The Macksey Journal

Volume 1 Article 58

2020

Ascendance and Transformation: Humanizing TRIO First Generation Students of Color and their STEM Empowerment Agents

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Cover Page Footnote

Acknowledgements I thank Dr. Ana Elizabeth Rosas,*University of California, Irvine*, for her guidance and encouragement as my Undergraduate Research Opportunities Program Faculty mentor. I also thank Dr. Laura Enriquez,*University of California, Irvine*, for reviewing and helping with the construction of my manuscript. I would like to extend gratitude to Chelsea Ea for assisting with the distribution of the student survey. This work was supported by the California Lutheran University TRIO Math and Science Upward Bound and Centinela Valley Project staff and students, with special thanks to my Hawthorne and Leuzinger High School students. Finally, this work was invaluably supported by my family and friends, and I thank them for their patience and care. This work was funded and supported by the University of California, Irvine Undergraduate Research Opportunities Program.

Ascendance and Transformation: Humanizing TRIO First Generation Students of Color and their STEM Empowerment Agents

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Abstract

The TRIO program has the ability to mentor Black and Latinx students of color into pathways that can minimize the gap in educational attainment. Stanton-Salazar (2011) explains how mentorship in the form of empowerment agents among working-class students of color furthers their access to institutional support that is empowering for them in combination with their critical consciousness as they navigate STEM as a field and career choice (as cited in V. Pendakur, 2016). In other words, a mentor becomes a tool for action for this student population to transform themselves and their community. The TRIO STEM educators involved in California Lutheran University's TRIO Programs, specifically the Math and Science Upward Bound Program and Centinela Valley Project, address the unique demands and challenges of educating a working-class racially diverse high school student populations from Inglewood, California. These programs' TRIO approach to sustainability and education and as embraced by their STEM educators enriches the fields of Chicana/o/x/a-Latina/o/x/a Studies and S.T.E.M. This research deviates from previous studies because of its emphasis on Inglewood, California. This is a city and population that is limited in educational access resources and in turn, as a city and population has begun to invest itself in the academic success and retention of its high school students. By uncovering student perspectives through a survey and analyzing the approaches of educators through in-depth interviews, I hope to advance a new understanding of Inglewood,

California as a population that can transform, sustain, and retain STEM learners from racially diverse backgrounds.

Keywords: TRIO, STEM, Mentorship, Empowerment Agents, Critical Consciousness, Educational Attainment, Academic Retention, High School, College

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Upward Bound provides fundamental support to participants in their preparation for college entrance...We serve high school students from low-income families and high school students from families in which neither parent holds a bachelor's degree.
- California Lutheran TRIO Mission

In 2013, California enacted the Local Control Funding Formula (LCFF) to create economic equity in K-12 districts for low-income and racially diverse student populations by providing funding based on student characteristics and improvement in academic outcomes (Ferriss 2017; California Department of Education 2020). “Like many states, California has struggled with a disturbing academic ‘achievement gap’ that’s developed along socio-economic and ethnic lines” (Ferriss 2017). Federal TRIO Programs are educational access programs designed for disadvantaged students, more specifically they focus on low-income, first-generation students to close the “achievement gap.” TRIO programs are seen across the nation, and due to the LCFF, districts with higher populations of working class racially diverse students are able to localize funding to implement TRIO programming for their students. In 2012, California Lutheran University’s TRIO Upward Bound was implemented in the Centinela Valley Union High School District (CVUHSD) in the Los Angeles County. The CVUHSD in 2010-2011, had “83% low-income students, spent $9,985 on educating each student and 27% of its graduates were eligible to apply to four-year public colleges” and after the LCFF, by 2014-2015 had “69% low-income students, spent $12,628 on educating each student and 32% graduates

eligible to apply to four-year public colleges" (Ferriss 2017). This case study focuses on two schools in the CVUHSD that funds two California Lutheran University TRIO programs to investigate TRIO staff members' approaches to educating working class, first generation students of color into STEM.

Scholars have established that the utilization of mentorship for Black and Latinx students in the form of institutional and empowerment agents are effective in furthering educational attainment, mainly in the first two years of high school (Pendakur 2016; Bensimon et al. 2019; Pitre and Pitre 2009). Similarly, other studies show that maintaining a cultural critical consciousness throughout academic curriculum for racially diverse, mixed socio-economic status students and awareness of their working-class community can help marginalized students succeed (Oseguera, Locks and Vega 2009; Jackson and ASCD 2019; Pendakur 2016; Jaramillo 2012). Furthermore, other studies have explored a diverse student population's demands and challenges with receiving educational equity and the strategies to further retention, inside the classrooms and outside with educational access programs, mainly in STEM (Gandara and Contreras 2009; Gabriel 2008; Pitre and Pitre 2009; Leonard, Burrows, and Kitchen 2019). The relationship between TRIO as an educational access program that utilizes mentorship, a critical consciousness, and promotes educational equity and marginalized students is not clarified in these previous studies. Therefore, the goal of this study is to address the following: How do TRIO educators in their specific roles use their program involvement, role, and history with the program to encourage a racially diverse Inglewood, California high school population to thrive in STEM? and What are the unique demands and opportunities to educating and connecting with a racially diverse student population within and beyond the TRIO curriculum facilitated in Inglewood, California?

