



Recruitment Efficacy of a Summer Undergraduate Research Program: Impact on Graduate School Intent and Selection

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Introduction

Successful recruitment of an inclusive student body is essential to enriching the quality of graduate programs^{1,2}. Therefore, universities implement multiple activities to recruit diverse students for post-baccalaureate studies to their institutions. Some of the recruitment activities include offering informational meetings, campus tours, career fairs, summer research programs, and assistantships³ to prospective students.

Poock³, who surveyed members of the National Association of Graduate Admissions Professionals (NAGAP), found that NAGAP members “perceived only one of the twenty five recruitment activities [assistantships] to be somewhat effective” (p. 174) at recruiting diverse students to graduate programs. Other activities including summer research programs were perceived as ineffective; however, Poock’s findings differed when comparing perceptions of members at doctoral-granting and masters-granting institutions. According to Poock, members at doctoral-granting institutions *perceived* multiple recruitment activities, including summer research programs, to be more effective than their peers at masters-granting institutions³.

The current study aims to determine the *actual* efficacy of one type of recruitment activity – a summer undergraduate research program – implemented by the Dwight Look College of Engineering at Texas A&M University (TAMU). The summer undergraduate research program at this doctoral-granting institution is titled “Undergraduate Summer Research Grant” (USRG). The purpose of the USRG program is to attract and recruit diverse students to pursue graduate studies in engineering and in particular at TAMU. The USRG program provides participants with a forty hours per week immersive research experience akin to the *National Science Foundation - Research Experience for Undergraduates* program for a period of ten weeks. In addition to research, program participants engage in professional development workshops that are intended to prepare participants to apply for graduate studies. A complete program description and historical data on program applicants is available in a previous publication⁴.

Previous Research

Previous studies have shown that participation in summer undergraduate research programs can enhance student learning outcomes and change career intentions towards pursuit of graduate studies in science and engineering. For example, Lopatto, who surveyed undergraduate students in the sciences across the nation to determine the effect of undergraduate research experience on students’ educational experiences and science career intentions, found “learning gains related to the research process, scientific problems and lab techniques” (p. 303). He also reported that students either sustain or increase their interest in pursuing post-graduate school in sciences after participation in the summer undergraduate research programs⁵.

Additionally, Trenor and Olga reported that undergraduate summer research experiences are important for STEM majors in shaping their career goals and interest in pursuing a doctoral degree⁶. Morley, Havick and May found that minority students participating in the Georgia Tech Summer Undergraduate Program of Research in Electrical Engineering for Minorities were more

likely to pursue graduate studies in engineering when compared to students who did not participate in the research program⁷. Luchini-Colbry, Wawrzynski, Mangiavellano and McCune reported a 23% increase in the number of engineering students who indicated intent to pursue graduate school post participation in a summer undergraduate research experience at Michigan State University⁸. Similarly, Conrad, May and Auerback noted a 28% increase in the number of engineering students interested in pursuing graduate studies after participation in the Summer Undergraduate Research Experience (SURE) program at the Georgia Institute of Technology. They also attest to the effectiveness of SURE as a graduate recruitment tool because half of the minority students who enrolled in the doctoral program after participation in the SURE program attended school at Georgia Institute of Technology itself.⁹

Purpose and Research Questions

Relatively little is known about how universities can effectively use summer undergraduate research programs as a way to recruit diverse students to graduate programs in engineering at the program's home site. In order to develop strategies to recruit students to graduate programs at TAMU through its summer undergraduate research program, we first examined the efficacy of the USRG program in influencing students' post-baccalaureate plans. Next, we examined factors that influence USRG participants' selection of graduate school at the conclusion of the USRG program. Last, we compared the influence of the same factors for those who applied and those who did not apply to TAMU for graduate school, to determine strategies that universities can employ to effectively recruit summer undergraduate research program participants to a graduate program in engineering at the program's home site.

