



## **A Case for Student Led Global Learning**

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## Abstract

Michigan Technological University's Pavlis Institute for Global Technological Leadership was initiated in 2005 to provide MTU students with international leadership skills through coursework and a **student-led** intensive international experience. The Pavlis certificate program requires 25 semester hours of coursework with 13 semesters in the summer (nine hours are allocated to the five week in country experience) between the student's junior and senior years. The additional hours are focused on preparing them to lead, work, and communicate effectively with one another and with their in-country contacts. The major differences between the Pavlis program and other intensive programs that prepare global engineers are threefold:

1. The Pavlis teams (typically 4-8 students) are multidisciplinary, approximately 70% engineers and science majors, with a few other majors from social science, business, and other disciplines.
2. The students work on multiple technology projects while in-country, some are ongoing from previous years and some are new. The students also check on completed projects for sustainability and identify future projects for the next cohort traveling to the project center.
3. The in-country teams are student led, a faculty member spends 1-3 days at the start of the experience for orientation and introductions and then leaves. A local person is "employed" by the university to be 24/7 contact for the student's in case of emergencies and to facilitate some contacts.

It is apparently this last difference that has made all the difference in the learning outcomes from the students that have completed the program.

The current project centers for the Pavlis program include Chennai, India, Sunyani, Ghana, and Malta. Typical projects include K-12 technical instruction and demonstrations, remote power installations (solar, Lister engine), clean water, and a retrofitted mobile health clinic that will be delivered and tested in Ghana this summer. The outcomes assessment from the graduates from the program indicate that the project content and project center location are much less important than the experience itself and the fact that they are in charge and responsible. Students report that the international experience leaves them with a greater sense of self-confidence and self awareness that has made a profound impact on their career choices and lives. Although hard to document, learning outcome comparisons will be made with more traditional international engineering experiences at Michigan Tech, including our International Senior Design program which is faculty led. The Pavlis Institute's unique student-led international experience provides students with the opportunity to practice their leadership, engineering problem-solving, and communication skills in an international context.

## Introduction

In response to the growing demand for graduates with cross-cultural communication skills, Michigan Technological University alumnus Frank Pavlis provided the initial support and

guidelines for the Pavlis Institute of Global Technological Leadership in 2005. Its purpose is to provide Michigan Tech students with the opportunity to develop their leadership skills throughout a four-year, 25-credit certificate program centered on building confidence and self-knowledge, cross-cultural communication and teamwork, adaptability, and resilience in its students. These skills are then put to the test in the summer after the students' third year, when they spend five weeks implementing a variety of technical projects in an international environment. When students complete four years of Pavlis Institute coursework, the international experience, and a senior Capstone project, they receive a certificate in Global Technological Leadership.

While there are many other programs available for undergraduate students that provide international experiences, there are three major differences between these programs and the Pavlis Institute. First, Pavlis teams are multidisciplinary, consisting of students from a variety of fields. Second, project sites are revisited year after year, and are continually improved. The third and most important difference between the Pavlis Institute and other programs with an international component is that Pavlis trips abroad are student-led, with faculty only accompanying students for a few days at the beginning of the trip.

Data presented in this paper comes from three sources: a senior Capstone project survey of Pavlis alumni, a survey of educational outcomes of the Pavlis international experience on the 2009 cohort, and a survey comparing outcomes of students who have traveled abroad for either the Pavlis Institute, Engineers Without Borders, or International Senior Design projects.

This paper will discuss the effect that the multi-disciplinary nature of Pavlis travel teams has on the learning outcomes of students and how multi-year sustainable projects foster teamwork in Pavlis students and continuity over time in the communities they visit. The paper will describe how the Pavlis Institute's student-led trips abroad lead to different learning outcomes than faculty-led trips, and how the goals of the Pavlis Institute international experiences as well as the personal goals of Pavlis students differ from other programs with international components.

### **Multi-disciplinary teams**

In many programs with international components, such as Engineers Without Borders (EWB) and Michigan Technological University's International Senior Design (ISD), teams are primarily made up of engineering students. While EWB welcomes students of all majors, the projects they do in developing countries focus heavily on sustainable engineering. The ISD program assembles student teams from many engineering majors, depending on the project. For example, a project involving the development of a leg brace might be completed by a team of mechanical and biomedical engineering students. A project involving the design and building of a latrine might be completed by a team of civil and environmental engineering students.