Drawing on interviews with California Lutheran University's TRIO Upward Bound staff members and survey responses from TRIO enrolled students at Hawthorne High School and Leuzinger High School, I identify three main approaches from the TRIO Program: mentorship, critical consciousness, and educational equity opportunities. My findings suggest that mentorship is the most effective approach for staff members to connect and engage with students' academic value, college going experiences and interest in STEM. This paper extends on the literature by focusing on students enrolled in a TRIO Upward Bound program from one year to four years in multiple grade levels. The three themes in approaching educating a diverse student population seen in this paper is broken down by staff members. All of these staff members share a connection to these students, as they were and are actively a reflection of an underrepresented, racially diverse population. From the professional staff, the Academic Specialists use of weekly site visits are a form of mentorship, that include, but are not limited to academic tracking, college planning, financial aid planning, one-on-one appointments, etc. The TRIO teachers' mentorship is seen through an academic lens in which they further academic value and success inside the classroom. Then, the Tutor Mentors that offer academic assistance to the TRIO teachers' but are seen as mentors in that they form relationships with students inside and outside the classroom. Tutor Mentors offer mentorship through encouraging a positive environment on academics, discussing personal educational challenges, sharing personal academic pathways to higher education, offering one-on-one tutoring sessions, weekly group tutoring sessions, etc. Working class, first generation students of color are increasingly enrolling in higher education, and I particularly explore how the TRIO Program connects and engages with students through its staff members' mentorship, critical consciousness, and educational equity opportunities. This leads to students' increasing their academic value, college going experiences and an interest in STEM.

Developing a Framework to Understand TRIO Educators' Approaches for High School Students

I am investigating TRIO educators' approaches to educating a working class, first generation, racially diverse into STEM fields within and beyond their high school. My in-depth investigation of how educators work as part of and in support of an educational access program established and funded for college bound high school students, is important for the Inglewood, California community. It will further the understanding on how and why educators exert and remain invested in their role towards educating a working class and racially diverse student population on to a STEM pathway. The goal of this literature review is to focus on first generation students navigating their pathway to higher education as framed by the following three major themes: the utilization of mentorship for Black and Latinx students, maintaining a cultural critical consciousness, and educational equity opportunities. These major themes are then broken down into sub-themes to further understand the academic value, college going experience and retainment of low-income students of color into STEM.

Mentoring and Academic Support Services

A major focus of the TRIO program is to mentor Black and Latinx students of color through the staff members the students connect and engage with. Stanton-Salazar in Pendakur (2016) considers how mentorship in the form of empowerment agents with working-class students of color will further the access to institutional support that is empowering for them in combination with their critical consciousness. In other words, a mentor becomes a tool for action for this student population to transform themselves and their community (Pendakur 2016). Bensimon, et. al. (2019) supports this because it "moves beyond a focus on programmatic solutions to bring attention to what faculty as institutional agents actually do, what motivates

them to assume such a role, and the actions they take to broaden participation in STEM." Thus, it is through mentoring relationships and resources, or an institutional agent as Bensimon et al. outlined, that students of color can be facilitated to pathways of retention and academic value.

This paper contributes to how the TRIO program's curriculum and staff members' involvement can mentor Black and Latinx students of color into pathways of retention and build academic value that can minimize the gap in educational attainment. Charisse C. Pitre and Paul Pitre (2009) explore the effectiveness of TRIO programs for underrepresented high school students within the first two years of high school. They outline each program and how "through academic, career, and financial aid counseling services, participants are made aware of options available to them after earning their high school diploma" (Pitre and Pitre, 2009). Then, Balzer Carr and London (2019) demonstrate that while the utilization of modified supplemental instruction increases academic success, the utilization of tutoring increases retention. More specifically, Blazer Carr and London (2019) argue that "students who chose tutoring were more academically motivated to overcome challenges in school, evidenced by their drive to attend tutoring."

Developing a Critical Consciousness and an "Inglewood Consciousness"

In this TRIO program, the staff members maintain a critical consciousness in the education and program curriculum that has a focus on the diverse student population culture. A critical consciousness is the ability to have an in-depth understanding of an individual and/or population's exposure to social, cultural and political elements in their life, and this paper contributes to how it affects their academic career (Mustakova-Possardt, 2003). The population focused on in previous studies and in this paper revolve around the following characteristics: Black and Latinx ethnicities, low-income economic status, and first-generation educational

status. As Oseguera, Locks and Vega (2009) highlight, there has been an increase in Latinx and low-income student populations on college campuses with the most challenges in their transitions to and complete their higher education for a lack of socio-economic status and resources, and the poor college preparation they receive. Robert Jackson and ASCD (2019) investigates the prejudices and challenges students in underrepresented communities face inside and outside the classroom walls. Jackson (2019) calls into question if an educator is aware of the consequences their biases and judgements of students "who do not fit into their definitions of a 'typical Black or Latino male student'" have. Pendakur (2016) shows the effectiveness of being aware of your student population by underscoring "that marginalized students succeed in the classroom when their academic curriculum engages their social identities, and when we set out to design a leadership curriculum." The TRIO program staff members maintain a critical consciousness by calling themselves into question inside and outside the classrooms in order to be effective institutional and empowerment agents.