The research questions explored in this study are:

- (1) How does participation in the USRG program influence students' intention to pursue different career and degree paths in engineering?
- (2) What factors influence USRG program participants' decision to potentially apply to and matriculate in engineering at TAMU at the completion of the program?
- (3) How do factors that influence USRG program participants' decision to potentially apply to and matriculate in engineering differ between those who applied and who did not apply to graduate studies at TAMU?

Methods

A mixed methods survey design approach was used to collect data from the target population to respond to the research questions asked in this research. This research was conducted after receiving appropriate permissions from TAMU's Institutional Review Board. The response rates are reported and have been rounded to the nearest percentage and therefore may not exactly add to 100%.

Target Population Characteristics

The target population for this research study was all students (n = 169) who participated in the USRG program at TAMU from 2011 to 2013. The majority of the population consisted of seniors (32%) and juniors (39%). Twenty two percent of the population consisted of sophomores and 7% of the population did not report their classification. A little more than twice as many males than females formed the population. Domestic students formed 89% of the population.

Ten percent identified as international students and the remaining did not respond to their citizenship status. The majority of the population (56%) self-identified as White. About 16% self-identified as Asian/Pacific Islander, 12% as Hispanic/Latino and 7% as Black. Ten percent did not report their ethnicity. Slightly more than half (51%) of the population had some prior research experience. Forty nine percent had no research experience. The remaining 8% did not report this data.

Data Collection

The students received a survey at the end of each summer for three (2011-2013) program cycles and the survey received a response rate of 73%. The survey consisted of 18 questions, 12 of which were categorical, 3 of which were Likert-type, and 3 of which were open-ended questions. Only select categorical and open-ended items are reported herein. This is because only the selected items were relevant in responding to the research questions asked in this particular study. The select categorical questions asked participants to report on their demographics (e.g., gender, residency status, ethnicity, educational classification, and previous research experience), change in intentions to pursue graduate studies, and reasons for change in plans, if any, to pursue graduate studies. The select open-ended question asked participants about the appeal in attending a graduate school (if any) of their choice. Additionally, participant data on application, admittance and matriculation to TAMU was retrieved and recorded from TAMU's admissions database.

Participant Characteristics

Research participants consisted of students who participated in the USRG program between 2011 and 2013. The majority of the sample consisted of seniors (55%) and juniors (41%). Two percent of the sample consisted of sophomores. Almost twice as many males than females responded to the survey. Almost half of the students in the sample (53%) self-identified as domestic in-state students. About twenty eight percent self-identified as domestic, but out of state students, 7% as international students and 13% of the participants did not respond to the question. A majority of the sample self-identified as White (62%). The rest of sample consisted of persons who self-identified as Asian (14%), Hispanic/Latino (12%), and Black (5%). Approximately 8% of the sample selected "other" or chose to not respond. Participants' prior research experience ranged from no experience (39%) to one academic semester (26%) to two or more academic semesters (30%).

Data Analysis

Data analysis was conducted in three phases (Phase I, II and III). Phase I consisted of analyzing quantitative data for participant demographics, changes and reasons for changes in participants' post-baccalaureate plans, and application, admittance and matriculation rates. Only 90% (112 participants) of the survey responses were retained for data analysis in phase one of this study because of missing identifiers in the data. It was impossible to obtain participant application, admittance and matriculation data from the university's admissions database for analysis without the identifiers. This data was crucial to link the application data to the data about factors that influenced participants' decision to apply to and matriculate at TAMU in Phase III of the analysis. Percentage change in and reasons for change in participants' post-baccalaureate plans and application, admittance and matriculation rates were computed and are summarized in the results section.

