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Mustang EMS: Community Emergency Medical Education

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Mustang EMS: Community Emergency Medical Education

A Southern Methodist University Engaged Learning Project

Kelly Kiser

ABSTRACT

While serving as Captain of Mustang EMS, I used Engaged Learning support to develop a series of educational programs designed to make campus a safer place and help Mustang EMS members grow professionally. By designing and implementing Emergency Preparedness Booths at events such as PerunaPalooza, I sought to teach SMU students how to recognize and respond to common medical emergencies such as alcohol poisoning, heart attack, and stroke. Hosting Emergency Response Training Scenarios helped to generate a crew of knowledgeable Mustang EMS officers that will ensure the continuity of this event. Finally, by designing a protocol and hosting a campus-wide scavenger hunt for Mustang EMS members to check the campus AEDs, I worked with Risk Management and fellow students to ensure that campus is heart safe for any future cardiac arrests in the area.

*I would like to acknowledge the support of Director Lee Arning, the Mustang EMS Officers,
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Introduction

It was Halloween, and I was a freshman testing the water at the first and only fraternity party that I attended as an SMU student. There, in one of the shadowy corners of the club, I found a large, round individual that, intentionally or unintentionally, resembled Buddha. Next to him, two individuals in Boy Scout costumes posed for photos. Something felt wrong. Using my skills as a newly minted Emergency Medical Technician (EMT), I decided to check the student's pulse and respiratory rate (both were slow). The boy was unresponsive to voices and even to a painful pinch, and was starting to show signs of breathing difficulty. Here was a student lying in a coma-like state from alcohol poisoning, and his peers had no idea anything was wrong and were posing for pictures. Fortunately, we were able to get this student the care he needed to make a full recovery. However, the incident showed me that there is a general lack of knowledge on SMU's campus about emergency medical situations. Ever since this occasion, I have been inspired to teach other students about emergency medical situations and have incorporated this goal into my work as Captain of the student organization Mustang Emergency Medical Services (Mustang EMS). The Engaged Learning program has helped me to augment this project to an even higher level

Context & Parameters

Mustang Emergency Medical Services (Mustang EMS) is a student initiative that, since 2010, has sought to make campus a safer place and to provide hands-on medical, educational, and business experience for students. At the start of the Engaged Learning project, Spring 2014, the group had recently received its charter from Student Senate. Group members were maintaining the campus Automatic External Defibrillator (AED) system and developing curriculum for a CPR program to be made available to all students. I was selected as Captain of the organization in February 2014, and as the new leader, I aspired to expand the membership, develop the CPR program, and prepare a series of internal and external education programs. As Captain, I took over a previous Engaged Learning project conducted by Zac Friske, in order to ensure continuity of operations. In addition, inspired by my encounter with a student with alcohol poisoning, I sought to implement a series of ambitious educational activities that could be sustainably continued on campus by future generations of SMU students. My central goals were as follows:

1. Develop educational material designed to teach the public to recognize the signs of and know the appropriate response to cardiac events, stroke, and alcohol poisoning.
2. Begin using this material at campus events, creating a model system that can be used by future generations of Mustang EMS members.
3. Help Mustang EMS members to develop professionally, both in terms of real-world skills (running a meeting, budgeting, working with administration) and medically related skills.

Project Description

With Engaged Learning support, I was able to attain the aforementioned goals by planning and implementing a series of activities with Mustang EMS. In this section of the paper, I detail each component of the project using the following structure:

1. A brief overview of the activity
2. Central objectives of the activity
3. Specific uses of Engaged Learning Funding
4. Clarification of my involvement in the activity
5. Evaluation of the activity's success
6. How the activity relates to my academic experiences at SMU and serves as a culminating project.

Overview: Emergency Response Training Scenarios

These once monthly events simulate the type of clinical situations that pre-health students will encounter in their professional lives. A volunteer student has make-up applied to simulate an injury and is given instructions to act out a set of symptoms. Then, members who have attained EMT-B certification are asked to respond as they would in the field. They are evaluated by other MEMS members or by a paramedic for the appropriateness of their treatment.

Objectives: Emergency Response Training Scenarios

- I. Allow Mustang EMS members to practice patient interaction, a skill that is critical to work in the health-care industry. No other student organization or class at SMU is set up to help students get experience in this area.