However, my study is not the first to focus on the challenges of education in a city of Los Angeles. Jaramillo (2012) analyzes South Central Los Angeles and school institutions through a social drama. Jaramillo (2012) found:

> After becoming familiar with the school's institutional policies and curricular initiatives as well as the interactions among faculty and the wider community, it became increasingly evident that the city and its peoples' histories, dynamism, and conflicts uniquely shaped the everyday activities and relations that characterized school life (P. xii).

Building on Jaramillo's (2012) focus on a city's people, history, dynamics and conflicts impact a student's everyday activities, I develop the term "the Inglewood Consciousness" to conceptualize

how the students specifically in the Centinela Valley Project and Math and Science Upward Bound program navigate their education during the academic year. The student population in this study have an "Inglewood Consciousness", which include stigmatization from their community and families on academic success, college going experiences, and interest in STEM.

Building Educational Equity in STEM

With this in mind, this paper's last emerging theme is on how educational access resources and tools, propels schools and educators to further the pathways for working class, racially diverse students to reach educational equity. Gandara and Contreras (2009) reveals the hardships and challenges Latinx students face, discussing how they enter behind academic measures and the families' impact on education attainment. Latinx students are just one minority group marginalized in the educational system and have disparities in academic success. Gabriel (2008) dissects the strategies used to promote academic success and retention for marginalized communities in relationship to prepared students. She argues that these students must be seen at the same standard as those prepared for college while also taking into consideration the challenges underprepared students face to develop an academic environment that promotes educational equity (Gabriel 2008).

Moving towards a focus on TRIO, Pitre and Pitre (2009) argue that the purpose of the Math and Science Upward Bound Program is to aide students' recognition and potential of exceling in STEM fields, in higher education and professional careers. A study has shown that Upward Bound Black and Latinx students took more STEM courses than non-Upward Bound Black and Latinx students and had the same or higher aspirations for college (Pitre and Pitre, 2009). Leonard et.al. (2019) assert that in order to retain students in STEM they need to be prepared by educators that are experts in STEM content.

Therefore, the literature suggests that there are advantages to TRIO educational access programs in working class, first generation communities. Previous studies, such as the study done by Pitre and Pitre, have focused on the TRIO program's impact during the summer residential component and academic year but do not investigate how the academic year is affected by their hometown high school and its' surrounding environment (2009). To build on these prior studies, I investigate the impact of empowerment agents in TRIO's Centinela Valley Project and Math & Science Upward Bound Program to the culture that surrounds STEM by mentoring Black and Latinx student populations. These institutional and empowerment agents are seen in the involvement and staff member roles of TRIO Academic Specialists, Teachers, and Tutor Mentors. The TRIO staff members involved are framing and informing their facilitation and dedication to a racially diverse student population. Then, this study makes contribution to this literature on cultural consciousness because Inglewood students face social, political and cultural experiences as barriers to their educational attainment. This topic on low-income students of color has been studied to acknowledge these challenges and this research will add to this discussion by focusing on a community rarely researched that is challenging this notion through educational access programs that focus on their racially diverse population.

In addition, it will add to the literature because this particular TRIO program has a racial demographic amongst the educators that is similar to the representation in the students involved to influence their experience drastically. The misrepresentation of Black and Latinx populations, more specifically Inglewood students, in higher education suggests that there needs to be an investigation on how these educators, as institutional and empowerment agents, propel students. This research will add to this literature by bridging how the specific curriculum offered by this TRIO program can revolve around a focus on minority student retention that creates STEM

learners. This study on educational attainment of Los Angeles students will further studies to outline the methodologies TRIO staff members and its impact on academic value, college going experiences and an interest in STEM.

Data and Methodology

Participants

I draw on a case study of a TRIO program in Southern California. The TRIO Upward Bound host office is located at California Lutheran University. The TRIO staff members work at this office as well as in collaboration with high schools in Ventura County and Los Angeles County. This study focused on the following Los Angeles County high schools, Hawthorne High School and Leuzinger High School, which work in collaboration under sub-programs with the California Lutheran University host office. These high school students are enrolled in one of the two sub-programs for Los Angeles County students: Math and Science Upward Bound (MSUB) or Centinela Valley Project (CVP). Throughout the academic year, TRIO staff members from the host office perform site visits at each high school as well as bring the MSUB and CVP students to California Lutheran University for Saturday sessions. In the summer, students from each high school reside at California Lutheran University with TRIO staff members for a six-week summer residential program.

First, I draw on 15 interviews with TRIO staff members with the following roles: two Program Coordinators, three Academic Specialists, five TRIO STEM Teachers and five STEM Tutor Mentors. Participants have been working with this TRIO Program from one year to thirty years. Nine are alumni of this TRIO program and are mostly Tutor Mentors. Two are alumni of a TRIO program and are an Academic Specialist and STEM Teacher. A total of 60% of staff members were female. The female to male ratio amongst the professional program staff was 4 to

1, amongst the STEM teachers was 2 to 3 and amongst the Tutor Mentors was 3 to 2. The race/ethnicity of the staff members are 66% Latina/o/x/é, 20% White, 6.67% Asian American and 6.67% Southeast Asian Indian. These participants ranged from ages 19 to 65 due to the multiple roles examined. The professional program staff ranged from ages 24 to 38. The STEM teachers ranged from 27 to 65. The Tutor Mentors ranged from ages 19 to 24.

