

Research and Student enrichment programme with special reference to STEM enrichment Programme

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Introduction

Since 1980s Educators Scientists and policy makers have become increasingly concerned with the state of SCIENCE, TECHNOLOGY, ENGINEERING and MATH (STEM) Education. Education system has to produce adequate number of skilled graduates in STEM field to address future scientific problems. Further given the increasing importance of science and technology to the modern economy, Science and engineering occupations are expected to be a major area for future job growth and will continue to represent one of the fast growing and highest paying occupational sectors in developing economies.

Moreover there are adverse effects on STEM leadership because of graduate intake composition of the country as a prerequisite for high paying technical jobs is experience in STEM related fields. Recently scholars have noted that in addition to improving students academic performance and providing students access to research experience and faculty members, the success of STEM Enrichment Programmes is also enhanced by Social Psychological process by which students come to identify as scientists and innovators. (Carlone and Johnson 2007; Egan et al 2012; Lee 1998; Merolla et al. 2012).

Objectives of the study

1. To identify whether students who participate in STEM enrichment programs are more likely to maintain an interest in STEM career

2. To ensure that science identity also impacts the probability that students will matriculate to graduate school
3. To explain how STEM enrichment programs can enhance Matriculation in Graduate School

Theoretical Background

Identity theory (Stryker 1980, Burke and Stets 2009) which states every individual in modern society has multiple role identities which corresponds to the different social roles they fill.

The theory also differentiates the role identities based on specific social roles, from social identities based on group identification and social characteristics and person identities based on specific personal traits.

Literature review

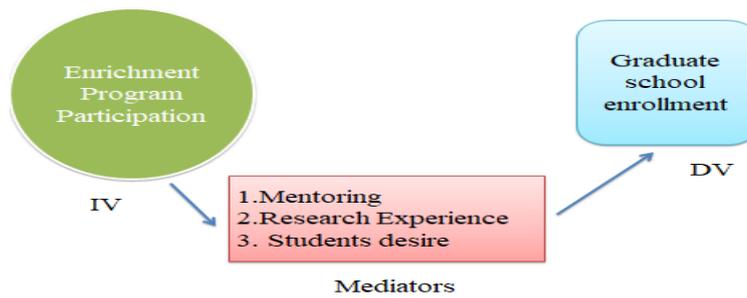
Students who participate in enrichment programs are more likely than students with similar background to sustain an interest in STEM , perform better in their courses , complete STEM degrees and attend graduate school (Alfred et al 2005, Barlow and Villarejo 2004, Maton and Hrabowski 2004, Maton et al 2000)

Enrichment program participants are more likely to gain research experience and involve in research projects are more likely to matriculate in graduate schools (Barlow and Villarejo 2004, Carter et al 2009, Jones et al 2010, Schultz et al 2011)

Hypothesis

1. STEM enrichment program participation will be associated with matriculation to graduate school.
2. STEM enrichment program participation will be associated with (a) More mentoring (b) More research experience (c) Higher student intention for a scientific career.
3. All the above variables will mediate the relationship between enrichment program participation and graduate school enrollment.

Model of the Study



Analysis

Table 1		
Frequency distribution for student outcomes (N = 694)		
Outcome	Frequency	%
Matriculated to STEM graduate program	220	31.70
Left college for employment	336	48.41
Changed Major	137	19.74
Left college—not employed	10	0.14

Source The Science Study

Table 2				
Correlations among STEM program participation and Mediating Variables (N= 49)				
Variable	Program Participation	Faculty Mentor	Research Experience	Intention for STEM Career
Program Participation	1			
Faculty Mentor	.512	1		
Research Experience	.496	.549	1	
Intention for STEM Career	.159	.223	.207	1

DV	IV \rightarrow DV	M \rightarrow DV	IV \rightarrow DV	IV \rightarrow DV Mediators Controlled
Graduate School Enrollment	$\beta = 0.355^{**}$	$\beta = 0.545^{**}$	$\beta=0.461^{**}$ $R^2=0.213$	$\beta =0.162$ $R^2=0.471$

DV – Graduate School Enrollment

IV - STEM Enrichment Program Participation

M - 1.Mentoring

2.Research Experience

3. Students desire

Findings

The findings of the study reveal that Faculty Mentoring has enormous potential with Students desire and Research experience aligned together and will benefit graduate school enrollment after matriculation evoking more graduate outcomes for the benefit of mankind and inventions and innovations.

Conclusion

Students' choices about whether to remain in STEM are shaped by structural forces that influence students' access to networks of social relationships based on STEM. Students with access to these relationships in the form of enrichment programs are more likely to identify as scientists and are more likely to continue their education into graduate programs. Increasing participation in STEM remains a national priority

Given the likelihood of reduced federal spending on enrichment programs in the current fiscal climate, the current study offers hope that colleges and universities can design effective interventions that encourage more students to continue into graduate school in science, arts and commerce to inculcate scientific enquiry leading to inventions and innovations. Colleges and universities should develop programs that not only enhance students' skills in the laboratory and in the classroom, but also create welcoming social environments that provide students interested in STEM with opportunities to develop meaningful social relationships centered on their interest in scientific inventions and innovations.

References

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