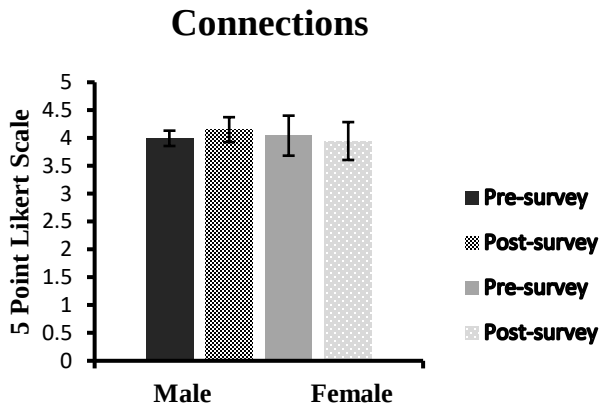

Figure 9. Average response levels in making connections for gender groups.

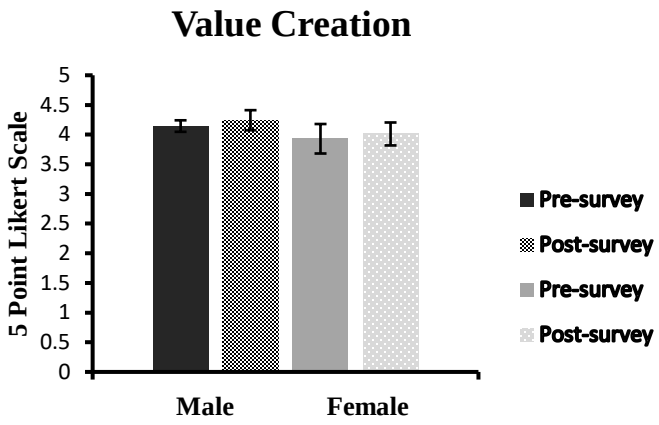

Figure 10. Average response levels in creating value for gender groups.

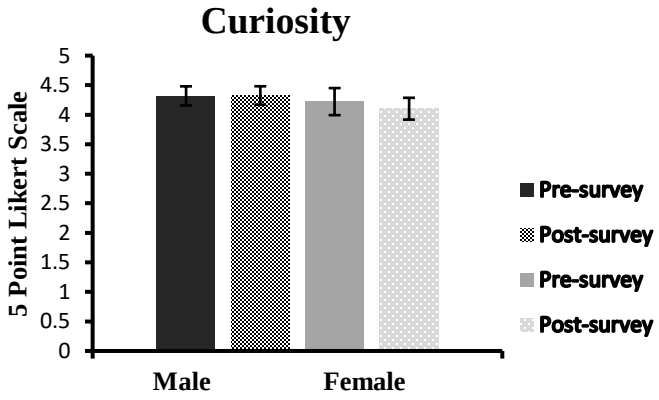

Figure 11. Average response levels in curiosity for gender groups.

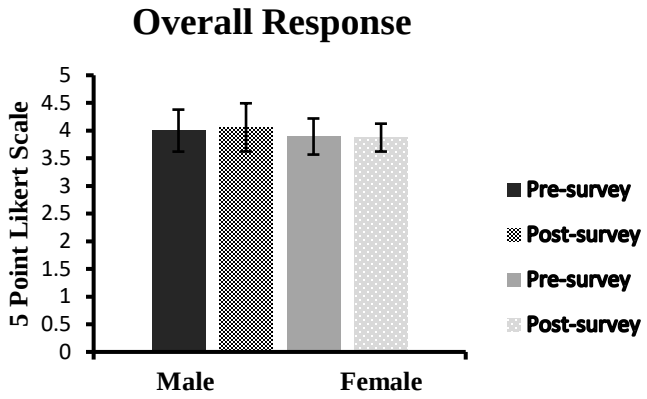

Figure 12. Overall survey scale averages for gender groups.

For the FGCs and non-FGCs groups, **Figures 13-18** demonstrated the average self-ratings gathered from pre-and post-surveys. The samples exemplified unequal variances with no statistical differences. Statistical analysis for the pre-survey showed a high instance in motivation and then for post-survey data, a high instance in self-efficacy. P-values were 0.08 and 0.09 and thus no significant differences.