Second, I draw on 23 survey responses with TRIO students that have been involved in the program from one year to four years. Participants were drawn from two high schools with 12 from Hawthorne High School students and 11 from Leuzinger High School students. They ranged from ages 14 to 18, with an average age of 16. Participants are first-generation students' that have been involved in the program from one year to four years, with an average of 2.5 years of involvement. The demographics of the participants are 78.3% Latina/o/x/é, 17.4% Black/African American, 4.3% Native American, 4.3% Native Hawaiian or Pacific Islander, and 4.3% White. This purposive sample includes students with a range of household incomes, mainly working class, as approximately 52% make less than $50,000 and approximately 22% make less than $25,000. Table 1 (See Appendix A) outlines the students' demographics by the population sample's gender identities.

Procedures

Interviews were conducted between late November 2019 and January 2020 over the phone, during the TRIO staff members' breaks at Academic Year Saturday Sessions. I directly recruited individuals from the networks I built through five years of previous involvement as a Math and Science Upward Bound (MSUB) student, a volunteer Tutor Mentor and a Tutor Mentor for Math students. Through this, I was able to select five individuals that meet with the students on a daily basis as their educators during the summer residential component, five

individuals that meet with the students on a daily basis as their assistant educators during the summer and academic year component, and five individuals that meet with the students periodically during the summer and academic year component. Participants were interviewed in English and were assigned pseudonyms to protect confidentiality. Interviews lasted an average of 45 minutes to an hour and were directed by a semi-structured interview guide that included questions about demographics, their specific role, involvement and history, and their experiences with the students. These interviews were transcribed verbatim.

The online survey was conducted between December 2019 and January 2020 through Google Forms that was distributed at California Lutheran University during a Saturday Session facilitated by the Academic Specialists. This purposive sampling of 23 individuals was created from the networks I built through two years of previous involvement as a volunteer Tutor Mentor and a Tutor Mentor for Math students. All participants were selected based on their involvement in Math and Science Upward Bound (MSUB) and the Centinela Valley Project (CVP) because they correspond to the Los Angeles County high schools. The survey was conducted in English and kept anonymous to keep student confidentiality. The survey asked 44 questions and was divided into six sections. The first section had five multiple choice questions focused on student demographics. The second section had eight multiple choice questions focused on their education background and family's demographics impact on career, higher-education and the TRIO program. The third section had five multiple choice questions and one open-ended questions were used to determine sub-program involvement and history as well as further educational access program involvements. The fourth section had seven multiple choice questions on their TRIO educators' involvement, role and impact. The fifth section had nine multiple choice and one open-ended question on the summer residential component. The sixth

section had eight multiple choice questions to rate the TRIO program and educators' impact on their academic and career pursuits. Survey responses were saved and recorded on Excel.

Data Analysis Strategy

I used the transcribed interviews and used open coding which identified three broader thematic codes. Each theme was assigned a color and I went through each transcript to highlight passages. Within each broader theme, I developed index codes to identify sub-categories and patterns within the discussion of the broader themes. Following, I created a codebook on a Word document that identified the major themes, sub-categories, patterns and quotes that I extracted. Then, I created an Excel document with the student survey data. There, I created descriptive statistics of the data to measure the mean of variables. Based on preliminary analysis of my data, I identified three broader themes that addressed my research question: academic value, college going, and interest in STEM. The independent variables were as follows: first-generation status, parental education, and designated staff members. The dependent variables were as follows: academic value, college going, and interest in STEM.

Independent Variables

For the purpose of this case study, I used three independent variables: first-generation status, parental education, and staff members. A description of the independent variables used in the analyses follows.

First-Generation Status. Students were asked to report if they were the first in their family to pursue higher education. First-generation status was considered a factor in the student's college going experience and choices.

Parental Education. Students were asked, "What is the highest degree or level of education your parent 1 or legal guardian 1 had completed?" as well as for "parent 2 or legal

guardian 2". Respondents were asked to select from the following levels of education or degrees for both questions: "Elementary School", "Middle School", "Some High School", "High School Diploma or GED", "Some College", "Associate's Degree", "Bachelor's Degree", "Master's Degree", "Ph.D or Higher", and "Trade School". If a respondent did not have a second parent or legal guardian, the second question allowed respondents to select the following choice: "Not Applicable". Then, students were asked to report if their parent's educational background impacted their choice to pursue higher education. Parental education was considered a factor in the student's college going experience and choices.

Staff Members. Students were asked to specifically report whom were their assigned academic specialists, STEM teachers, and tutor mentors. Students also responded to questions on their TRIO Program coordinator. Their names are changed into pseudonyms in this case study.

Dependent Variables

For the purpose of this case study, I used three dependent variables: academic value, college going and interest in STEM. A detailed description of the dependent variables used in the analyses follows.

