Domestic Internationalization Developed Through Collegiate Activities

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Abstract

With growing technological advances, the emergence of a global economy has been facilitated. In order to effectively compete in today's international economy, businesses must now be flexible in regards to cultural diversity. At Middle Tennessee State University student involvement in organizations such as the Experimental Vehicles Program (EVP) and Master of Science in Professional Science (MSPS) Club provides students an unparalleled experience with not only technical skills, but also cross-cultural interaction.

The EVP is a program that consists of five experimental vehicles designed, manufactured and constructed by students in time for annual competitions. These vehicles consist of the Lunar Rover, SAE Baja, Solar Boat, Formula SAE, and the Solar Hybrid. This program is available to undergraduate students of any academic and cultural background. The MSPS Club is oriented to students of the Master of Science in Professional Science program which contains six concentrations: Actuarial Science, Biostatistics, Biotechnology, Engineering Management, Geoscience, and Healthcare Informatics.

Lack of cultural awareness, cultural sensitivity, and communication difficulties can create cultural bias. Interaction with diverse cultures gives an opportunity for acceptance of difference cultures. Through the EVP and MSPS Club, students are given a chance to work and communicate with cultures different from their own. These two programs are prime examples of domestic internationalization on the MTSU campus.

Introduction

The increasing globalization in the world requires interaction among people of different cultures, beliefs and backgrounds more than ever before. With competition stemming from every continent, businesses must find ways to be competitive in the worldwide economy. Diversity is needed to become more creative and open-minded. Involvement of students in international programs provides direct education in both technical and cross-cultural arenas for future employees and leaders. The beginning of cultural acceptance is initiated with collegiate programs such as the Experimental Vehicles Program (EVP) and Master of Science in Professional Science (MSPS) Club at Middle Tennessee State University (MTSU).

The Experimental Vehicles Program (EVP) was created in 2004 as an extracurricular program consisting of five different experimental vehicle design teams: the Lunar Rover, Baja SAE, Formula SAE, Solar Car, and Solar Boat. The goal of the EVP is to facilitate student development through hands-on construction of experimental vehicles under the guidance of peer and faculty mentors and partnerships with both national and international industry leaders. As summarized in previous papers, among the top ways to better prepare students for success in a "global environment… and provide international opportunities for students" is through

international design projects[7]. Each vehicle is designed and manufactured in time for annual competitions[5]. Student involvement in the EVP is encouraged to students of all majors and cultural background. Approximately 30% of EVP members are international students. Internationalization has been achieved by collaborations among the American and international students and by developing designs and taking into consideration the constraints of cultural differences[8].

The Master of Science in Professional Science (MSPS) Club is a club available to all Master of Science in Professional Science students. The MSPS program, nationally known as the Professional Science Master's (PSM), was brought to MTSU in 2004 with the support of the Alfred P. Sloan Foundation. The goal of PSM programs is to train students in STEM disciplines while simultaneously teaching valued business skills[4]. MTSU offers six concentrations within the MSPS program: Actuarial Science, Biostatistics, Biotechnology, Engineering Management, Healthcare Informatics, and Geoscience[6]. The key characteristics of this program are the 250-hour internship in place of a thesis and the set of business core courses required of students. Forty percent of the MSPS program is international students. The goal of the MSPS Club is to familiarize domestic and international students with industry and bring the students from all concentrations of the MSPS program and nationalities together.

Because of the high international student enrollment in the EVP and MSPS programs, action must be taken in order to fully prepare these students for their future endeavors. By surveying the skills of incoming international and domestic students in both programs, actions can be taken to fully develop these deficiencies. International and domestic student interaction is a key component to achieving this goal as seen in upcoming text.