The Pavlis Institute organizes students according to their entry year in groups called cohorts. During the third year of study, cohorts are separated into teams based on which country they will travel to. Teams consist of 4 to 10 students representing a variety of departments and majors, from sciences and engineering to business and the humanities. By being part of such diverse teams, students are encouraged to pursue projects both in and out of their primary field of study. The variety of possible project choices is greatly increased when students are able to brainstorm and work with students from other disciplines.

The multi-disciplinary nature of teams also encourages effective communication and teaming skills among students who may not have much in common academically. Students meet and work closely with students from other majors or departments with whom they otherwise probably would not have gotten to know. This broadens students understanding of other academic fields and gives them the chance to explore interests outside their major classes.

### **Multi-year, sustainable projects**

While the first two years of Pavlis coursework are devoted to improving communication, leadership, and teamwork skills, the third year is focused on the research and development of projects to be completed during the international experience. These projects vary widely depending on the needs of the local community and the interests and expertise of the student teams. The projects differ from EWB and ISD projects in that they are not necessarily technical in nature. Some non-technical projects from past cohorts include establishing a community center in Ghana and teaching hand-washing lessons at elementary schools in India.

In addition, the projects are designed to be continued from year to year by Pavlis groups until they are deemed “finished,” meaning they have become self-sustaining and effective. Even after a project is finished, though, Pavlis students returning to that country still check on the project to ensure no problems have arisen. If it is found that a previously completed project is in need of attention, students will work to correct the problem. Flexibility is one of the key skills learned while working abroad, as reported by students who have completed the international experience.<sup>1</sup> In some cases, students have worked with in-country students to facilitate the implementation of the projects and/or the continuation of the projects between Pavlis student visits.

Another important facet of Pavlis projects is the degree of research students do into the cultural appropriateness and usefulness of the projects they intend to do before any work is started. Project development starts during the third year of Pavlis coursework, after the students learn where they will be traveling and in-country contacts have been established. These in-country contact persons are valuable resources for the students throughout the project development phase and during the trips abroad.

One of the differences in project development between the Pavlis Institute and other programs, such as International Senior Design, is that Pavlis students come up with and develop their own projects with faculty advice and support, whereas in ISD projects are developed by faculty and presented to the students. There is a strong focus on ensuring that projects are culturally appropriate for the communities in which they will be implemented. Students do a significant amount of research by interviewing other students who have traveled to these areas and through communicating with in-country contacts to find out which of their project ideas might be feasible. In this way, students practice communicating across cultures before they even leave the country. Projects that are extremely involved and complex technically are often shared with the Michigan Tech senior design teams or the Enterprise (a 3-4 year design stem) teams. These teams work on developing the major technical products and the Pavlis students then implement these projects abroad. In many cases, students from these design teams will travel to the project sites where the Pavlis students will facilitate their implementation of the projects, again without direct faculty supervision.

### **The impact of student-led trips**

When students were polled after traveling abroad for the Pavlis Institute, International Senior Design, or Engineers Without Borders, there were significant differences in outcomes of student-led international trips versus faculty/staff-led international trips. The two notable differences were the levels of confidence in leadership skills and improvement of cross-cultural communication skills.

#### **Increase in confidence in leadership skills**

Student-led trips lead to an increase in students' leadership skills and their confidence in those skills. 100% of Pavlis students polled responded that their experience abroad significantly improved their general confidence/skills as a leader back home.<sup>2</sup> Only 64% of ISD/EWB students responded this way.<sup>2</sup> By allowing students to practice leading their own trips in a new environment, the Pavlis Institute gives students the means to grow their skills as international leaders. One student who traveled to Ghana with Pavlis in 2012 remarked:

“It (the Pavlis Institute) has definitely given me more confidence in what I can do- I am more comfortable in figuring out problems on my own, without the guidance of a higher authority figure.” -Helena Keller (Ghana group, 2012)<sup>1</sup>

The students learn to lead themselves and grow confident in their ability to do so when there is no faculty member present as an authority figure. The survey also showed that 85% of Pavlis students strongly agreed that the program helped them develop their skills in working in a different culture/country.<sup>2</sup> Learning how to work in a foreign environment has many benefits for students. It increases their cultural awareness and competency. Especially in engineering and the sciences, employers are increasingly seeking to hire people who are comfortable and competent in working internationally or with international clients and colleagues. Students who graduate

from the Pavlis Institute have increased confidence in their skills as a leader and are also better able to work across cultures.