Academic Value. I used two measures of academic value: valuing of staff member involvement and valuing of program curriculum. These were dependent on the program respondents were enrolled in and the length of enrollment.

Valuing of Staff Member Involvement. Tables 2 through 4 (see Appendix B, C and D) outline the staff members respondents reported on included academic specialists, tutor mentors and STEM teachers. Respondents were asked to rate "how helpful" their academic specialist, tutor mentors, and STEM teachers were to their academic performance on a 10-point Likert-type scale ranging from 1 (*Didn't help me at all*) to 10 (*Extremely Helpful*).

Valuing of Program Curriculum. At the end of the survey, respondents rated the overall valuing of the program to their academic success using a 10-point Likert-type scale ranging from 1 (*Didn't help me at all)* to 10 (*Extremely helpful*).

College Going. I used two measures of college going: program impact to college planning and staff member impact to college planning.

Program Impact to College Planning. Table 5 (see Appendix E) outlines student ratings on the TRIO programs impact to college plans through the following. Students were asked, "Did you plan on going or see yourself going to college (e.g. Community College, four-year, two-year, etc)?" before and after they joined the TRIO program. Then, at the end of the survey, respondents rated the overall valuing of the program to their college going experience composed of two statements, "This TRIO Program is the reason I CAN pursue a higher education." and "This TRIO Program is the reason I AM pursuing a higher education." Respondents indicated their respondents on a 5-point Likert-type scale ranging from *Strongly Agree* to *Strongly Disagree*, with *Neutral* as the mid-point.

Valuing of Staff Member Involvement. Tables 2 through 4 above outline the staff members respondents reported on included academic specialists, tutor mentors and STEM teachers. Respondents were asked to rate "how helpful" their academic specialist, tutor mentors and STEM teachers were to their "academic goals (e.g. planning for college)" on a 10-point Likert-type scale ranging from 1 (*Didn't help me at all*) to 10 (*Extremely Helpful*). The tables demonstrate the frequency in rating through percentages.

Interest in STEM. I used two measures of interest in STEM: program impact on goals and STEM goals.

Program Impact on Goals. The impact of the program to STEM goals scale was composed of two statements, "This TRIO Program is the reason I CAN pursue a higher education in STEM." and "This TRIO Program is the reason I AM pursuing a higher education in STEM." Respondents indicated their respondents on a 5-point Likert-type scale ranging from *Strongly Agree* to *Strongly Disagree*, with *Neutral* as the mid-point. Respondents could also indicate "I am not pursuing STEM" as a choice to not mess with the results of students interested in STEM. Table 6 (see Appendix F) outlines these measures with detailed descriptions following.

STEM Goals. Students STEM goals were determined through the following questions. Students were asked if they planned a higher education degree and if they planned a career in STEM (any major under Science, Technology, Engineering and/or Math). Table 7 (see Appendix G) outlines these measures with detailed descriptions following.

Conceptualizing the Value of TRIO Approaches for Educational Support and Access to STEM Pathways

The findings are presented in three sections. The first section focuses on the TRIO students' academic value by describing the associations between valuing of staff member involvement and valuing of program curriculum. The second section identifies the TRIO students' college going experiences through the program's and staff members' impact to college planning. The third section breaks down how a TRIO student then becomes involved in STEM through the program's impact on goals and the students' STEM goals.

The Ascendance in Academic Value

Valuing of Staff Member Involvement. In analyzing the interview data, it revealed how the TRIO Program staff members engage with students to increase their academic value through

their mentorship duties. Each staff member is able to use their role's duties as the foundation to the way they can connect and mentor students for academic success. Camilla has been an academic specialist for a little over a year and shared how she tracks students' high school careers and their path to higher education based on each student's needs: "I think what I specifically do is I reinforce support to my students. A lot of my students don't experience consistency or support, either at home or at school, and I go to my students every Tuesday and Wednesday, so they should expect to see me once a week." Camilla grew up in a "Black and Brown" community similar to these students and has a sense of comfort and home engaging this cultural awareness with them in her role. These students have little to no supplemental academic resources at home but through TRIO, these staff member can provide mentorship for their academic success.

In analyzing Tables 2 through 4 (See Appendix B, Appendix C, and Appendix D), the TRIO Program students' responses demonstrated their value of their staff members to their academics. More specifically, the survey found that 65.2 percent of students rated weekly site visits to be *extremely helpful* to their academic performance. In other words, this question pertained to the academic specialists that perform weekly site visits to Hawthorne High School and Leuzinger High School to help improve students' academics on a more consistent basis. Next, the students engage with tutor mentors during the summer residential component in their classes and study hours. They also engage with tutor mentors in the academic year component of the TRIO program through after school tutoring. The survey found that 74 percent of students found their academic year tutoring engagement with tutor mentors to be *extremely helpful* and overall, 82.6 percent of students rated their tutor mentors as *extremely helpful* to their academic performance. Then, the survey found that 56.5 percent of students rated their STEM teachers as

extremely helpful to their academic performance. The students engage with STEM teachers during the summer residential component of the program through their STEM courses and study hours.

