

# **Developing Sustainable and Continuing Practices for Diversity and Inclusion in a Civil and Environmental Engineering Department**

## **Tiago R Forin (Engineering Clinic Instructor)**

Tiago Forin is a lecturer at Rowan University.

## **Stephanie Lezotte (Assistant Dean) (Rowan University)**

Dr. Lezotte (she/her/hers) is Assistant Dean in the School of Graduate Studies. Dr. Lezotte earned her Ph.D. in Education from Rowan University, with a concentration on postsecondary and higher education, and her research focuses on examining organizational structures and systems that inhibit postsecondary access and success, particularly STEM fields and graduate education. Her research has been published in *Journal of Diversity in Higher Education*, *School Science and Mathematics*, *Journal of Professional Issues in Engineering Education and Practice*, *Journal of Applied Research in Higher Education*, *Improving Schools*, and *William and Mary Educational Review*. She has taught master's and doctoral courses in higher education leadership as well as undergraduate reading, writing, and literature courses in both New Jersey and Alaska since 2005.

## **Adriana C Trias Blanco (Assistant Professor)**

## **Theresa Fs Bruckerhoff (Project Evaluator)**

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## Abstract

This is a summary of Rowan University's efforts to initiate changes in diversity and inclusion with a Civil and Environmental Engineering Department. After having six years of an NSF grant, the research team initiated multiple efforts to increase a body of diverse students in the department, develop inclusive pedagogy, and develop a means for sustainable change within the university after the grant's end. To increase the number of diverse students, the department looked at a holistic approach to recruitment and enrollment. To better understand the students' experience, surveys and interviews were conducted with specific questions regarding how they viewed the climate of diversity and inclusion within their classes and the university at large. Multiple mentoring efforts were also started so that students received support in their collegiate careers. With regards to inclusive pedagogy, the department faculty were encouraged to develop relevant examples for students' career developments. These examples addressed diversity from a global perspective as well as domestic issues of inequality. With the grant approaching its end, there was increased efforts to make sustainable change within the whole university. With backing from the grant, faculty members received internal funds that focused on the development of inclusive pedagogy. This occurred twice during the lifetime of the grant. The researchers also developed a workshop series that would include all strategies used to develop inclusive pedagogy for faculty outside of the Civil and Environmental Engineering Department. This workshop was done to support changes made to promotion practices where faculty would receive encouragement and credit for addressing diversity and inclusion in their tenure with the university. This poster will highlight the research team's role in developing and implementing these changes for the sixth year of the grant.

## Introduction

The Civil and Environmental Engineering (CEE) department at Rowan University was awarded a grant through the National Science Foundation known as the Revolutionizing Engineering and computer science Departments (RED) grant. The CEE department is using the RED grant to address certain actions to better serve the underrepresented population of students present. The research responsible for the managing the RED grant utilized critical education theory to make their framework. This framework is considered to be helpful in creating an equitable learning environment where students are empowered and actively participate in their own education [1].

Since the initiation of the RED grant, the CEE department provided an opportunity to create policies that would better serve students. The first action that the RED research team did was look at the student population present at Rowan University. It was determined that the amount of certain underrepresented groups such as women were well below the national average [2]. A survey was given to faculty and students to see what the climate of diversity was at the university level. The survey looked at how diversity and inclusion was expressed in curriculum, policy, and practice [3,4]. These surveys gave the RED research team the opportunity to see what students were missing in their learning experience. It was seen that students rarely saw examples of

diversity and inclusion and that the faculty were willing to make changes to their curriculum but didn't know where to start. With those pieces of information, the RED research team gave the CEE faculty a workshop on how to utilize inclusive pedagogies [5]. After this workshop, the RED research team began conversations with the CEE faculty to discuss what actions could be done. It was determined that using global examples would be an easy way to introduce diversity and inclusivity in the majority of CEE courses. This decision was based on work done by Donna Riley who mentions that non-western examples are a part of inclusive practice [6]. Since the Accreditation Board for Engineering and Technology addresses the development global competency, this was easily adopted by the faculty. After years of having global examples integrated in to the CEE course work, the RED research team saw changes in students' recognition of the climate of diversity and inclusion. Students were regularly seeing how engineering impacts people and societies.

### The Final Year

After the success of the CEE department's efforts, the RED research team has helped influence the entire College of Engineering. The RED grant PI was instrumental in establishing a sustainable plan for having diversity and inclusion be a permanent staple at Rowan University. It is now required for faculty to focus some aspect of their curriculum on these concepts for promotion and tenure. To assist faculty across the college of engineering, the RED research team will set up a series of workshops in the final year to get faculty members outside of the CEE department to change their approach to making their courses more inclusive. The workshops will focus on introducing the concepts of inclusive pedagogy and present faculty with methods to engage students. Examples developed by the CEE department will be used for the workshop to show what can be done. The workshops will be split into two main sessions towards the end of the Spring 2022 semester. The first session will be concerned with establishing what inclusive pedagogy is and encourage the faculty attendees to develop their own examples to be developed before the second workshop. Before the second workshop the RED research team will go and assist faculty members to develop their ideas before the second workshop. For the second workshop, the faculty will show the newer examples that were developed and will have opportunities to have more time to develop another example during the workshop.

### Conclusions

This paper offers a look into the development of the final year developments of the RED grant given to the CEE department at Rowan University. The success of its implementation in the CEE department will be shared with all faculty in the College of Engineering. The workshops will hopefully develop a new sense in more engineering faculty about the importance of inclusive pedagogy and that its implementation in their course work is a reasonable expectation. Since having a focus on diversity and inclusion is important for faculty promotion and tenure, the RED research team will provide all the assistance that faculty will need to make these changes in their own courses.

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