- II. Advance our members' proficiency so that they will be better prepared to act as educators at campus events and in their future careers. Ability to effectively teach is another skill crucial to success in the medical field.

Engaged Learning Funding: Emergency Response Training Scenarios

Engaged learning funding was used to purchase:

- I. A moulage kit to simulate injuries
- II. A jump bag stocked with bandages, splints, and other materials our students need to treat the mock injuries.

My role: Emergency Response Training Scenarios

My role in this activity, as Captain, was to purchase the necessary supplies; lead the officers in developing the content for the scenarios; and either complete or delegate all logistical tasks necessary to ensure the success of the event. I served as moderator at the first few scenarios, and then passed on the role to other officers so that they could further develop their leadership skills.

Evaluation: Emergency Response Training Scenarios

This activity was highly popular among Mustang EMS members, with a typical turnout of 15-20 students per event. The popularity can be taken as evidence that the event met its strategic goals of helping Mustang EMS members hone their skills and develop professionally. A few examples of the ways in which this activity met those goals:

- I. At every event, the Mustang EMS officers taught members how to take vital signs (blood pressure, pulse, respiratory rate, capillary refill, lung sounds) and gave them the opportunity to practice taking vital signs.

- II. We also taught specific skills relevant to member interests and current events. For instance, after the emergence of Ebola cases in Dallas, , we provided a presentation that focused on the proper removal of Personal Protective Equipment (i.e. masks, gloves, facial shields, etc.) and gave members the chance to practice removing nitrile gloves that had been “contaminated” with red paint so that the paint would simulate a contaminant.
- III. Each event featured an emergency scenario in which EMT-B members were able to practice more advanced skills such as tying a triangle bandage and taking a patient history. We later discussed these skills with the general membership.
- IV. We tied in key themes, for instance, portraying a drug overdose in order to help teach the signs and symptoms of alcohol poisoning and drug overdose. On a college campus, these are realistic emergency scenarios, and it is important that our members be adequately educated on them in order to teach their peers to recognize an emergency and call 911.

Personal Development: Emergency Response Training Scenarios

Designing and implementing the Emergency Response Training scenarios helped complement my academic studies and professional interests, contributing to the significance of this overall Engaged Learning project as a culminating college experience. In my classes as a biology student at SMU, I learned about various components of human biology and about conditions that affect human health. However, for this project, I had to synthesize this knowledge and develop it to a higher level by researching and explaining specific conditions and their treatment. For instance, for the drug overdose training scenario, I started out with knowledge about the chemical compounds of several different

pharmaceuticals (from general and organic chemistry), and knowledge from physiology about the effects of narcotics, hallucinogens, stimulants, and depressants on the body. For the scenario, I referenced a medical textbook to learn an even higher level of detail about the type of treatment that an emergency responder would provide. I also researched the specific biological reasons for the way that valium overdose presents itself and the treatment, as well as reasons to ask specific questions when taking the patient history. Although not all this information was strictly necessary for the demonstration, it is important to learn as many details as possible before teaching a scenario in order to present a clear picture of the information and to answer questions. In doing so, I augmented the basic level of knowledge from my SMU classes to a higher, culminating level. In the future, I will further develop this knowledge as a student at UT Southwestern Medical School.

Overview: Emergency Preparedness Booths

Even though prompt medical care can dramatically increase the odds of surviving a heart attack, many lives are lost because bystanders are unable to recognize cardiovascular emergencies or are not confident about their ability to perform CPR when it becomes necessary. There is a similar lack of public knowledge about alcohol poisoning, as I discovered freshman year at that party. By hosting Emergency Preparedness Booths, Mustang EMS seeks to help resolve this problem. The first booth was held at PerunaPalooza in April, 2014, and included the following activities:

- III. Handing out and discussing brochures with information about heart attack, stroke, and alcohol poisoning.

- IV. “Pop quiz” over medical emergencies to evaluate our success and to serve as a springboard for further conversation
- V. Give previously CPR certified members of the public the chance to maintain their skills by practicing CPR on mannequins.

Engaged Learning Funding: Emergency Preparedness Booths

Engaged Learning funding was used to purchase the brochures used at this event. Additionally, CPR mannequins from a previous Engaged Learning Project (directed by Zac Friske), were used for the demonstrations.