Valuing of Program Curriculum. From the students rating the program, 52.2 percent of these students have only been involved with the program for a year and 17.4 percent have been involved for four years of high school. Linda is an academic specialist that has worked with the Los Angeles students for four years and has now incorporated a student council program into the TRIO program. "I feel the program as a whole provides leadership roles for students. We provide workshops in regard to leadership for the students. Then, the students from different grants run for roles in office such as President, Vice President, Secretary, etc." This leadership that staff members instill in students furthers them to begin tracking their own academic progress and that of their classmates. This allows them to use the resources they gain through the program to guide them and their academic pursuits.

Overall, Tables 2 through 4 (see Appendix B, Appendix C, and Appendix D) showed that 68.1 percent of TRIO students found the engagements of staff members to be valuable to their academic performance. When asked how the program overall is helpful to their academic success, as Table 8 (see Appendix H) demonstrates, 82.6 percent of students found it to be *extremely helpful*. In analyzing the interview and survey data, the staff members illustrated how the TRIO Program mentors and engages with students to increase their academic value.

The Transformation of the College Going Experience

Program Value. Through what is outlined in the program curriculum, staff members can use their role to get involved with students' future plans and use the program as a foundation for college preparation. Students in the program that stay during the summer residential program get

the chance to take courses in a simulated college schedule. In these six weeks, the rising seniors must report to their academic specialists to make sure they are on track. Mia has been an academic specialist just as long as Camilla and has similar way in approaching her engagement with students. She outlines her way of connecting and engaging students with their plans for college as:

> What I personally provide for my students are one on one appointments in which I get to know my student on an academic and personal level. During our appointments, I create an outline that tracks their grades and their A through G progress. I also am able to know what goals my students have as they express to me what they envision themselves doing after high school.

TRIO is able to provide this equal opportunity for students to plan for college with specialists that have degrees themselves in order to receive the same help a second-generation or higher income student may receive from a parent, a paid advisor or college counselor at their campus.

Most of the student population at both Hawthorne High School and Leuzinger High School are low income and first generation, which mostly means that they have little to no college exposure at home. The survey found that 78.3 percent of students represent being the first in their family to pursue higher education. Thus, most of these TRIO students do not have a family educational background in college going experiences and 78.3 percent of them reported an interest in pursuing a higher education because of their family's background. Thus, as Table 5 (See Appendix E) demonstrates, 87.0 percent had already seen themselves going to college before joining the program. It also found that 100 percent of the students could plan on going or see themselves going to college after they joined the TRIO program. This increase in students planning to go to college from before and after they joined the program can be better understood

through the student responses to the statements: "This TRIO Program is the reason I CAN pursue a higher education" and "This TRIO Program is the reason I AM pursuing a higher education." Table 5 highlights how 60.1 percent of students *strongly agreed* that the TRIO Program was the reason they "can" pursue a higher education and 43.5 percent of students *strongly agreed* that the TRIO Program was the reason they "am (are)" pursuing a higher education.

Valuing of Staff Member Involvement. In analyzing the interview data, the TRIO Program staff members discussed how they increase the number of students going to college by connecting them with a pathway. Camilla not only sticks to what the program denotes as her role but takes the extra measure to give direct pathways to students that feel inhibited. She described an instance where she went beyond her role to mentor the student with her college plans:

> During award letter season, her best choice was Cal State Long Beach, but she felt inhibited to go to community college because her family felt she would never succeed at the university level. We had a conversation on why she was apprehensive, during which she disclosed to me that she felt scared about attending a university because she felt obligated to stay home due to her family's cultural values.

Camilla then disclosed that she took this student to Cal State Long Beach where they had a guided tour, visited the financial aid office to ask questions, visited the housing office to discuss dorming status waivers and visited the EOP office to enroll her in their summer bridge program that is similar to TRIO. She was able to play this integral role of mentoring the students' college going experience and build the student's confidence, while maintaining a critical cultural consciousness, to declare to the school.

In further visual inspections of Tables 2 through 4 (See Appendix B, Appendix C, and Appendix D), the survey found that an average of 68.1 percent of students reported that their

staff members were *extremely helpful* when it came to their academic goals, such as planning for college. More precisely, Table 2 demonstrated that 78.3 percent of students indicated their academic specialists are *extremely helpful* in their academic goals (e.g. planning for college). Table 3 indicated that 69.6 percent of students rated their tutor mentors as *extremely helpful* to their academic goals. Then, in Table 4, 56.5 percent of the students said their STEM teachers are *extremely helpful* to their academic goals.

"Ascending beyond the Ordinary, Transforming into the Extraordinary": Creating STEM Learners

Program Value. Students of color generally come from disadvantaged and marginalized backgrounds and they grow up with stigmatized beliefs that there is no room for advancement or growth both professionally and personally. Alexander is a tutor mentor for TRIO students and during the academic year, he mainly works with the students at Cougar High School, his alma mater. At Cougar High School he was able to build relationships with the School of Engineering and take this knowledge with him as a TRIO alumni tutor mentor:

> The one thing that I do find interesting is that a study conducted by a teacher at [Cougar High] shows that a certain amount of engineering students at [CHS] feel discouraged/lost when it comes to graduating high school and how to pursue higher education. This results in these students experiencing a drop in their GPA's and having at least one D or F in their progress reports.