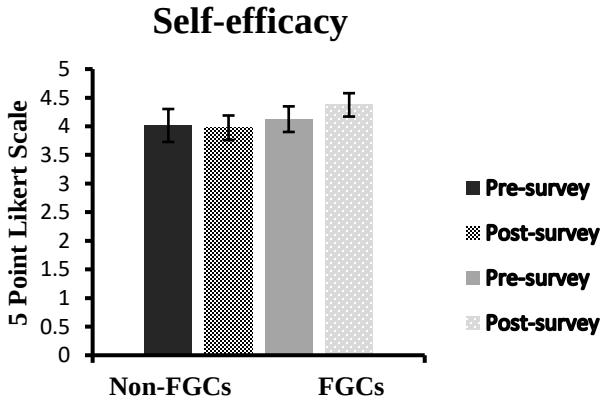

Figure 13. Average self-efficacy levels according to first-generation college student criteria.

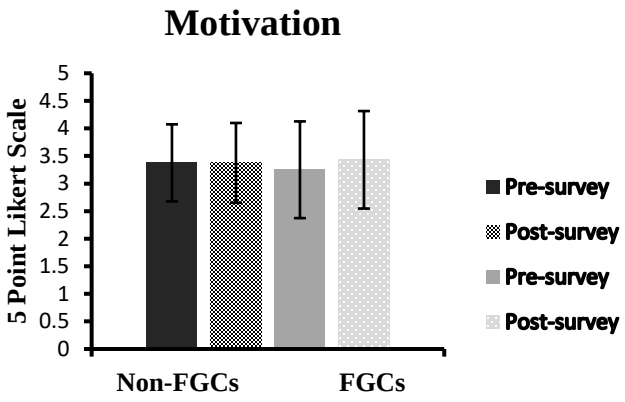

Figure 14. Average motivation levels according to first-generation college student criteria.

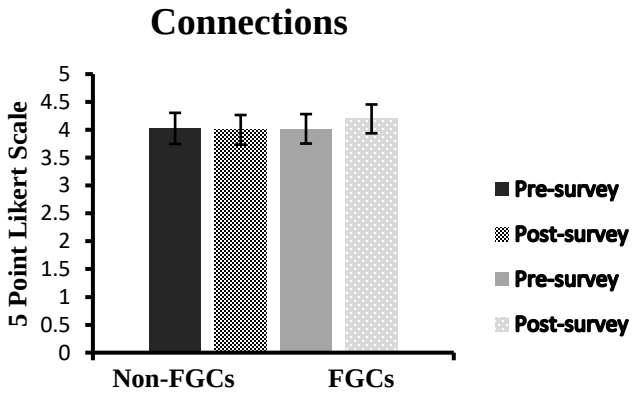

Figure 15. Average response levels in making connections according to first-generation college student criteria.

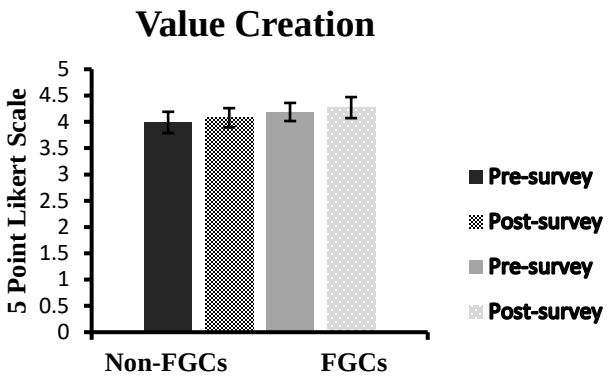

Figure 16. Average response levels in creating value according to first-generation college student criteria.

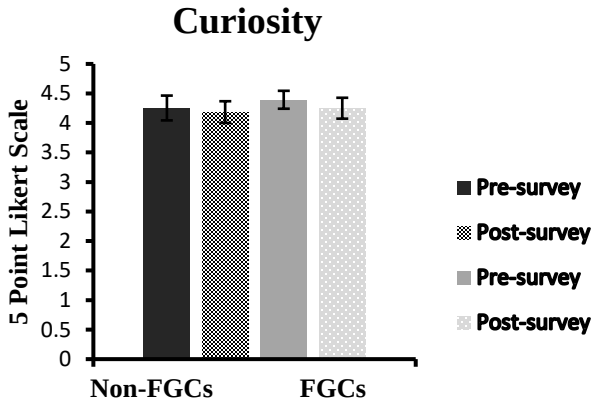

Figure 17. Average response levels in curiosity according to first-generation college student criteria.