My Role: Emergency Preparedness Booths

My role, specifically, was to design and print all materials, coordinate members volunteer schedules, coordinate event logistics, and work at the booth for the first half of the event.

Evaluation: Emergency Preparedness Booths

Continuity will be the greatest challenge for this component of the Engaged Learning Project. For every Emergency Preparedness Booth, the materials need to be updated, members’ schedules need to be coordinated, and logistics need to be arranged. All this planning necessitates a major time commitment for every single event. I sought to help alleviate the burden placed on any one individual in planning Emergency Preparedness Booths in the future by changing the structure of the Mustang EMS Officer Core to include two Education Officers, who will share the responsibility in future years. Hopefully, the material and scheduling system I set up can serve as a model that will make this project sustainable for next year’s education officers.

At the very first event, the other Mustang EMS officers and I successfully spoke with about 100 SMU students. We measured the success of our teaching by giving students a quick “pop quiz” at the end of each conversation, with a 100% pass rate. Partnering with a fraternity helped us expand our reach, as we did a pre-event training session with the fraternity members, who co-hosted the booth with us and reached out to even more passersby.

Personal Growth: Emergency Preparedness Booths

Academically, this program helped me expand upon previous knowledge from biology classes and to develop a more concrete picture of previously abstract understandings. For instance, with regard to the heart, I had previously studied starling forces and basic concepts of resistance and pressure in class. However, in developing educational materials for the project, I researched details on how nutrition and exercise influence vascular resistance, increasing or decreasing risk of stroke. I studied the effects of alcohol on the vascular and neurological systems and was able to synthesize this information in order to answer questions from SMU students at the Emergency Preparedness Booth.

Overview: Operation HeartSafe

As part of this Engaged Learning project, I took over as the director of Zac Friske’s Engaged Learning project (Operation HeartSafe) and ensured its continuing sustainability. Many students have expressed interest in getting CPR trained, and one of my goals as captain was to expand our CPR program and make CPR training more available.

Objectives: Operation HeartSafe

This activity involved finding a student interested in being a CPR instructor, coordinating their training, and then acting as a facilitator for the CPR instructor to host three CPR classes per semester, available to all SMU students, faculty, and staff.

Engaged Learning Funding: Operation HeartSafe

Engaged Learning Funding was used to purchase CPR Instructor training, Heartsaver Student Workbooks, Instruction DVD/Manual, BVM, cleaning supplies for mannequins, and a timer.

My Role: Operation HeartSafe

I designed and advertised an application for CPR Officer, and then I collected the applications and selected an underclassman to receive CPR Instructor training (using Engaged Learning funds).

Although Mustang EMS already had CPR mannequins from Zac's Engaged Learning Project, I used Engaged Learning Funds to obtain CPR masks, instruction booklets, and other materials for the classes.

The CPR Officer held three classes per semester, and as Captain, my job was to make sure all the necessary logistics were taken into consideration—planning location, coordinating with the public relations officer to make sure the classes were advertised, and making sure that a supporting officer was always available, for instance.

Evaluation: Operation HeartSafe

Sustainability will be a challenge for this component of the project in the future, as there will be a constant need to train a new CPR officer every 3 years. However, it is a worthwhile goal: through this project, we were able to reach a number of students who would not ordinarily be able to receive CPR training. If necessary, it would be possible to

coordinate with the CPR instructors at Dedman Recreation Center to ensure that their classes, like ours, could be held at a reduced cost for students and according to a schedule that works for students. However, having one of our own officers serve as CPR officer contributed to two central goals of the Engaged Learning project:

- I. Our CPR Officer helped to contribute to the grassroots movement aspect of Mustang EMS, with students teaching students to recognize and respond appropriately to emergency medical situations. In contrast, if we asked a SMU staff member with CPR certification to play this role, we would be unlikely to get as much buy-in from the student body as we do by having a CPR instructor present at campus events, advertising her classes and debriefing students on heart health.
- II. Having a student CPR instructor helped us to plan classes at times that do not conflict with class/exam schedules. We also were able to offer classes at a reduced rate. Cost is often prohibitive for students who need CPR training.
- III. Serving as a CPR Instructor helped one of the Mustang EMS officers to develop professionally. She gained extensive knowledge about the cardiovascular system and was able to apply it in a concrete way. Additionally, she got the chance to practice teaching. This is a key skill for future health care providers, since a large portion of that job involves educating patients on their medical conditions and treatments, plus additional ways to stay healthy.
- IV. The class size was limited to 6 students because we only had a limited number of mannequins. After the first semester of operations, we were able to train 18 students. In order to reach out to more students during future semesters, I requested a budget from student senate to buy more CPR mannequins and other

supplies. In the years to come, these acquisitions will permit the CPR Officer to train larger groups of students at one time.

