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## Examining Student Perspectives on STEM Education

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# RCEU22-SOC-JPS-02 Project Proposal

## Project Title

Examining student perspectives on STEM education

## Faculty Information

Name: Dr. Jennifer Patrice Sims

Status: Assistant Professor

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Proposal ID RCEU22-SOC-JPS-02

# RCEU22-SOC-JPS-02 Project Proposal

## I. Project Description

Research has shown that many STEM students develop belonging concerns within the first few weeks of class, and that this is intensified in response to performing poorly on assignments. Without intervention, these students are more likely to leave STEM majors. Early intervention has been central to the conversation about improving student performance and belonging in introductory level STEM courses; however, many students do not take advantage of available academic assistance opportunities. This study asks why and asks what professors and universities can do to better meet students' needs. The main aim of the project is to analyze interview data from students on their perspectives on an introductory STEM class. The motivation and goal of the project is to better understand STEM students' needs and thereby be able to make recommendations for STEM education improvement to UAH and other universities.

## II. Student Duties, Contributions, and Outcomes

### *a. Specific Student Duties*

The student-researcher's duties will include data analysis and literature review. Regarding the former, the student-researcher will learn to use QDA Miner, a qualitative data analysis software package, while working with Dr. Sims to analyze STEM student interviews. The student-researcher will also find and read about 15 peer-reviewed research articles (i.e., about two per week) on best practices in STEM education. They will produce an annotated bibliography that they and/or Dr. Sims can use to write a literature review for a future publication.

### *b. Tangible Contributions by the Student to the Project*

The student-researcher will advance this project by helping complete data analysis and by helping start or complete the literature review. These contributions will directly lead to publication of the work.

### *c. Specific Outcomes Provided by the Project to the Student*

As an outcome of participation in this project, the student-researcher will firstly learn and gain practice conducting qualitative analysis. Secondly, from searching for relevant literature, the student will learn how to find, read, and identify key findings from scholarly work as well as gain knowledge of best practices in STEM education. Finally, from completing an annotated bibliography, the student-researcher will improve their writing skills. These outcomes will be useful to the student-research in future courses, graduate school, and/or a variety of employment positions.

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## III. Student Selection Criteria

The student-researcher must have an interest in education (curriculum and instruction) and STEM. They must also have at least sophomore standing by summer 2022, and have passed the following college level courses (or have the transfer equivalent):

- (1) *both* EH101: College Writing I and EH102: College Writing II
- (2) *either* SOC100: Introduction to Sociology, PY101: General Psychology I, or ED308: Educational Psychology
- (3) *any* methods course (e.g., SOC301, PSY302, ED315, etc.)

Applicants who have career aspirations to be a teacher (PK-12 or college) will receive preference.

## IV. Project Mentorship

Dr. Sims will provide the student-researcher with skills training and mentorship. Meeting two times a week in the Sociology Department Lab, one meeting will be devoted to data analysis and the other to literature review. During data analysis meetings, Dr. Sims will first teach, then supervise, and finally simply hear reports on the student-researcher using the computer software to analyze the textual data. During literature review meetings, the student-researcher and Dr. Sims will discuss the most recently read articles. By listening to the student-researcher's summary of the articles as well as reviewing drafts of the annotated bibliography, Dr. Sims will be able to ensure that the student-researcher is learning to find appropriate academic literature, that they are learning how to identify and synthesize key information from the studies, and that their writing skills are improving.