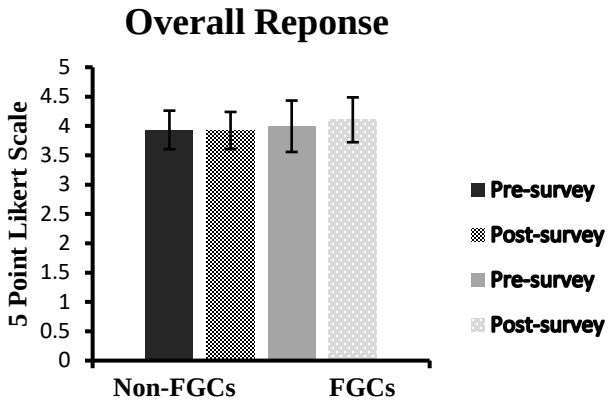

Figure 18. Overall survey scale averages according to first-generation college student criteria.

Discussion

Observations from the racial student groups showed an overall stagnation for the White students and a slight increase in underrepresented students' responses. Those from the White student group reported a decrease in self-efficacy and motivation levels over the semester. This could be due to the nature of the project. Since students were asked to complete all three modules with their group members, there could have been a dependency development. Social settings may have also influenced White students' motivation since some studies suggest that they tend to feel worried about how they are perceived by others even with adequate self-esteem (3). Possible interventions could be made to the project design where students have the opportunity to exemplify their independent abilities. In contrast, the underrepresented groups experienced an increase in self-confidence and motivation after completing the semester project. This result disproved the acquired hypothesis assuming that the gap in diverse education would limit these levels. However, this could be because the minority groups in this major understand and were prepared for the

potential adversity. On the other hand, this growth could be attributed to the underrepresented student group sample proportions. Out of the 16 minority students, 7 were of Asian descent. Previous literature has described White and Asian communities with similar confidence levels (3). In terms of response, no distinct instances were observed for connections, value creation, and curiosity. This would suggest that the entrepreneurial-based project introduced skillsets constant with innate abilities. The student groups based on race showed statistical differences in motivation levels between pre-and post-surveys. Because underrepresented groups had a culturally ingrained sense of motivation, it would explain the difference seen throughout the semester. Responses to the open-ended questions furthered this knowledge since there was a trend in URM students not having a sufficient entrepreneurial background, yet their family values motivated students' performance.

Overall, male and female students demonstrated constant levels of response throughout the semester, yet male ratings were higher than female. In between the gender populations, an increase was observed in self-efficacy levels for males while the female population experienced a decrease. This coincides with previous literature and the stated hypothesis (8). Similar observations were determined in response when making connections and developing curiosity. It was stated that female students tend to disengage from STEM careers without sufficient social support (3). This would explain the decline in self-confidence and thus the lack of desire to relate information when solving challenging problems. Motivation levels were relatively stagnant for males after the semester, yet for female students, there was a slight growth in students' ambition. Even though this result went against the claimed hypothesis, the ratings were understandable since female students tend to have a higher determination to obtain a goal (3). This could also be because the sample size for the female students was surprisingly larger than the males. When completing the project,

both student groups developed an increase in value creation skills. Because creating value is skill-based on entrepreneurial knowledge, it can be assumed that further increases were based on awareness of customer perspectives. There was a trend within the open-response questions where several female students viewed entrepreneurial skills as concrete to business, thus deemed such skills as unrelated to their future. This could also contribute to the decrease in self-efficacy since the EML aspects could be seen as "daunting concepts".

From the results, an overall marginal increase in response was shown for first-generation college students while their counterparts remained relatively stagnant. It was interesting to notice that for the FGCs, there were modest increases in self-efficacy, motivation, and connection skills throughout the semester while other students remained almost constant. Advances in these areas could be credited to their similar characteristics to White and Asian students (3). The curiosity ratings for both student groups had a barely noticeable decline. This could be due to usual student fatigue by the end of the semester. Similar growth to gender populations in value creation levels was observed. An increase in this same fashion solidified that the EML project introduced customer values for a variety of students. No statistical significance was determined for FGCs. This could be due to the small sample size of 8 first-generation students.