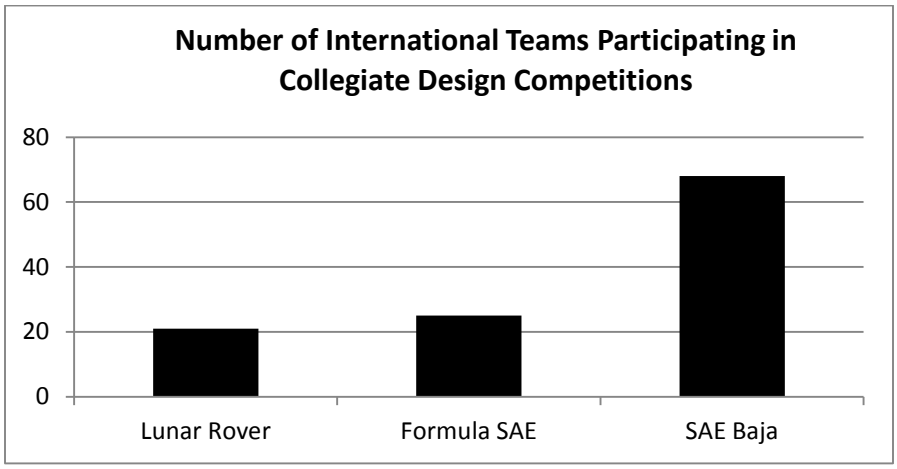
National/International Competitions

Though technological advances have allowed for multiple outlets for which ideas can be shared, difficulties such as language barriers and nonverbal communication queues exist which can create cultural bias and sensitivity. Collegiate design competition teams can provide students with the tools to overcome these challenges. The Experimental Vehicles Program (EVP) participates annually in national and international competitions with multinational collegiate teams. Each year students design and create a new and more efficient vehicle for each of the five projects[5]. Successful designs not only received awards, but it is a direct reflection of the student's innovative ideas and dedication.

This unique program provides great benefits for students such as the professional development of students in addition to providing a great opportunity for students to associate with other students from similar programs across the globe. For example, at the 2014 Human Exploration Rover Challenge MTSU competed among several different countries such as Russia, Germany, Puerto Rico, Mexico, Canada and India. Figure one shows examples of the numbers of international teams in collegiate design competitions the EVP participated in in 2014. By participating on

multi-cultural design teams in international competitions, students in the EVP learn to take into consideration individuals speaking a foreign language. For example, certain words may have different meanings in other countries. Students learn to recognize and become sensitive to differences in non-verbal communication queues. For example, a "thumbs-up" in one country may mean "good job," but in another it may be offensive. Also, through the submissions of reports to instructors, peers, and judging committees, students on multi-cultural design teams improve written technical and non-technical communications skills[1]. As soon by the bar graph, the EVP encounters multiple different international teams while competing with the experimental vehicles.

Figure 1. International Team Participation



Annually, EVP members are comprised of approximately 70% male and 30% female. This breaks down to be approximately 50% Caucasian, 20% African American, and 30% other nationalities[3]. At the beginning of every school year, members of the teams undergo a survey to assess their strengths and weaknesses. Through this survey, it was determined that a number of international and domestic students had proficient technical skills, but lacked in the areas of formal technical and non-technical write-up reports and presentation skills. At the end of the school year, another survey is conducted to assess the skills of the students. In the 2013-14 academic school year, the EVP had 80 members. A majority of international students did not have experience writing reports and giving presentations. The end of year survey of these students revealed that they had improved on these skills. Via peer-led teams and constructive criticism, international students developed skills working side-by-side with peers, graduate students, and faculty advisors. Through the mentoring received, students previously lacking in presentation and formal write-up skills scored better than before showing an increased performance in the areas previously mentioned.

The EVP not only engages student learning, but also exposes students to experiences outside of the general classroom curricula. Students gain hands-on experience with complex engineering projects. The teams are comprised of undergraduate students from multiple disciplines in order to incorporate diversity into the program. Additionally, the team is not gender specific and is comprised of many nationalities. Through this experience, students work closely with one another resulting in a family-like bond between the members. This experience allows for cultural awareness while working closely with other members of the team[3].