### Improvement of communication skills

Pavlis Institute students reported feeling much more comfortable communicating in the countries they traveled to than did students on faculty-led trips abroad. 83% of Pavlis students indicated that they would be able to communicate sufficiently and know how to find their way around if they were to travel alone back to the country they visited.<sup>2</sup> Only 9% of ISD/EWB students responded this way.<sup>2</sup> The results of this survey suggest that students who spend time in a foreign environment without direct faculty supervision develop their communication skills in ways that students on faculty-led trips do not.

There are many reasons that this could be the case, but the primary reason is likely because in the absence of a faculty member to serve as “leader,” the students must rely on themselves to communicate with and develop relationships with their in-country contacts. For the first few days of Pavlis trips, faculty accompany students to make introductions and assure that the students are settled as far as housing and communication technology is concerned (i.e., making sure each group has a working cell phone for emergencies). To use India as an example, during these first few days in-country contacts directed questions and attention to the faculty members and not the students. In South Indian culture, the professor/student relationship is much more formal and university staff members are highly respected and revered. For example, students would never call faculty by their first names, as many Pavlis students do their professors in the program. This aspect of culture reinforced the role of Pavlis faculty members as “leaders” of the student group, and is one of the main reasons that Pavlis trips are designed to be student-led. If the faculty had remained with the group for the duration of the international experience, students would have had far fewer opportunities to develop their own skills as leaders because all questions involving decision-making and planning would have been directed towards the faculty members.

As it was, Pavlis students did experience significant improvement to communication skills after their international experiences. 80% of Pavlis alumni agreed or strongly agreed that Pavlis improved their skills in verbal communication, while 65% said it improved their skills in non-verbal communication.<sup>3</sup> A survey of the 2009 cohort found that 55.6% of students indicated that after their international experience they were better able to communicate across cultures. The remaining 44.4% responded that they were *much* better able to communicate across cultures.<sup>1</sup> The considerable improvement in cross-cultural communication skills by Pavlis students is directly related to fact that the trips are student-led and communication with in-country contacts occurs under the pretense that students, not faculty supervisors, are the project leaders.

“The international experience taught me...the way that you carry yourself, the gestures that you make, the sentiments that you convey are so much more

important in making a connection with someone than any verbal communication.”  
– Nicole Westphal (India group, 2012)<sup>1</sup>

### **Differences in the goals and purposes of international experiences**

Whether a trip is student-led or faculty-led can be attributed to differences in goals of the group or organization. The Pavlis Institute aims to educate its students in cross-cultural communication and international leadership through coursework and the international experience. Project work is important, but the main focus of the organization is on developing international leadership skills in students. The project work and international experience serve as vectors for this development.

In International Senior Design and Engineers Without Borders programs, however, the primary objective is to provide students with real-world project experience in their field of study. This is most clearly illustrated through the survey question which asked what primary experience or skill students had hoped to gain from their respective travel abroad program. 83% of Pavlis students indicated that their priority was to gain was new cultural experiences, while only 55% of ISD/EWB students answered as such.<sup>2</sup> The other 45% of ISD/EWB respondents indicated the improvement of technical skills as their main goal of their trip.<sup>2</sup>

The second notable difference between Pavlis and ISD/EWB trips is the length of stay. Pavlis students spend five weeks abroad, while ISD/EWB trips last one to two weeks. The shorter length of ISD/EWB trips is due to time constraints (as these trips often take place during the semester), availability of a professional engineer to oversee project construction, and financial limits. While operating under such constraints works for the goals of ISD/EWB programs, the mission of the Pavlis Institute clearly necessitates a deviation from the typical travel abroad program.

End of year data and summary statistics from the surveys will be presented at the meeting, including all results from the Pavlis Institute graduates and the EWB and ISD graduates from the 2013 academic year.

### **Conclusion**

As demonstrated through student surveys and quotes, the ways in which the Pavlis Institute differs from other student travel abroad programs results in significantly improved cross-cultural communication skills and self-confidence in its participants. Though the program is still young, the impact it has already made on nearly three dozen graduates is impressive. The multi-disciplinary teams, continuity of the projects, and student-led nature of the trips are all unique

aspects of the Pavlis Institute program, and worthy of note in a society which is increasingly seeking globally-minded workers.

## **Bibliography**

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<sup>2</sup>Keller, Helena; Uganski, Chelsea. "Travel Abroad Program Survey." Survey. 4 March 2013.

<sup>3</sup>Hopson, Sarah. "Pavlis Institute Program Assessment." Survey. 3 December 2011.