Phase II consisted of analyzing qualitative data for factors that influenced USRG program participants' decision to apply to and potentially matriculate at TAMU at the completion of the program. Only the 90% responses retained and analyzed during Phase I were analyzed during Phase II. This is because only 90% of the responses can be linked back to the application, admittance and matriculation data in Phase III of analysis. In Phase II, three raters independently coded participant responses into academic and non-academic factors that influence student selection of an ideal graduate school as described in a literature review by Lei and Chuang.⁸ Academic factors include institutional, department and faculty factors. Non-academic factors include personal reasons and influence of other people. Once coded independently, the coding was compared among the three raters. Participant responses were coded into a particular factor if at least two of the raters (an inter-subjective agreement of 67%) agreed on the coding. If coding could not be agreed on at all, evidence was discarded at least for this preliminary analysis. Evidence within a particular factor was then clustered together (based on similarity of evidence) to arrive at themes within the particular factor. The percentage of evidence classified within each factor and the themes that emerged from the analysis are reported in the results section.

Phase III consisted of comparing quantitative and qualitative data of the differences in factors that influenced USRG participants' decision to apply to graduate school between those who applied and who did not apply to TAMU. Only 72% (n = 81) of the data from phase II was retained and analyzed for this phase of the study. This is because 31 of the 112 persons did not respond to the qualitative question on the survey. Hence, the total response rate for this portion of the study was 65%. Frequency counts of each of the factors for the two groups (applied versus not applied) were computed as percentages and are reported in the results section along with the themes and frequency of occurrence for each of the factors. A chi-square test of independence was also conducted to determine if the factors that influenced participants' decisions to apply to graduate studies varied between those who applied and those who did not apply to graduate school at TAMU for the target population. Results of the chi-square test of independence are also reported in the results section.

Results

Change in participant intentions to pursue graduate studies, reason for change in intentions to pursue graduate studies and actual application, admittance and matriculation data to TAMU are first described. This description is followed by a summary of factors the USRG program participants' considered when applying to a university and how the factors differed between participants who applied to and those who chose to not apply to TAMU.

Change in Intentions - Overall

USRG participants were asked to indicate their plans to pursue graduate studies before and after participation in the USRG program. Overall, 84% of the respondents intended to pursue a graduate degree immediately after completion of their undergraduate education at the conclusion of the USRG program compared to the 67% who intended to do the same prior to participation in the USRG program. Approximately 7% intended to gain work experience before pursuing a graduate degree at the conclusion of the USRG program compared to the 14% who intended to do the same prior to participation in the USRG program. While 42% of the respondents did not

report any change in their current plans to pursue graduate studies, 48% of the participants who did change their plans to pursue graduate studies indicated that participation in the USRG program was either a primary or a secondary reason for change in plans for pursuing graduate studies.

Change in Intentions - Degree Program

Of the 112 persons who responded (see Table 1), 9% more participants revealed plans to pursue a doctoral degree in an engineering-related field immediately after receiving a bachelor’s degree. About 8% more participants intended to pursue a research-oriented master’s degree in an engineering-related field after participation in the USRG program. A 4% and 2% decrease in the number of participants interested in pursuing a non-research oriented master’s degree in an engineering-related field and other advanced degree outside of engineering, respectively, was observed in the data. A decline of 2% or less was observed in the number of participants interested in joining the workforce after a baccalaureate degree or pursuing an advanced degree after gaining work experience. A 5% decline in number of participants who were uncertain about their career intentions after participation in the USRG program was observed from the data. Almost ten percent of the participants chose to either not attribute change in plans (if any) to the summer undergraduate program or preferred to not respond to this question. The majority of total participants (14%) who had selected multiple career intentions prior to participation in the USRG program also showed inclination towards pursuing research oriented degrees after participation in the USRG program. Only one respondent indicated that she/he would not pursue graduate studies after having participated in the USRG program.

