Closing the IT Self-efficacy gap among underrepresented students in the Business School

Introduction

The achievement gap faced by academically at-risk minority students has long concerned the educational community. The national discourse on racial disparity is focused primarily on the achievement gap between the academic outcomes of Black, Latino, and American Indian students and the outcomes of their white counterparts (Gregory, Skiba, & Noguera, 2010). According to Ladson-Billings (2006), the achievement gap between white and Black students is the result of an "education debt"; historically different groups had unequal educational opportunities. According to the National Governor's Association, the achievement gap is "a matter of race and class across the U.S.," and "a gap in academic achievement persists between minority and disadvantaged students and their white counterparts" (Ladson-Billings, 2006). Cohen, Garcia, Purdie-Vaughns, Apfel, and Brzustoski (2009) reviewed how psychological interventions are designed to decrease the ethnic achievement gap by reducing academic underperformance.

University Context

This research is conducted in the context of large, yet highly diverse business school in a public university. The motivation to conduct this line of research originated after exploring the Student Success Dashboard of one of the large-size public universities in Northern California to find out more about Information systems courses' average GPA within the last 10 years. The data indicated that there is a gap in students' GPA in almost every class in this school. As a Minority-Serving Institution, the university has a student population that is especially suited to demographic based analysis.

Applying different pedagogical strategies and educational technology tools can help in increasing student engagement and improving academic performance. Also, considering interventions that could support underrepresented minority students can help in closing the achievement gap. It has been proven that the use of various technological tools is an effective method to facilitate communication by encouraging cooperative learning among students (Hollenbeck & Hollenbeck, 2009).

Furthermore, given that this institute is the largest and the most diverse four-year public university system in the nation, advances in student achievement and equity in the system, made possible by newly emerging technologies, are likely to be of interest and use nationwide.

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Project Summary

Demographic	Frequency	Percentage	Demographic	Frequency	Percentage
Gender			**Major**		
Female	38	42.7%	Business Administration	32	36%
Male	51	57.3%	Management Information Systems	9	10.1%
International/Domestic					
Yes	2	2.2%	Accounting	15	16.9%
No	87	97.8%	Marketing	7	7.9%
Studying per week	**T1**	**T2**	Finance	16	18%
1-5 hours	23.6%	20.2%	General Management	7	7.9%
6-10 hours	34.8%	40.4%	Human Resources and Organizational Behavior	1	1.1%
11-15 hours	22.5%	19.1%			
16-20 hours	11.2%	9.0%	International Business	2	2.2%
Above 20	7.9%	11.2%	**Ethnicity**		
Working per week	**T1**	**T2**	American Indian	1	1.1%
Don't have a job	20.2%	23.6%	Asian	26	29.2%
Less than 10 hours	9.0%	6.7%	African American	4	4.5%
11-20 hours	25.8%	23.6%	Latino	18	20.2%
More than 20 hours	44.9%	46.1%	Pacific Islander	1	1.1%
Age			White	30	33.7%
19-24	63	70.8%	Other	6	6.7%
25-30	14	15.7%	I prefer not to respond	3	3.4%
31-36	6	6.7%	**Full-time Student**		
37-42	3	3.4%	Yes	85	95.5%
Above 42	3	3.4%	No	4	4.5%

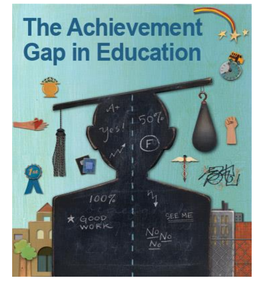
This study presents findings of a longitudinal assessment study conducted at the beginning and end of Spring 2020 semester in a required information systems class for business majors in one of the most racially diverse campuses in the United States. As a technical class designed primarily for students pursing non-technical studies, participants generally enjoyed limited technical background or subject matter interest upon enrolling. The objectives of the research design are to assess how exposure of non-technical students to a variety of technical competencies would effect Information technology (IT) self-efficacy and interest in information systems (IS). The research model also evaluates how the changes in IT self-efficacy and interest vary across demographic groups. Fostering the enhancement of student's IT self-efficacy as well as their interest in IS constitutes the instructor's attempt of "deliberate psychological education" within the zone of proximal development (ZPD) framework (Vygotsky, 1978). Vygotsky states that student aptitude in a specific area can be accomplished through strategically planned educational structures directed towards support and assistance for specific skill competencies (Bellamy et al., 2005). The study examined the impact that the course's structure and content constituting the deliberate psychological education framework had on student's IT self-efficacy and IS Interest.

Methodology and Result

A convenience, non-probability-based sampling method was used in this research (Creswell, 2017). The sample comprised a group of business students who were enrolled in the Introduction to Information Systems (MIS101) course in Spring 2020.

While concerns regarding inclusivity of access to technology remain, our analysis demonstrates encouraging results. Our findings demonstrate the significant increase of IT self-efficacy and interest to the non-technical students included in our study. Mean averages on the posttest measurements of IT Self-efficacy and IS Interest were significantly higher than pretest measurement. This study also revealed that the posttest mean averages were higher among females and underrepresented minority students in comparison with their male and white counterparts. While our posttest data still demonstrated a gap between the IT self-efficacy and interest between genders and racial minorities, the gaps were significantly smaller in our posttest assessment.

This research shows that through applying experiential technology more broadly in the classroom, the IT self-efficacy of students may be increased, and that the rate of increase will be greater for student populations that have less familiarity with technology.



By further understanding ways by which to boost IT self-efficacy in students, information systems educators may have more means by which to expand IT workforce participation. While many studies have described the negative effects that relative low levels of IT workforce participation among women and certain racial and ethnic groups, this study demonstrates the potential benefits of technology interventions to increase IT self-efficacy and interest in IS in differing populations. The results of this research can serve to assist the university's goals around improving educational equity, by empirically demonstrating the factors that affect student engagement and interest, particularly among minority and underserved students.

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