Work in Progress - Retention and FIGS: Institutional versus Engineering Major Efficacy

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***Abstract* – In an attempt to retain students, institutions have implemented programs focused on "the first year experience". Many institutions link their first-year programs to specific disciplines, calling these programs freshmen interest groups or "FIGs." In this research we explore the extent to which this FIG model, found in other research to be effective for improving general institutional retention, can be extended to improve major specific retention in Environmental Resources Engineering (ERE) at Humboldt State University. Analysis from institutional and departmental sources on three cohorts of freshmen ERE majors in FIG (n=29) and Non-FIG (n=15) groups, as well as other non-ERE FIGS groups indicates that ERE freshmen enrolled in FIGs continued to their sophomore year at HSU at the same average rate as students in other FIGs (76%) and at a significantly higher rate than all Non-FIG freshmen (72%). However, FIG participation did not affect retention in the engineering major itself. Our study suggests that the FIG model best addresses the instabilities of transition into college and that major retention in science and engineering is a more complex phenomenon that the current FIGs model does not address. Data for two additional cohorts of freshmen (n=65) will be added to this analysis and the combined results will be reported at the conference.**

Index Terms – Retention, Environmental Engineering, Freshman Interest Groups..

INTRODUCTION

The past decade has seen growing attention to "the first year experience" at many institutions in an attempt to retain students. The Policy Center on the First Year of College reports growing attention to "the first year experience." Based on data from 50% (75) of U.S. doctoral or research-focused institutions [1], the Center found that most of the first-year program models were initiated in the late 1990s. While the programs have taken many forms, typically they have integrated curricular and co-curricular experiences with a goal of constructing seamless learning environments [2]. Many institutions link their first-year programs to colleges or specific disciplines, with the field of Engineering standing out as a leader in the movement.

Smaller "learning communities" are central to first-year models that address multiple theoretically-based strategies for retention. These additional strategies include common course enrollment in at least a few classes and co-curricular design including common residence and support services. Some have called these programs freshmen interest groups or "FIGs."

At Humboldt State University (HSU) more than twenty Freshman Interest Groups (FIGs) are offered every Fall term. The HSU Environmental Resources Engineering (ERE) Department has facilitated a FIG for engineering and environmental science students. Students in the ERE FIG enrolled in a 3-unit engineering class: ENGR 115 Introduction to Environmental Science and Engineering. At the same time they were required to register for one additional seminar unit taught by their ENGR 115 instructor. Most ERE FIG students also enrolled in a communications course and a math class.

Students collaborated with the instructors in selecting topics for the 1-unit FIG seminar. Topics ranged from time management and scheduling advice to sessions on professional development. Guest speakers included senior students, student club representatives and professionals in environmental science and engineering. The 3-unit introductory environmental science and engineering class surveyed a range of environmental resource engineering and science areas from water quality and resources to air quality and energy resources. The course also incorporated concepts of engineering ethics, sustainability and environmental responsibility.

EVALUATION PLAN AND EXPECTED OUTCOMES

In this research, we examined the Humboldt State University (HSU) "freshmen interest group" (FIG) model and its relative efficacy for retaining students in engineering. We asked, "How does participation in an engineering FIG at HSU affect first year retention in the engineering major?"

Between 2004 and 2006, 44 first-time freshmen entered HSU as declared engineering majors. A total of 29 of these students enrolled in FIGS, while 15 opted out of FIG participation. The ERE FIG classes enrolled 16 to 24 students with an average class size of 20. We reviewed class lists for the FIG for each Fall term between 2004 and 2006, as well as departmental advising lists, to generate the engineering student sample for this study. For all students listed as engineering majors, we tracked their enrollment status as using online registration systems.

For all students who were no longer enrolled or were currently enrolled as non-engineering majors, we reviewed their transcripts. We compiled data on total semesters enrolled and the last semester in which they enrolled in an engineering course. We counted them as having "switched" to another major in the first term in which they no longer enrolled in engineering coursework. To double check this measure, we confirmed that a student who switched out of engineering indeed did not enroll in engineering coursework in a later term.

We have analyzed data from three cohorts of freshmen ERE majors self selected into FIG (n=29) and Non-FIG (n=15) groups and compared their first year institutional retention outcomes with outcomes of other FIG groups. We also compared ERE FIG and Non-FIG students on first year major retention. We will add data gathered from two additional cohorts (n=65) to evaluate how FIG participation affects retention in the engineering major itself.

PROJECT STATUS AND PRELIMINARY RESULTS

Preliminary analysis supports prior findings supporting the efficacy of the FIG for improving first year institutional retention. Yet the model had no effect on retaining students in the engineering major.

The first year institutional retention rate across all FIG students between 2004 and 2006 was higher than the first year retention rate for Non-FIG students. The first-year retention rate across all freshmen who enrolled in FIGs during this time period was 76% (n=837). This rate was marginally higher than the first year retention rate of 72% for Non-FIG freshmen (n =1063).

Freshmen ERE majors who participated in FIGs were less likely to be retained in the ERE major in their sophomore year (48%) compared to ERE freshmen who did not enroll in FIGs (53%), but this relationship was not statistically significant. While students who participated in FIGs were more likely to be retained at HSU, FIG participation of ERE students did not have an impact on their retention in the major. Yet the major sample size was small and cohort variation high; therefore, these results should be considered with caution.

One of the difficulties with comparing FIG to Non-FIG students at HSU is that students self selected to participate in a FIG. Does a student choose to be in a FIG because the student is more academically committed or because he or she is nervous about upcoming college challenges and/or her major course of study? If the students in FIGs are our higher risk students, then the resulting similar rates of major retention between FIG and Non-FIG ERE majors might actually reflect support for the FIG as a model for major retention. Inversely, if FIG students are more committed as group, our results would suggest a negative effect of the model on major retention.

Research that investigates the qualitative differences in experience of FIG and Non-FIG ERE majors would offer a more nuanced understanding of the substantive significance of FIG participation for retention in the major. A one-time survey of all first year students issued in the fall of 2000 found FIG students were more academically and socially satisfied with their college experience. They reported higher levels of contact with faculty both inside and outside the classroom. They completed more units during their first semester and were more likely to be involved in student activities. The retention values reported here do not capture these more nuanced measures of satisfaction that have implications for university culture, as well as the reputations of both the institution and the engineering major.

While the FIG may not suffice to retain students in the engineering major, that does not mean that the model would not be effective for retaining or recruiting students to other majors. But it is uncertain whether a FIG model would make the field any more attractive to students in engineering. Instead, our study suggests that the FIG model best addresses the instabilities of transition into college and that major retention in science and engineering is a more complex phenomenon that the current FIGs model does not address.

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REFERENCES

[1] Cutright, M.. 2002. "What Are Research Universities Doing for First-Year Students." About Campus September/October:16-20.

[2] Kurotsuchi I. et al. 2006. " The Role of Living-Learning Programs in Students' Perceptions of Intellectual Growth at Three Large Universities." NASPA Journal 43:Art. 7.Retrieved May 8, 2008, http://publications.naspa.org/naspajournal/vol43/iss1/art7

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