These students are surrounded by stigmatized notions that have been instilled through their community that they are not capable of becoming college students, and especially not STEM learners. Alexander uses his critical cultural consciousness and mentorship role with the program

to connect and engage with these students. He is proud of the work he does because he is able to be a part of the program that increases students' value of STEM.

In analyzing Table 6 (See Appendix F), on the statement: "This TRIO Program is the reason I CAN pursue a higher education in STEM," 30.4 percent of students *strongly agreed* and 17.4 percent of students *somewhat agree*. In other words, approximately 47.8 percent of students agreed that they valued the program as a reason they could pursue a STEM education. On the statement: "This TRIO Program is the reason I AM pursing a higher education in STEM," 21.7 percent of *strongly agreed* and 13.0 percent of students *somewhat agree*. In other words, approximately 34.7 percent of students agreed they were pursuing a STEM education because of the program. In sum, this demonstrates that an average of 41.3 percent of students attribute the program to be valuable to their reason for a higher education in STEM.

STEM Goals. This can be seen through the TRIO Program staff members as they mentor and connect students with pathways to increase their interest in STEM. Adan is another tutor mentor for TRIO students and during the academic year, works with the students at Hawthorne and Leuzinger High School mainly with STEM curriculum. As a Math major at a Cal State and TRIO alumni, he understands the rigor it takes to stay engaged with STEM goals. Adan shared his sentiment to how the schools these students are enrolled in plays into their STEM goals: "I know that Hawthorne High School has a huge emphasis on their school of engineering, which allows students to participate in rigorous STEM curriculum. I feel that Leuzinger does not have a huge emphasis on STEM." He has noted how the Leuzinger High School would rather take the approach of student support programs that are similar to TRIO without being STEM oriented. He found that more of his Hawthorne students want to pursue STEM than the Leuzinger. In order to push them further, he likes to use his tutoring hours to also share his background and pathway to

becoming a Math major. By disclosing how he has made it to a Cal State in STEM as a Latino male, he feels these students will value TRIO more to their STEM goals.

In analyzing the survey data, Table 7 (See Appendix G) focused on the TRIO student STEM goals in higher education and a career. The table demonstrated that 39.0 percent of students plan a higher education in STEM and a career in STEM. From this group, 17.4 percent of the students reported that the TRIO program impacted their choice and made them want to pursue STEM.

Conclusion

Working class, first-generation students of color from the Centinela Valley Union High School District have funded TRIO programs after the enactment of the Local Control Funding Formula to create access for students to increase their overall academic value, college going experiences and an interest in STEM for higher education and beyond. My analysis demonstrates that approaches from TRIO staff members like the utilization of mentorship, maintaining a critical consciousness, and providing educational equity opportunities are the most effective approaches in increasing academic value, college going and STEM interest. This in turn decreases the "achievement gap" by further preparing high school students for college and beyond. This study provides the unique insight of both the TRIO professional staff members and the Los Angeles County school's students to demonstrate how the staff members connect and engage with the students, how it affects the students' valuing of their academics due to the programs efforts, and what is being done to push these students not only into higher education but a STEM pathway.

The literature regarding the utilization of mentorship for students of color has established that institutional and empowerment agents have contributed to educational attainment, when

focused on the impact made in the first two years of high school (Pendakur 2016; Bensimon et al. 2019; Pitre and Pitre 2009). Scholars have also examined that academic curriculum for a racially diverse, working class student population is successful when maintaining a cultural critical consciousness and being aware of the socio-economic status of the community these marginalized students are trying to succeed in (Oseguera, et. al. 2009; Jackson and ASCD 2019; Pendakur 2016; Jaramillo 2012). With regards to educational equity and an interest in STEM, scholars have studied the demands and challenges as well as the academic strategies needed to be implemented to approach educating a working class, racially diverse student population to further their retention, from inside the classroom and through educational access (Gandara and Contreras 2009; Gabriel 2008; Pitre and Pitre 2009; Leonard, et. al. 2019). These findings show support for the working class, first-generation students of color from the Los Angeles County that have been enrolled in TRIO programs to increase their academic value, college going experiences and STEM interest. Ultimately, my findings fill the gap in the literature by providing empirical evidence from the students and staff members of a specific program that demonstrate the relationship in utilizing mentorship, a critical consciousness and educational equity opportunities to academic outcomes.

This study highlights the staff members' approaches to increasing student participation in their overall high school experience as it pertains to reaching higher education as a goal and STEM as a possible opportunity. The primary limitation to the generalization of these results is that it is based on interviews with the staff members and survey responses from the students to interpret the impact. Thus, access to interviewing the students enrolled in the program will help inform this study to better understand how the students connect and engage with staff members and the program curriculum instead of responses to statements in a survey. Also, this study has

longitudinal insight from the staff members as they have been involved from one year to four years. Expanding the survey to be made available to students from cohorts before 2019 will provide a longitudinal insight on the programs impact from the student perspective. This will demonstrate how the staff members approaches are student focused and improve academic outcomes over time.