Table 1. Percentage change in career/degree path interest after participation in USRG program

Statement	Retrospective Post- and Pre-Response (% Change)
Go to graduate school full time for a	
1. Doctoral degree in an engineering-related field	9%
2. Masters (non-research oriented) in an engineering-related field	-4%
3. Masters (research oriented) in an engineering-related field	8%
4. Other advanced degree outside engineering (medical, law, business, etc.)	-2%
Go to work, then;	
5. Not pursue a graduate degree	-2%
6. Pursue a doctoral degree in an engineering-related field	0%
7. Pursue a masters (non-research) in an engineering-related field	-1%
8. Pursue a masters (research-oriented) in an engineering-related field	-2%
9. Pursue advanced non-engineering degree (medical, law, business, etc.)	-2%
Other	
10. I was uncertain at the time	-5%
11. Not applicable/prefer not to answer	0%

Application, Admission, Matriculation to TAMU

Of the 112 participants (see Figure 1), 40% applied for graduate school to TAMU and 60% did not apply to TAMU. Of the 40% who applied, 87% were admitted to TAMU, whereas the remaining were either denied admissions (11%) or withdrew (2%) their application. Of the 87% who were admitted, 51% matriculated to TAMU whereas approximately 39% chose to not pursue graduate studies at TAMU. The remainder (10%) have been admitted, but the yield is unknown at this time because the semester for which they were admitted has not begun.

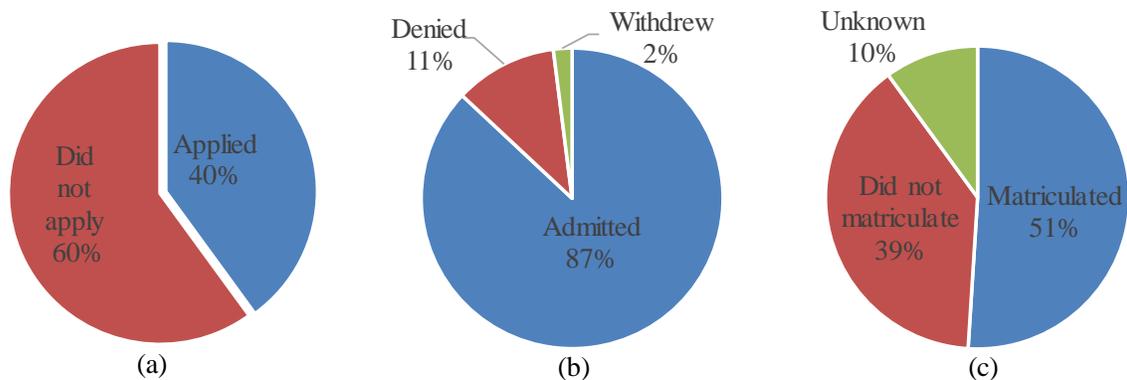


Figure 1. (a) Application to TAMU; (b) Admissions to TAMU; and (c) Matriculation to TAMU.

Factors - Graduate School Selection

Participant responses on factors that influenced their selection of a graduate school were coded into four categories based on previous research¹⁰. The categories included institutional factors, department factors, faculty factors and personal factors. Response percentages for each of the categories are presented along with frequency of observations for each response. Only the observations with multiple occurrences are reported herein (see Table 2).

Maximum number of responses (55%) were coded into *department factors*. Department factors included: availability of specialty areas and/or unique features of program; quality or reputation of the program; availability of resources – research, monetary or otherwise; presence of a nurturing environment; and straightforwardness of admissions and time to degree completion.

The second highest recorded responses were coded into *faculty* and *personal factors* (each at 35%). The dominant faculty factors included match between faculty research interests and diversity of research. This was followed closely by positive interaction with faculty and presence of distinguished or reputed faculty. Participants noted “friendliness” and “helpfulness” as desirable faculty traits. Personal factors included institution location; proximity to home/family; perceived value of the field of interest and/or outcome of further education; and cost of living.

The least number (25%) of responses were coded into the *institutional factors*. Responses under the institutional factors included: prestige or reputation of the institution; educational cost associated with attending a university; previous affiliation with the university; quality of institution; and campus resources/facilities.

