Transfer students in STEM majors: Socialization factors that influence academic and social adjustment

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Introduction

An abundance of literature exists regarding the underrepresentation of women in STEM fields. However, this underrepresentation of women in STEM continues to be a concern even with the increase of women obtaining baccalaureate degrees. Although women currently account for at least half of the baccalaureate degrees awarded in most industrialized countries, they continue to be significantly underrepresented in science and technology (NSF, 1994; Stolte-Heiskanen et al., 1991). While community colleges are being recognized as pathways for preparing individuals to pursue baccalaureate degrees in STEM fields at 4-year universities and colleges (Starobin & Laanan, 2005), little research has been conducted that focuses on the socialization factors of women at community colleges and how this socialization influences academic and social transfer adjustment in STEM areas (A. K. Bragg, 1976).

Purpose

The purposes of this study were to examine the socialization factors of college community college transfer students in Science, Technology, Engineering, and Mathematics (STEM), and to examine the social factors that impact the academic and social adjustment of community college transfer students in STEM majors.

Research Questions

- What are the background characteristics of ISU community college transfer students pursuing bachelor degrees in STEM majors at ISU by gender?
- Are there statistically significant differences in the community college and university experiences by gender?
- What background characteristics and community college and ISU experiences predict social and academic adjustment for community college transfer students in STEM majors at ISU?

Literature Review

Socialization of transfer students in STEM

Definitions

Socialization is defined as the process by which persons acquire the knowledge, skills, and dispositions that make them more or less effective members of their society. While it is considered to be a lifelong process, Astin’s (1984) Theory of Student Involvement emphasizes the importance of the early years of higher education. Astin’s (1984) Theory of Student Involvement hypothesizes that the amount of physical and psychological energy that the student devotes to the academic experience is a function of the student’s confidence, the amount of academic expectancy, and the amount of social integration. Weidman’s (1987) Socialization Theory focuses on the socialization factors of women at community colleges and how this socialization influences academic and social transfer adjustment in STEM areas (A. K. Bragg, 1976).

Methodology and Data Analysis

Quantitative research design

- Survey research design, more specifically an ex post facto research design
- Iowa State University-Transfer Student Survey (ISU-TSS)

Data Analysis

- Statistical Package for Social Sciences (SPSS)
- Descriptive Statistics (Frequencies and percentages)
- Exploratory Factor Analysis (EFA)
- Inferential Independent-samples T-Test
- Hierarchical Multiple Regression

Results

Background Characteristics

Table 1: Means, Standard Deviations, and T-test Results for Community College Experiences

Table 2: Means, Standard Deviations, and T-test Results for University Experiences

Inferential Independent-samples T-test

Table 3: Predictors of Community College Transfer Student Academic Adjustment to ISU

Table 4: Predictors of Community College Transfer Student Social Adjustment to ISU

Conclusion

Although female students are entering post-secondary education environments with previous science and mathematical knowledge and experiences and are academically prepared in these areas, the role of faculty and academic advisors are extremely important in the adjustment process. Additionally, the continued encouragement of female students to participate in classroom environments and become involved in campus organizations is essential to their overall positive adjustment and socialization process. Encouraging students to interact with faculty at the university and transfer as many credit hours as possible is also important during the adjustment process. In addition, assisting students in researching prospective institutions during the transfer process and understanding their value to the university is vital in the academic and social adjustment process.

Implications for Future Research

- Conduct longitudinal studies that follows students from early grade school throughout their postsecondary education/pre-collegiate hobbies.
- Seek qualitative information that is needed at every stage of the student’s socialization to understand how students are interpreting their socialization. Understanding this interpretation early in the socialization process will highlight success factors as well as adjustments that may need to be made.
- It is also beneficial to conduct studies on past community college transfer students who are currently in a STEM career to assess their early socialization processes.
- Conduct qualitative research on STEM and Non-STEM students to understand the socialization similarities and differences among these two groups.
- Explore faculty perceptions of transfer students.
- Explore the socialization experiences of females of color in STEM majors.