Another advancement to the study could include a comparison between the Los Angeles County programs and Ventura County programs impact on its working class racially diverse student population's educational outcomes. This will further analyze how the educational access program focuses on student characteristics and the different critical consciousness maintained in different racially diverse communities. All in all, this study's strength is its exploration of Los Angeles county schools that are rarely researched to revisit the increase in higher education enrollment. This approach on investigating the implementation of TRIO as an educational access program reveals the importance of education revolved around student characteristics. Finally, these findings are important for how we understand educational access programs as a way to connect and engage with students on a year-round basis and its impact on marginalized communities.

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Appendix A

Table 1

Survey Demographic Information by Gender

Demographic Information	Female	Male	Gender Variant/ Non-Binary/ Non-Conforming	Total
Ethnicity				
Latina/o/x/é	11	7	0	18
Black/African American	2	1	1	4
Native American	0	0	1	1
Native Hawaiian or Pacific Islander	1	0	0	1
White	0	1	0	1
Household Income				
Less than $25,000	5	0	0	5
$25,000 to $50,000	4	3	0	7
$50,000 to $100,000	0	2	0	2
Prefer Not to Say/ Don't Know	5	3	1	9
Grade Level (Present)				
Freshman	1	0	0	1
Sophomore	5	1	0	6
Junior	0	4	1	5
Senior	8	3	0	11
Grade Level (at entry)				
Freshman	7	3	1	11
Sophomore	3	3	0	6
Junior	2	2	0	4
Senior	2	0	0	2

Appendix B

Table 2

Academic Specialist Value*

Survey Question	1 – 3 *(Didn't help me at all)*	4 – 6 *(Somewhat helpful)*	7 – 8 *(Very helpful)*	9 – 10 *(Extremely helpful)*
How helpful do you find these site visits to your academic performance?	4.3	4.3	26.2	65.2
How helpful do you find these site visits to your academic goals (e.g. planning for college)?		8.7	13.0	78.3

*The table demonstrates the frequency in rating through percentages.

Appendix C

Table 3

Tutor Mentor Value*

Survey Question	4 – 6 *(Somewhat helpful)*	7 – 8 *(Very helpful)*	9 – 10 *(Extremely helpful)*
How helpful do you find TRIO Tutoring during the Academic Year to your academic performance?	4.3	17.4	74.0
How helpful do you find your Tutor Mentor(s) to your academic performance?	8.7	8.7	82.6
How helpful do you find your Tutor Mentor(s) to your academic goals (e.g. planning for college)?	13.0	17.4	69.6

*The table demonstrates the frequency in rating through percentages.

Appendix D

Table 4

STEM Teacher Value*

Survey Question	1 – 3 *(Didn't help me at all)*	4 – 6 *(Somewhat helpful)*	7 – 8 *(Very helpful)*	9 – 10 *(Extremely helpful)*
How helpful do you find your TRIO Program STEM Teachers to your academic performance?	8.7	8.7	26.1	56.5
How helpful do you find your TRIO Program STEM Teachers to your academic goals (e.g. planning for college)?	8.7	8.7	26.1	56.5

*The table demonstrates the frequency in rating through percentages.

Appendix E

Table 5

TRIO Rated Impacted on College Plans

Survey Question	Freq (%)
Before you joined TRIO, did you plan on going or see yourself going to college (e.g. Community College, four-year, two-year, etc.)?	
Yes	87.0
No	13.0
After you joined TRIO, did you plan on going or see yourself going to college (e.g. Community College, four-year, two-year, etc.)?	
Yes	100
Overall, do you agree with this statement: "This TRIO Program is the reason I CAN pursue a higher education."	
Strongly Agree	60.1
Somewhat Agree	26.1
Neutral	8.7
Overall, do you agree with this statement: "This TRIO Program is the reason I AM pursuing a higher education."	
Strongly Agree	43.5
Somewhat Agree	34.8
Neutral	17.4

Appendix F

Table 6

TRIO Rated Impacted on STEM Goals

Survey Question	Freq (%)
Do you agree with this statement: "This TRIO Program is the reason I CAN pursue a higher education in STEM."	
Strongly Agree	30.4
Somewhat Agree	17.4
Neutral	26.1
I am not pursuing STEM	26.1
Do you agree with this statement: "This TRIO Program is the reason I AM pursuing a higher education in STEM."	
Strongly Agree	21.7
Somewhat Agree	13.0
Neutral	34.8
I am not pursuing STEM	26.1

Appendix G

Table 7

Student STEM Higher Education and Career Goals

Survey Question	Freq (%)
Do you plan to pursue a higher education degree in STEM (any major under Science, Technology, Engineering and/or Math)?	
Yes	39.0
No	39.0
Maybe	22.0
Do you plan to pursue a career in STEM (any major under Science, Technology, Engineering and/or Math)?	
Yes	43.5
No	39.1
Maybe	17.4
Did the TRIO Program impact this choice?	
Yes, it made me want to pursue STEM.	17.4
No, I already knew I wanted to pursue STEM.	34.8
No, I already knew I did not want to pursue STEM.	43.5

Appendix H

Table 8

TRIO Program Value to Academic Success

Survey Question	7 – 8 *(Very helpful)*	9 – 10 *(Extremely helpful)*
Overall, how helpful do you find the TRIO Program Curriculum to your academic success?	8.7	82.6