Table 2. Observed frequency of themes for department, faculty, personal and institution factors

Factor	Theme	Observed Frequency
Department	Speciality areas or program features	25
	Quality or reputation of the program	13
	Resources	9
	Nurturning environment	3
	Straightforwardness of admissions	2
	Time to degree completion	2
Faculty	Diversity of research interests	9
	Positive interaction	8
Personal	Location	12
	Proximity to home/family	8
	Perceived value of education	7
	Cost of living	2
Institutional	Prestige or reputation	7
	Educational cost	5
	Previous affiliation	4
	Quality	3
	Campus resources	2

Factors - Comparison

A comparison of factors between those who applied versus those who did not apply to TAMU indicated that 54% of the participants (n = 37) who applied to TAMU may have applied due to department factors such as availability of a subspecialty, strength of program and resources. Approximately 43% may have applied due to faculty factors (e.g., positive interaction, mentorship and faculty interests/diversity of research), 35% due to personal factors (e.g., location, proximity to home, perceived value of degree) and 18% due to institutional factors (e.g., previous affiliation, quality of school and university resources).

A similar analysis for non-applicants (n = 40) indicated that 55% may have considered similar department factors (e.g., subspecialty, quality of the program and resources) when deciding to not apply to TAMU. About 35% may have considered personal factors (e.g., location, proximity to home, cost of living and perceived value) and 30% may have considered institutional factors (e.g., cost, previous affiliation and reputation). Twenty seven percent of the participants may have considered faculty factors (e.g., positive interaction, quality of professors, and faculty interest/diversity of research) when deciding to not apply to TAMU.

The Chi-square test of independence for the two groups (applied versus did not apply) revealed chi-square p value of 0.3 (degree of freedom (df): 1) for institution factors; a chi-square p value of 0.93 (df: 1) for department factors; a chi-square p value of 0.2 (df: 1) for faculty factors; and a chi-square p value of 1 (df: 1) for personal factors.

Discussion

This study examined the efficacy of the USRG program in recruiting students to graduate programs in engineering at TAMU. Specifically, the researchers determined the influence of the program on participants' post-baccalaureate plans, factors that influence student selection of a graduate program, and differences in factors that led participants' to either apply or not apply to TAMU for graduate school after participation in the USRG program.

Participant responses to change in post-baccalaureate plans especially due to participation in the USRG program further support assertions in the literature^{5, 6, 7, 8, 9} about the role of summer undergraduate programs in changing career intentions of program participants. Akin to previous studies, an increased number of participants reported intent to pursue graduate education after participation in the USRG program. At least forty eight percent of the 17% (n = 18) that changed intention to pursue graduate school attributed the change in plans to participation in the USRG program. The overall trends (positive within the pursuit of doctoral degree and research-oriented master's degree categories and negative in other categories) suggest a mobility of participants towards pursuit of doctoral and research-oriented master's degrees immediately after graduation from an undergraduate institution. This makes it imperative that universities target participants of summer undergraduate research programs as candidates for graduate school in their graduate recruitment efforts, especially for degree programs with a research focus.

Further, results on factors that influence student selection of a graduate school suggest that department factors (in terms of availability of a subspecialty and quality of the program) run foremost in the minds of students looking for a prospective graduate school. Faculty factors (research interests and positive interaction) and personal factors (location) follow closely. Institution factors are of least importance to students in selecting a graduate school after participation in the USRG program. Results suggest that as a group, the USRG program participants are already beginning to consider a graduate school selection criteria that students consider when matriculating in a graduate program². Individually, however, some participants are still considering factors (e.g. location, cost, academic reputation) that are important to students at the beginning of their search process². This suggests that either the summer undergraduate research experience influences each participant differently because of dissimilarity in experiences across the different program dimensions or has no influence on the participants' criteria for selection of a graduate program.

An examination of the differences in the sample between factors for selection of a graduate school for those who applied and those who did not apply to TAMU also suggests department factors played a major role in a student's decision to apply or not apply to TAMU. This implies that a student is unlikely to attend a graduate school after participation in the summer undergraduate program where the department does not offer a sub-specialty, program features or resources of interest to the student. A high percentage of applicants considered faculty factors as important when applying to TAMU. Comparatively, faculty factors were the least considered for those who did not apply. This finding reinforces the need in developing faculty-related factors, such as diversity of research interests and mentorship training, to support graduate recruitment efforts.