Conclusions

Limitations arose when performing experimental observations for the race, gender, and FGCs populations. To begin with, sample sizes may have influenced underrepresented and first-generation results. In further experimentation, racial groups such as White and Asian may be categorized together in order to gain more definite data. In contrast, female populations were on a larger scale than male students in the biomechanics course. While this fact is encouraging, in order to obtain clear results, future experiments may include other departments to acquire fairness. On a

long-term scale, steps to the revision were in progression. Some institutions chose to implement mentor programs to promote better adjustment for minority groups (3,9). The implementation of a mentor program was discussed for the biomechanics engineering course. Students that had previously completed the course with a high-grade standing would be eligible as mentors. The intended goal would be for all the mentors to originate from diverse backgrounds. From in-class observations, it was determined that mentors of different engineering disciplines would also be beneficial. Upperclassmen in mechanical or industrial engineering would be beneficial for assisting minority students with entrepreneurial tasks. The general design was that the mentors would be designated students in groups of 3-4, yet students should be encouraged to interact with all upperclassmen. In addition, the mentors could serve as a panel when students execute EML projects.

Acknowledgments

First, I would like to thank my research mentor, Dr. Mostafa Elsaadany for guiding me throughout this process. I would also like to acknowledge the University of Arkansas Honors College for the financial support from the Student Undergraduate Research Fellowship. It is a privilege to gain such an award and I appreciate the confidence in my research.

References:

1. Fechner H, Shapanka MS. Closing Diversity Gaps in Innovation: Gender, Race, and Income Disparities in Patenting and Commercialization of Inventions. Technol Innov [Internet]. 2018 [cited 2021 Sep 16];19(4):727–34. Available from: http://dx.doi.org/10.21300/19.4.2018.727www.technologyandinnovation.org

2. Jackson JL, Huang-Saad A, Mondisa JL. The Urgency of Intersectionality : A Review of Racialized Experiences in STEM Entrepreneurship. ASEE Annu Conf Expo. 2021;

3. Id P, Villalobos C, Florida C, Villalobos J, Florida C, Nair UK, et al. Identity , Self-Esteem , and Academic Motivation : An Analysis of Effects on Underrepresented STEM Majors Identity , Self-Esteem , and Academic Motivation : An Analysis of Effects on Underrepresented STEM Majors Jose Villalobos , Uday Nair , Lisa Mas Care. 2019;

4. Id P, Nezafati M, Engineering B, Joe T, Doux L, Engi- B, et al. WIP : Integration of Inclusive Mindset in a Middle-Year Biomedical Engineering Course : a Study Over Healthcare Disparities via Story-Driven Learning WIP : Integration of inclusive mindset in a middle-year biomedical engineering course : a study over heal. 2021;

5. Mann CL, Peterson DM. Closing the racial inequality gap. 2020 [cited 2021 Sep 20];Sep(September). Available from: https://ir.citi.com/%2FPRxPvgNWu319AU1ajGf%2BsKbjJjBJSaTOSdw2DF4xynPwFB8a2jV1FaA3Idy7vY59bOtN2lxVQM%3D

6. Fleisher L, Marquez A. A Seat at the Table: Special Considerations for Women and Underrepresented Groups in Academic Entrepreneurship. Acad Entrep Med Heal Sci. 2021;1–19.

7. Cadenas GA, Cantú EA, Lynn N, Spence T, Ruth A. A programmatic intervention to promote entrepreneurial self-efficacy, critical behavior, and technology readiness among underrepresented college students. J Vocat Behav. 2020 Feb 1;116:103350.

8. Elliott C, Mavriplis C, Anis H. An entrepreneurship education and peer mentoring program for women in STEM: mentors' experiences and perceptions of entrepreneurial self-efficacy and intent. [cited 2022 Feb 16]; Available from: https://doi.org/10.1007/s11365-019-00624-2

9. Neve N, Keith-Marsoun SK. The Invention bootcamp, a four-week Summer course for high school underrepresented students in a university setting. ASEE Annu Conf Expo Conf Proc. 2017;2017-June.

10. Duval-Couetil N, Wheadon J. The value of entrepreneurship to recent engineering graduates: A qualitative perspective. Proc - Front Educ Conf FIE. 2013;114–20.

Appendix I: Informed Consent

Developing Entrepreneurial Minded Learning in a Second Year Biomechanical Engineering Course
Consent to Participate in a Research Study
Principal Researcher: Kaitlin Hall
Principle Investigator: Mostafa Elsaadany

INVITATION TO PARTICIPATE
You are invited to participate in a research study about Entrepreneurial Minded Learning (EML) in a Biomechanical Engineering course at the University of Arkansas's Biomedical Engineering Department. You are being asked to participate in this study because you are a Biomedical Engineering student who is currently enrolled in the University of Arkansas Biomedical Engineering Department.

