

# **Exploring Future STEM Teachers' Understanding of Inequities for Gender Nonconforming Youth**

## **Thesis**

Students who do not conform to traditional heteronormative gender binaries are often marginalized in K-12 classrooms, harming their access to instruction and opportunities to learn. Teacher preparation is a critical point where future teachers can develop the beliefs, dispositions and skills to support LGBTQIA+ students. Analysis suggests that teachers consider gender and gender identity inequities in education manifesting from an educator's lack of knowledge and experience with relevant queer issues. By improving preparation, future teachers will be better positioned to address the inequities that queer students face everyday.

## **Introduction**

Research suggests that over a third of gender nonconforming students have reported missing school because they felt unsafe (Kosciw et al., 2015). However, there is a dearth of research that explores how teachers and teaching contribute to this situation. One potential challenge to addressing this issue is that teachers are not being given the tools that they can employ to combat these inequities. This research project draws upon survey data from future teachers enrolled in a STEM teacher preparation program. This survey explores the student's individual perception of gender expression, gender inequities in the education system, and how as future teachers, they plan on countering these inequities. Analysis suggests that teachers consider gender and gender identity inequities in education stem from a lack of knowledge and experience with relevant queer issues. This includes an educator's preconceived notions on gender ideology, misconceptions about the social construction of gender, and the emphasis on the traditional gender binary and dichotomy. Findings from this work have implications for improving teacher preparatory classes and better preparing future teachers to understand their queer students. Furthermore, these findings can inform preparation programs such as the UC Irvine CalTeach Program, in creating inclusive learning environments through representation that confirms both their STEM and gender identities. By improving preparation, future teachers can be positioned to address inequalities that LGBTQIA+ students face, and in turn contribute to queer students' representation in STEM careers.

## **Objective**

The purpose of my research is to evaluate CalTeach student perception and knowledge on gender-identity and discover the ways in which these students plan on promoting gender-identity equity in their own classrooms. With the findings, I hope that I can inform the

CalTeach program and improve curriculum choices, such as the incorporation of new texts and conversations that future teachers are exposed to during their teacher preparation. I also hope to inform the broader field of STEM education, so that teachers of all levels of experience can help their students navigate both their gender and STEM identity concurrently.

### **Research Questions:**

RQ1: What are some ways in which aspiring STEM teachers see classrooms as inequitable for students based on gender/gender-identity?

RQ2: What are some things aspiring STEM teachers plan to do in their classroom to promote gender/gender-identity equity?

RQ3: What has contributed to the aspiring STEM teachers' views on gender identity and your planned course of action?

### **Methods**

#### *Participants*

This study draws upon existing survey data attained in the year of 2020 that aimed to gather future STEM teacher's conceptualizations of inequity in classrooms and how they foresee themselves combatting those inequalities. All participants of this survey are CalTeach students in their senior year. By this time, all aspiring teachers will have completed their first year of content courses and completed close to 100 hours in fieldwork as student teachers. A total of 31 aspiring teachers in their senior year completed the survey.

#### *Design*

**The design of this study and survey instrument is based on the importance of developing teacher beliefs and their linkage to teacher action, as beliefs are foundational to any action or change in practice teachers are likely to engage in (Fullan, 2007). As such, the survey questions aimed to garner information on their current conceptualizations of inequities that arise in educational settings, as well as how they foresee themselves combating these inequities. For instance, survey questions included: (1) What are racial/cultural inequities that occur in the classroom, (2) What are ways that a teacher can combat racial/cultural inequities, (3) include other questions here that were part of the larger survey. For the purposes of this research project, I focus on survey responses based on the following questions: (1) What are ways that gender identity inequities manifest into classrooms and (2) What are ways that teachers foresee combating gender identity inequities in the classroom? Specifically, this project aims to examine what future students consider gender**

**inequities in the classroom and actionable steps they will take in order to combat these inequities.**

### **Prior Work Completed**

I have been collaborating with a graduate student from the school of education that works closely with the CalTeach program, to pursue this research. my graduate student mentor and I meet on a weekly basis and check in regularly with the director of the CalTeach program. Thus far, we have collaborated on this research project for 1 Quarter, and will present current findings at the 2022 UROP Symposium. I hope to build on my initial findings that a gap in knowledge of queer topics exists within the CalTeach community, that can be identified and addressed with further research.

### **Student Responsibilities**

Over the Course of the Summer I will take responsibility for the following tasks:

- Further Analyze and Interpret Survey 2020-2021 survey results
- Continue to review the literature to inform the analysis approach and to ground the current study.
- Implement key findings from my work thus far in the design of an updated survey that will be released to the next cohort of CalTeach students.
- Meet with my faculty advisor on a weekly basis to discuss my progress and next steps in my project

### **Timeline**

#### Weeks 1-2

- Complete an initial coding of data from survey questions using open or descriptive coding
- Read and annotate 5 studies related to teacher education and supporting LGBTQIA+ students

#### Weeks 3-5

- Complete second round of coding, refining and theming initial codes
- Read and annotate 5 studies related to teacher education and supporting LGBTQIA+ students

#### Weeks 6-8

- Begin writing a comprehensive review of literature
- Revise survey to inform the next iteration of its implementation

- Analyze coded data and identify key findings and connections between what aspiring teachers *see* and their plans for *action*.

#### Weeks 9-10

- Complete literature review
- Complete analysis and compose a short report with key findings, suggestions, and next steps.

#### **References**

Fullan, M. (2007). *The new meaning of educational change* (4th ed.). New York, NY: Teacher College Press.

Thorne, B. (1993). *Gender play: Girls and boys in school*. New Brunswick, N.J: Rutgers University Press.

Berheide, C (1995). *Gender and Society*, vol. 9, no. 3, pp. 385–87,

Meadow, T. (2018). *Trans kids: Being gendered in the twenty-first century*.