

Roots of STEM Success Qualitative Data Description

The Roots of STEM Success qualitative dataset contains in-depth interviews with more than 500 students who attended various post-secondary institutions throughout North Carolina. In 2013, the research team interviewed 316 students who had accrued 90 or more credit hours at one of the sixteen four-year campuses of the University of North Carolina system. Two years later, we interviewed 124 students who were enrolled in eleven community colleges in NC. We did follow-up interviews with some of those 124 students three years later and supplemented that sample with additional interviews with students who had transferred from community colleges into STEM majors at UNC-system schools. Further inclusion criteria for each of the interview phases are described below.

Interviews with College Seniors

In the spring of 2013, students who had earned 90 or more credit hours at each of the UNC system schools received an e-mail with a link to a recruitment survey. Responses to the survey were used to identify students who had attended a NC public high school; were less than 30 years of age; and left high school with the academic potential or interest of majoring in STEM. Of the ±4600 survey respondents, approximately 1500 met the inclusion criteria.

Among qualified prospective interviewees, individuals were selected to be interviewed so as to fill the ethno-racial, gender, major, and campus targets of the Roots of STEM research project. The research team sought to find three distinct groups of students: (1) “majors,” or those who were completing STEM majors; (2) “leavers,” or students who had declared STEM majors and then left them for non-STEM fields; and (3) “avoiders,” or those who had left high school with some interest or capacity to major in STEM but who decided to major in non-STEM fields instead.

From February through April, 2013 the Roots of STEM project team conducted 316 interviews. Interviews were recorded and were conducted in person (for respondents attending UNC Charlotte), by phone, or during a Skype session. The research team made interview assignments in an attempt to match gender and/or ethnicity of the interviewee with that of the interviewer whenever possible.

Using semi-structured interview protocols, researchers conducted confidential interviews and did not record respondents’ names. Separate protocols were used for majors, leavers, and avoiders, although there was considerable overlap in the content of the protocols. See below for an overview of the protocol structure and sample questions. Interviews were transcribed verbatim by paid transcriptionists and transcripts were uploaded into nVivo. The research team has coded for important themes and analyses of these interviews is ongoing.

Interviews with Community College Students

We identified eleven community colleges located in both urban and rural locations in various regions of the state from which to interview students and worked with administrators at each of those community colleges to recruit students to interview.

As with the 2013 data collection, the research team developed a survey to identify students over the age of 18, currently enrolled at a community college, and intending to transfer to a four-year college and major in STEM. Students were e-mailed a link to the survey and indicated whether they would be interested in participating in an interview.

Among interested and qualified prospective interviewees, individuals were selected to be interviewed so as to fill the ethno-racial, gender, major, and campus targets of the Roots of STEM research project. From February through August, 2015 the Roots of STEM project team conducted 200 interviews. Interviews were recorded and were conducted in person (for respondents living locally), by phone, or during a Skype session. Again, the research team matched interviewer to interviewee by racial group and gender wherever possible.

In this round of data collection, interviews were confidential and respondents' names were not recorded. Recorded interviews were converted to MP3 files and then transcribed by paid transcriptionists. The interviewer also completed a post-interview form that served as a field journal in which the researcher could reflect on the interview experience as well as describe the key portions of the interview.

The research team re-interviewed 68 of the interviewees from 2015 throughout the spring and summer of 2018. Some of those students had graduated from or transferred to four-year universities: others were still attending community college or were out of formal education altogether. There had also been attrition from STEM majors among those students who had transferred. Therefore, we supplemented this sample of interviewees with 37 interviews with students who had attended a community college, transferred to a four-year university and were majoring in STEM fields. Analyses of these interviews is ongoing.

Interview Protocol—Structure and Sample Questions

General questions about Majors

1. We are interested in hearing the story of how you came to major in _____. Thinking back over the course of your life, what contributed to your becoming a _____major?
2. What kind of career/life plans have you made since you decided to major in _____?

Interest in Science

1. How did your interest level in science change as you went through middle and high school? Explain.
2. Since you started college, has your interest in science in general and your major (if a science major) increased/decreased? If so, what do you think contributed to this shift?

Pedagogical Experiences and Interactions with Teachers

1. Do you think your HS math and science teachers cared about you and your learning? Explain.
2. Do you feel your college math /science classes were taught well? Why or why not?

Identity and Confidence Issues

1. How do you think your math/science teachers in HS viewed your ability to do science? Did they think you are more or less able than you thought you were?
2. Think about your college science and math courses. Do you think you were more or less connected to your classmates than a typical student in the course?

Gender and Race Questions

1. Did your high school math & science classes' racial composition affect your comfort level in the class?
2. Roughly, what percent of students who are in your current major are like you in terms of gender? What about in STEM (or considered/intended STEM major, if they had one)?.