Qualitative Research: The Higher Education Transition of First-Generation Students in the STEM Classroom

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Focus

The primary focus of the research was to analyze the ways in which first-generation college students in STEM navigated through the Summer Scholars program and how their experiences evolved over the course of their first year.

The Summer Scholars Program is a 5-week intensive program for students coming to TCNJ, allowing the opportunity to live on campus and take courses that pertain to their major prior to their first year. The program also provides academic resources to help students along their classes.

Using the data from interviews and course content, patterns were observed that can further explain positive or negative experiences throughout the program..

Methodology

- **Applicable scholarly literature**
  - Helped to identify themes to look for
- **Interview transcription**
  - TRINT
- **Interview analysis**
  - ATLAS.ti
    - More insightful analysis with a **codebook**
- **Codebook**
  - Recurring themes were identified, coded and defined

Process of Qualitative Research

The first step in the research process was the transcription of summer and first year interviews using Trint: Automated Transcription of Audio and Video.

The tool allowed us to:

- Upload the interviews and transcribe the audio
- Playback the audio at a desired speed to listen carefully
- Edit the transcription for any errors
- Locate which transcriptions were edited and finished in order to organize our data

┌ 00:00:01

INT So the purpose of this interview is to understand your journey in the summer programs in order for the improve the program for the future of other students, so be truthful. I keep your information completely confidential and nothing you say will affect your grade status in your program or anyone's opinion. So so let's begin by you telling me your full name and your current major.

Codebook Approach

After analyzing significant patterns within the interview transcripts, we created codes that could be used to organize and identify recurring patterns. We then defined the codes and added examples from the interviews.

Code: Academic burnout: Negative emotional, physical and mental reaction to prolonged studying-- frustration, lack of motivation	**i.e.:** "I would try to study. I had more than one tutor trying to help me and nothing was really staying with me as I studied. Yeah I was just behind the whole time and stressed."
Code: Self efficacy: A person's confidence in their own ability to achieve something at a designated level of skill	**i.e.:** "Just 'cause I know I can do well. I know what I'm capable of."

ATLAS.ti: The Qualitative Data Analysis

ATLAS.ti is a tool that allows you to upload transcripts into the software, identify patterns within the data and label them with codes.

We utilized ATLAS as a data reduction tool to find examples of our variables in the transcripts. This software allowed us to comprise a codebook while finding broader themes throughout the interviews, helping to expose the patterns that persisted throughout the summer program.

CH [00:04:43] For calc. I just went over the homework in the notes that's really it. And then for Astro Dynamics, tht was the first half of STEM. I just I went over the notes and I don't really work well in groups. That's not my thing. It's either like a one on one kind of thing with a friend or just by myself. That's really the best because I just get distracted with it and I can't move have my phone.

Studying strategies

Preliminary findings

- **Wording** on the test did not match what students previously learned in class
  - While taking exams, students did not understand certain terminology because the wording was different than what they had learned
- **Tutoring** was a useful resource for students, however, more individualized and organized instruction would be more effective
- **Experiencing racism** is not something that students are necessarily worried about
  - Students developed coping strategies allowing them to look past the concept of race in the predominantly white college community
    - Support from fellow EOF students and mentors in navigating through TCNJ
- **Teaching styles** can make or break a student's experience in a course
  - Positive pedagogical experiences → higher chances of success