Personal Growth: Operation HeartSafe

As the component of the project that was most multi-disciplinary in nature, this aspect of my Engaged Learning Project helped me develop leadership skills. Not only did I involve the whole Officer team in making each CPR class happen, but I also reached out of my biology-major-comfort-zone in order to work with finances and comment on various graphic design ideas presented by the public relations officer, for instance. Additionally, this piece of the project involved coordinating with the administration (scheduling rooms, etc.). The variety of activities involved in the planning of these classes helped me develop as a future leader in the medical industry.

Overview: Systematization of the campus AEDs

Prior to the involvement of Mustang EMS, SMU did not use a standard schedule for testing or performing maintenance on the Automated External Defibrillators (AEDs) on campus. From 2012 until the time that I started the Engaged Learning project, Mustang EMS members sporadically tested them to make sure they worked. However, there was still a need for a yearly, methodical review of the system to ensure its functionality. As part of this project, I developed a protocol for testing the campus AEDs and created database to document their location and status. Mustang EMS members then met one afternoon, formed teams, and scattered to different locations to test every AED on campus during a one hour timeframe. The end result was a comprehensive report that Risk Management can use to make sure there is a working AED within 90 seconds of any emergency on campus, a key criterion for patient survival.

Engaged Learning Funding: Systematization of the Campus AEDs

This activity required no Engaged Learning funding. However, it was helpful being a part of the Engaged Learning network in planning this activity.

My Role: Systematization of the Campus AEDs

My specific role in this activity was to find a protocol and distribute it to a couple of officers so that they could learn how to test the AEDs and then teach members at the meeting. Additionally, I designed a system by which all members could simultaneously compile their assessments into one document in real time from their iPhones.

Evaluation: Systematization of the Campus AEDs

- I. The systematization of campus AEDs helped Mustang EMS members develop critical thinking about emergency situations, thinking through the most opportune placement for medical devices such as AEDs and thinking about the logistics of what would happen in an emergency situation. Additionally, it served as a means of gaining greater knowledge about what we previously knew about CPR/AED use, as we learned more about how the AED machines work.
- II. As a result of this project, we ensured that multiple AEDs were updated (several AEDs were found to have expired materials). This, in turn, helps make campus a safer place so that if an emergency arises, the proper equipment will be available.

Personal Growth: Systematization of the Campus AEDs

In terms of academics and developing culminating experience type skills, I developed my technology skills with this activity, learning how to use a new application of Google Docs in order to coordinate work with a large team.

Concluding Remarks

The beauty of education-oriented projects like this one is that they perpetuate themselves. Yet like many disease prevention education initiatives (nationwide), obtaining accurate metrics that would indicate the impact of Mustang EMS educational events on campus, remains a challenge. Perhaps there has been no direct life-safety impact yet. But then again, maybe one of the students from PerunaPalooza went on to share his knowledge with a friend, and then maybe instead of taking pictures with someone unconscious from alcohol poisoning at a party, that student called 911 and saved a life.

The metrics we do have are as follows:

1. Three CPR classes were held, resulting in 18 additional people becoming certified on campus.
2. Two training scenarios were offered; the total audience for those training scenarios was approximately 30 students
3. The first of what will become annual AED inspections was held and four deficiencies were corrected

This is the first set of metrics to be captured for Mustang EMS AED and educational activities, so they afford us no means of comparison. Notwithstanding, these metrics will provide a benchmark for all successive Mustang EMS Captains. At the completion of this project, an election was held and new a new leadership team was installed. To date, the new officers have held an additional two CPR classes and an additional Emergency Response Training Scenario.

Additionally, this project made a difference in my life and in the lives of my fellow Mustang EMS members by creating professional development opportunities for pre-med

students that did not exist prior to this Engaged Learning Project. We had the chance to practice teaching people and to heighten our level of knowledge about several emergency medical situations. This, in turn, will make us better clinicians in the future.