Similar to a global workplace, students must learn to propagate ideas, explain technical and non-technical concepts to others, communicate effectively with multi-cultural teammates of the EVP, and communicate with multi-cultural fellow competitors at the competition. Interactions among diverse cultures within the EVP and at competitions stimulate the exchange of ideas and cultural ideals while simultaneously adopting cultural sensitivity. Ultimately, these experiences have led to interest of future employment with companies with international experience. Also, a greater appreciation of cultural differences allows for a well-rounded future manufacturer who in due course can compete globally more efficiently and develop products capable taking over markets in different cultures[8]. As a result of the Experimental Vehicles Program, indirect cultural diffusion transpires and ethnocentricity and cultural bias can be eliminated[1]. Figure 2a-d shows EVP's vehicles at competitions.

Figure 2a-d. Examples of the EVP vehicles.

a. 

b. 

c. 

d. 

Master of Science in Professional Science Club

Although collegiate design teams bring students together and help to reduce cultural bias, collegiate clubs offer the same benefits. The Master of Science in Professional Science (MSPS) Club is available to all members of the MSPS Program. This program is a nationally recognized Professional Science Master's (PSM) program due to its enrollment and retention rates. These rates are among the highest of the PSM programs nationally, and enrollment numbers have continued to rise since the program's inception in 2005. The MSPS encourages international student enrollment. A majority of MSPS students are international. Figure three shows the enrollment numbers of the program from Fall 2007 through Fall 2014.

Figure 3. MSPS Program 2007-13

	Fall 07	Fall 08	Fall 09	Fall 10	Fall 11	Fall 12	Fall 13	Fall 14
# Enrolled	51	59	57	73	76	105	140	114
# Part-time Students	31	34	26	39	50	57	91	68
# Full-time Students	20	25	31	34	26	48	49	46
Male	20	22	23	25	32	57	66	51
Female	31	37	34	48	44	48	74	63
Caucasian	21	26	27	37	41	53	72	63
African American	15	17	11	15	15	20	29	18
Other	15	16	19	21	20	32	39	33

The MSPS program strives to prepare students for an internship where they gain real world experience. Students must be prepared to work in an environment with coworkers of diverse nationalities. For domestic and international students, working alongside other members of this culturally diverse group in the classroom and extracurricular club activities prepares students for these tasks in the future.

The MSPS Club consists of elected officers which run the organization along with a faculty advisor. The elected officers facilitate tours of local industry in order to network and build relationships within and outside the club. These leaders develop leadership and negotiation skills among culturally diverse members of the club and within the industry. The MSPS Club brings students together to lead their peers in networking with the industry. Through this interaction,

bonds are formed among the culturally diverse members of the group which in turn builds an appreciation for diversity. The MSPS club helps its members form relationships with peers who share the same interests, who they might not normally get the chance to interact with.

The MSPS Club gives individuals the opportunity to translate what he/she has learned in the classroom, which encourages members to understand how to communicate and connect with people from a different culture than their own. International student participation is encouraged in the MSPS Club. Being involved with the MSPS club is a very rewarding experience as you can see how people from all different backgrounds learn how to connect with each other through their similar educational interests[2].

Conclusion

The Experimental Vehicles Program and Master of Science in Professional Science Club are both excellent organizations here at Middle Tennessee State University that encourage students from diverse backgrounds to cooperate and connect with each other. Due to the globalized market in today's world, tolerance and acceptance of different cultures is essential. It is not always an easy task adjusting to the differences of other cultures, but it is necessary in today's business.

The EVP and MSPS Club here at MTSU are great ways to eliminate cultural bias and allow the understanding of how to work with people who are of a different background. Being able to collaborate with all types of individuals, and discuss ideas and work for the same goal is crucial in today's society, and the EVP and MSPS clubs give students the ability to do that. These two programs foster domestic internationalization here at MTSU, and support the idea that every person can make a unique and positive contribution to the organization.

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