While a difference in factors that may have contributed to participants' decisions to apply to TAMU exists in the sample, the chi-square test of independence revealed no significant difference at a p-value of 0.05 for all factors between those who applied and did not apply to TAMU from the target population. This suggests that participant decision to apply or not apply to a university may either be too unique² to be or completely independent of factors considered in selection of a graduate school at the conclusion of participation in the USRG program. Therefore, it is important to address the limitations of this study (described later) to confirm the results from this study.

Recruitment Recommendations

Based on the findings regarding factors that influenced decision to apply to graduate school, the following are recommendations to attract a diverse body of summer undergraduate research program participants to attend graduate school at the program's home site.

Department Visibility. Universities should focus on improving the reputation and quality of programs at the department level where summer undergraduate research programs are hosted as results indicate that department factors are more important than institutional factors to participants of summer undergraduate research programs. Improving the quality of programming includes increasing the diversity of research specialties and introduction of program features – for example, multidisciplinary and collaborative – that interest today's generation. Doing so might also elevate the reputation of the university itself, which in itself is a factor participants consider in selection of a graduate school.

Mentor Training. Departments should facilitate training of research faculty in mentoring of undergraduate students engaged in the summer research. While students do consider a match between faculty research interests and diversity of research options when selecting a graduate school, they are equally interested in finding a school where they have a positive interaction with faculty. Mentorship training might positively influence faculty interactions with students and therefore impress students to the extent that they would remain at or select the summer undergraduate research program's home site for graduate school. Because current graduate students often retain a mentorship role to undergraduate researchers, mentorship training should also be extended to them.

Financial Assistance. Universities and departments should lower educational costs for students participating in summer undergraduate research program either in terms of tuition or in financial assistance such as fellowships and assistantships. A recruiting tactic for universities/departments is to offer a financial incentive such as a scholarship or fellowship to participants who applied and matriculated to the summer undergraduate research program's home site. Both costs and compensation are considered when considering the value of selecting a graduate school. Costs seem to be a hindrance in applying to TAMU as seen from differences in institutional factors for those who chose to apply/not apply to TAMU.

Local Recruitment. Departments should recruit more local (both in terms of geographical location and its own undergraduate) students to summer undergraduate research programs. While personal factors such as location of the university and proximity of participants' home and

family are not in control of the university recruiters, recruitment of local students to the summer undergraduate research program at the home site may make it more likely for students to consider selection of the home site of the program for graduate school for the same reasons that may deter non-locals from selecting the home site for further studies.

Limitations and Directions for Future Research

Although this research offers some insight about how universities can effectively use summer undergraduate research programs in recruiting students, some caution must be exercised when interpreting the results of this study. First, future research should identify if the participants who sustained interest in pursuing graduate studies actually strengthened their interest in pursuing graduate studies as a result of the participation in the undergraduate summer research program. Sustained interest in graduate studies only indicates that the summer undergraduate research program did not dissuade the participants. An increase in previous interest to pursue graduate studies as a result of participation in the summer undergraduate research program would be a definite indicator of the success of the program itself. For those who changed their intent to pursue graduate studies as a result of participation in the program, future research should identify both the characteristics of the participants and features of the program that changed participant intent to pursue particular career plans, especially for a large sample size, to gain additional insights to improve the recruitment efficacy of summer undergraduate research programs.

Second, in order to further confirm our assertions, future research should determine how factors for selecting TAMU as the place to pursue graduate school alter as a result of participation in the USRG program (i.e., obtain baseline). This would further attest to actual success of summer undergraduate research program's role in changing factors that influence student application and matriculation to a university in favor of the program's home site.

Third, future research should improve on the inter-subjective agreement rating of 67% between coders to 100%. Doing so would increase the accuracy involved in computing significant differences between factors for applicants and non-applicants to a university for graduate school. This would also allow researchers to report their findings and recommendations with greater confidence.