WHAT YOU SHOULD KNOW ABOUT THE RESEARCH STUDY
Who is the Principal Investigator?
Dr. Mostafa Elsaadany
Email: mselsaad@uark.edu

Who are the principal Researchers?
Loren Hedgecock
Email: lghedgec@uark.edu

Kaitlin Hall
Email: kjh029@uark.edu

What is the purpose of this research study?
The students enrolled in the Biomechanical Engineering course will be assigned with a semester-long project that tasks the students to create a treatment plan and solve different problems in order to find the best way to treat their patients. The project is embedded with Entrepreneurial Minded Learning (EML) skills. These skills will be used to start developing students' entrepreneurial mindset, or a mind geared towards action.

Who will participate in this study?
Approximately 70 students enrolled in the Biomechanical Engineering course at the University of Arkansas.

What am I being asked to do?
Your participation will require filling out a survey at the end of the semester. Your grades, class participation, homework assignments, projects, and exams will be collected and analyzed anonymously.

What are the possible risks or discomforts?
The risks are leakage of participants' grades or their demographic information. Different measures will be taken to ensure the security of the participant's data. The data will be stored in

a secure platform with only access granted to the principal researchers and the PIs. The participant's name will not be included in any reported or published data.

What are the possible benefits of this study?
By participating in this study, all students will be able to problem solve as a team and work on real-world problems related to biomechanical engineering. These problems are intended for students to investigate the proper treatment plan for their "hypothetical" patients based on their group. For students participating in the entrepreneurial-minded learning (EML) aspect of this project, they will start building an entrepreneurial mindset and creating a mind geared towards action. There are many benefits to EML learning; it enables students with the tools to identify opportunities and create value in any context. EML's ultimate goal is to supply engineers with the learning tools needed to not just succeed but thrive in today's society. The young engineers in BMEG 2813 will participate in the semester-long project that will demonstrate many different EML skills. The modules will equip students with the ability to evaluate a situation, determine the values of the customers, build teams, explain societal and economic benefits, and respond to failure. Ultimately, this project should form engineers that are able to create value, curiosity, and connections.

How long will the study last?
This study will take place during the spring semester of 2021.

Will I receive compensation for my time and inconvenience if I choose to participate in this study?
Yes, you will receive extra credit in the course. If you decided not to participate in this study, alternative opportunities will be provided to receive an equivalent extra credit.

Will I have to pay for anything?
No, participation in this study will **not** cost you any payment.

What are the options if I do not want to be in the study?
If you do not want to be in this study, you may refuse to participate. Also, you may refuse to participate at any time during the study. Your grades and academic standing in the classes will not be affected in any way if you refuse to participate. If you decide not to participate in this study, alternative opportunities will be provided to receive an equivalent extra credit.

How will my confidentiality be protected?
All information will be kept confidential to the extent allowed by applicable State and Federal law. All the data collected will be kept in a secure domain. The participants' names will **not** be included in any reported or published data. Collected data will not be deleted at the end of the semester. However, data will continue to be secured as above.

Please note that grades and class assignments will be included in the research data. Confidentiality will be protected as above.

Will I know the results of the study?

At the conclusion of the study, you will have the right to request feedback about the results. You may contact, Dr. Mostafa Elsaadany (mselsaad@uark.edu). You will receive a copy of this form for your files.

What do I do if I have questions about the research study?
You have the right to contact the Principal investigator as listed above for any concerns that you may have.

You may also contact the University of Arkansas Research Compliance office listed below if you have questions about your rights as a participant, or to discuss any concerns about, or problems with the research.

Ro Windwalker, CIP
Institutional Review Board Coordinator
Research Compliance
University of Arkansas
109 MLKG Building
Fayetteville, AR 72701-1201
479-575-2208
irb@uark.edu

I have read the above statement and have been able to ask questions and express concerns, which have been satisfactorily responded to by the investigator. I understand the purpose of the study as well as the potential benefits and risks that are involved. I understand that participation is voluntary and extra credit is available whether I decide to participate or not participate in the study. I understand that significant new findings developed during this research will be shared with the participant. I understand that no rights have been waived by signing the consent form. I have been given a copy of the consent form.