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## Abstract

Solving global issues, such as climate change and pandemics, will require a diverse coalition of well-trained scientists. Tapping into the growing US Latinx population for our future STEM workforce will provide fresh perspectives on scientific thought and directives. Although Latinx comprise the fastest-growing ethnic minority group in the U.S. (Census Bureau, 2010), only 8.9 % graduate with a bachelor's degree in STEM (Census Bureau ACS, 2017; NSF NSCG, 2017; NSF NCSES, 2013). As a critical first step, science need a bold cultural shift that is inclusive, equitable, and just. Fundamental to the success of Latinx students in STEM is recognizing their embodied cultural capital wealth (CCW) as an asset. Latinx student success has been attributed to (1) their ethnic consciousness (commitment to community), (2) validation of their aspirational goals (recognition of the value of education), (3) success in creating social networks, and (4) their ability to navigate between their college and familial worlds, while negotiating their multiple identities (bicultural) as they move through these diverse cultural contexts (Rendon et al., 2014). By leveraging these assets students draw strength from their Latinx heritage to develop their STEM-cultural wealth (SCW), including scientific literacy, scientific disposition, and knowledge about the transferability of science into the labor market. Culturally Relevant Education (CRE), used in the classroom to capitalize on students' CCW, has been examined with successful outcomes in K-12. However, little work has been done on the effectiveness of CRE at institutions of higher learning. Our specific aims focus on determining the effects of CRE interventions which leverage Latinx student's CCW assets through participation in an interdisciplinary community-based research program (working alongside community leaders, mentors and peers) focused on an environmental problem of lake ecology in communities that align with student's social, cultural and historical identities.

## Introduction

- To ensure a broader impact in Latinx representation, the sciences need a bold cultural shift that is inclusive, equitable and just. Culturally Relevant Education (CRE), while embracing social justice, acknowledges the importance of social, historical, and institutional contexts on learning and access to learning (Aronson & Laughter, 2016; Rodriguez, 1998; Rincón et al., 2020).
- CRE aligns with Yosso's community cultural wealth (CCW) framework (2005), which identifies different mechanisms that communities of color rely upon to survive and resist macro and microforms of oppression as various forms of interconnected capital (aspirational, familial, social, linguistic, navigational, resistance).
- It is vital to recognize that Latinx students possess an exceptional knowledge base and strengths that merit recognition, although they are often unrecognized within institutions of higher education (Rendón et al., 2014; Yosso, 2005; Delgado et al. 2009), such as *ventajas* and *conocimientos*. This approach is ideal for STEM disciplines since it creates spaces for Latinx students to see themselves as scientists and leaders, thereby strengthening their scientific identity and sense of belonging.
- Our goal for this project is to determine the effects of CRE interventions which leverage Latinx student's CCW assets through participation in an interdisciplinary community-based research program focused on an environmental problem of lake ecology in communities that align with student's social, cultural and historical identities.

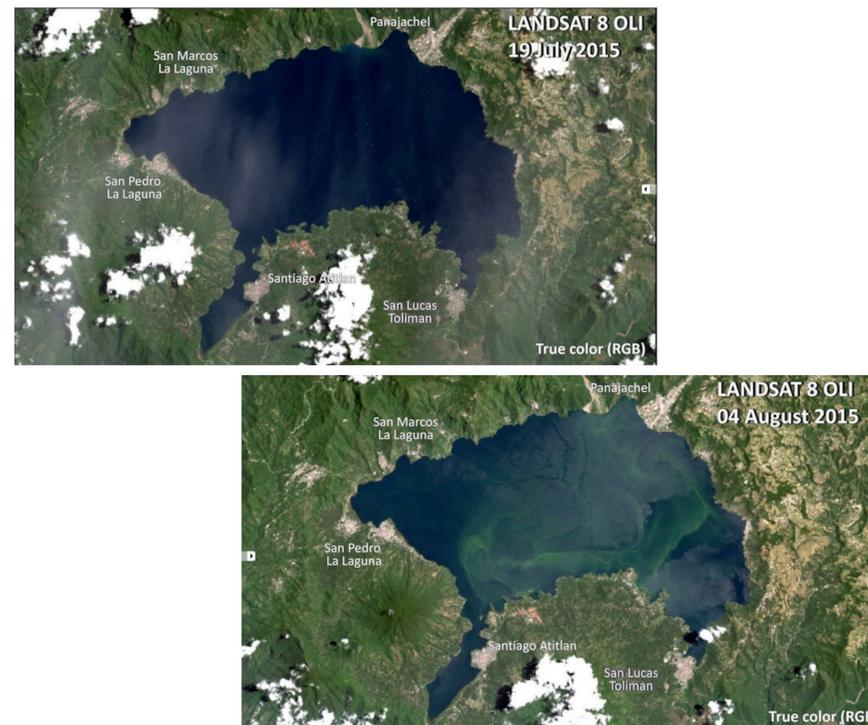
## Background for Study

In this project, college students work with K-12 students to develop a community science project focused on the effects water quality has on the ecosystem around a lake in Guatemala



Figure 1. Map of Guatemala (a) and Lake Atitlan (b)

**Problem:** Lake Atitlan has been experiencing dramatic algal blooms



**Question:** How does this affect the ecology around the lake?

## Methods

CSUSB students conduct their research in Lake Atitlan



CSUSB Students train Teachers and students in San Lucas Toliman



7-8<sup>th</sup> graders conduct research throughout the year



## Outcomes

Participant	STEM Skill	Other Skills
College Students	Scientific research design and implementation	<ul style="list-style-type: none"> <li>Leadership</li> <li>Intercultural communication</li> </ul>
7-8 <sup>th</sup> Graders	Learning and applying scientific method	<ul style="list-style-type: none"> <li>Leadership</li> <li>Intercultural communication</li> </ul>
Teachers	Learning and applying scientific method	<ul style="list-style-type: none"> <li>Intercultural communication</li> <li>New pedagogy</li> </ul>
Professor	<ul style="list-style-type: none"> <li>New research design</li> </ul>	<ul style="list-style-type: none"> <li>Professional language development in Spanish</li> <li>Intercultural collaboration</li> </ul>

## Contact

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## References

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