Fourth, future research should consider how factors that influence student matriculation at a university differ between students who chose to matriculate and those who do not chose to matriculate at a university after participation in a summer undergraduate research program. This would help universities determine strategies to effectively recruit summer undergraduate research program participants to the university in case the factors that influence student's final selection of a graduate program change during the "lengthy and complex" (p. 516) decision-making process².

Lastly, future research should consider how participants decide to participate in the summer undergraduate research program and if the pathway to the summer undergraduate research program has influence on participants' decision to pursue graduate studies. This research might have implications for the type of students who ought to be recruited into and the programmatic

features that ought to be changed to improve the efficacy of the summer undergraduate research programs as a recruitment tool for the program's home university.

Conclusion

While the present research cannot conclusively support the efficacy of summer undergraduate research programs, such as the one at TAMU, at recruiting students for graduate school at the program's home site, we do have confirmation that participants change their intentions for pursuing graduate school towards research-oriented masters and doctoral degrees in engineering as a result of participation in the program. Moreover, it has been determined that approximately 51% of the summer undergraduate research programs participants who were admitted to TAMU did matriculate at the university. Those who sustain interest or change towards pursuing a research degree can become prime candidates for recruitment to the home site's graduate programs. Institutional, department, faculty and personal factors that are important considerations for summer undergraduate research participants in selection of a prospective graduate school have been identified. Based on the selection factors, strategies to attract participants of summer undergraduate research programs to the program's home site are also recommended. What remains to be confirmed are assertions about the efficacy of the summer undergraduate research program as a recruitment tool with respect to the limitations and future research described in the study.

Bibliography

1. Council of Graduate Schools. (2003). *Achieving an Inclusive Graduate Community*. Inclusiveness Series. Vol. 1. Washington, DC: Council of Graduate Schools.
2. Bersola, S.H., Stolenberg, E.B., Fosnacht, K. & Love, J. (2014). Understanding Admitted Doctoral Students' Institutional Choices: Student Experiences versus Faculty and Staff Perceptions. *American Journal of Education*, 120 (4), 515-543.
3. Pooch, M.C. (2007). A Shifting Paradigm in the Recruitment and Retention of Underrepresented Graduate Students. *Journal of College Student Retention*, 9 (2), 169-181.
4. Pariyothorn, M. & Autenrieth, R.L. (2012, June). *Strategic Use of Summer Undergraduate Research Experiences*. Paper presented at the American Society for Engineering Education Conference, San Antonio, TX.
5. Lopatto, D. (2007). Undergraduate Research Experiences Support Science Career Decisions and Active Learning. *CBE – Life Sciences Education*, 6 (4), 297-306.
6. Trenor, J. & Pierrakos, Olga. (2008, June). *Utilizing a Social Cognitive Theoretical Framework to Investigate the Influences of a Summer Undergraduate Research Experience on Participants' Academic and Career Plans*. Paper presented at the American Society for Engineering Education Conference, Pittsburgh, PA.
7. Morley, R.L., Havick, J.J. & May, G.S. (1998). An Evaluation of the Georgia Tech Summer Undergraduate Program of Research in Electrical Engineering for Minorities. *Journal of Engineering Education*, 321-325.
8. Luchini-Colbry, K., Wawrzynski, K.S., Mangiavellano, R. & McCune, R. (2012, June). *Guiding Them to Graduate School: Professional Development for Undergraduates Participating in Engineering Research Programs*. Paper presented at the American Society for Engineering Education Conference in San Antonio, TX.
9. Conrad, L.F., May, G.S. & Auerbach, J.L. (2013, June). *REU Site: Summer Undergraduate Research in Engineering/Science Program at the Georgia Institute of Technology*. Paper presented at the American Society for Engineering Education Conference, Atlanta, GA.
10. Lei, S.A. & Chuang, N. (2010). Demographic Factors Influencing Selection of an Ideal Graduate Institution: A Literature Review with Recommendations for Implementation. *College Student Journal*, 44 (1), 84-96.