The 23nd IAMUC
samk
Helsinki, 19-20 Oct 2023

Proceedings of the
International Association of Maritime Universities Conference

Engagement of Students in Maritime Operations – An Exploration into Cultivating Cultural Connection Across Majors at a Maritime University

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Abstract: California State University Maritime Academy is a degree granting institution that serves students of several different disciplines, including license-track, future mariners. There is a cultural disconnect between license-track majors and those who are not pursuing a license. This study evaluates a pilot program developed to increase interdisciplinary engagement and help foster a common maritime identity across all majors as a way of improving student sense of belonging. The program was initially driven by the general perception of faculty in the Marine Transportation department that getting out on small boats would make all students feel a greater level of inclusion on campus. This study was created to formalize the exposure to small boat programming, and create data to validate or invalidate this faculty impression. As it developed, the study expanded beyond small boat operations and into the greater maritime transportation field of study. Eventually, as initial data proves supportive of the faculty impression that this program has value, we look forward to its expansion to include shared learning experiences across all seven campus majors.

Keywords: student engagement, belonging, retention, interdisciplinary education, marine transportation, maritime professionals.

1. Introduction

The California State University Maritime Academy (Cal Maritime) is situated on the Carquinez Strait, in northern San Francisco Bay, California, USA. It is one of seven maritime universities in the United States, and the only one on the U.S. West Coast. Cal Maritime has seven undergraduate degree programs, two of which are 'license-track,' where students train for future careers as credentialed, seagoing deck and engine officers. The students of 'non-license-track' disciplines, including business, global studies, oceanography, and engineering, will go on to work in a variety of professions - some in the maritime or adjacent industries, others in different fields altogether. Despite having much in common, there is a significant divide between students in different disciplines, particularly between license and non-license track students. This separation exists both socially and physically, with non-license-track students avoiding "maritime" spaces, such as the training ship, boat basin, and simulators. For many students, this manifests itself into a cultural disconnect between themselves and the school's current and historic maritime identity. This disconnect has consequences for campus cohesion and a negative impact on the collegiate experience for all students, especially those in non-license-track disciplines (some of whom will still go on to work in the maritime industry). With the desire to repair this disconnect and increase retention, we sought to create interdisciplinary activities that would bring all majors together.

Cal Maritime has not been immune to the national trend of declining college enrollment and is constantly seeking to improve student retention. Rates of both enrollment decline and attrition are greater in Cal Maritime's non-license track programs than in their license-track counterparts. Through several studies spanning the last twenty years (Hoffman et al. 2002, Freeman et al. 2007, O'Keeffe 2013, Whannell et al. 2015, Jaiswal et al. 2022) college attrition can specifically be attributed to students feeling social and academic disconnection, a lack of belongingness, and failing to form an identity within their institution (Jaiswal et al. 2022). Despite Cal Maritime having five non-license degree programs, its maritime identity still looms large on campus - this presence may inadvertently have an alienating factor for students outside of those disciplines.

Sharing marine operational experiences with students of other disciplines in an effort to improve campus culture stems from our own understanding of how great on-the-water experience can be. License-track students in the Marine Transportation (MT) major (and license-track engineers as well, though to a lesser extent) utilize the campus' scenic waterfront and busy boat basin in a variety of classes throughout their undergraduate education. These classes, which include everything from rowing to shiphandling, are very popular and provide hands-on learning experiences that have a great effect on students. Our goal was to recreate that experience for non-license-track students with a program on the water designed for them. Specifically, we wanted to potentially create a *powerful learning experience* (PLE), defined by Rowland and Kitchen-Meyer (2018) as a learning experience that "stands out in memory because of its high quality, its impact on one's thoughts and actions over time and its transferability to a wide range of contexts and circumstances." Our broader purpose in doing this was the hope that it would help cultivate non-license students' sense of belonging to our maritime community.

In this pilot study, we theorize that exposure to interdisciplinary learning experiences will foster a cultural connection with maritime operations on campus and allow for an increased sense of belonging for all students within the common maritime identity. Our creation of this pilot study is based on literature on increasing sense of belonging as a way of improving retention and positive campus experience.

2. Methods

To begin our pilot program, we reached out to Cal Maritime faculty to ask them to encourage their non-MT major students to participate in this program. Any interested students were asked to complete an online form that focused on area of interest and availability. The first question listed eight specific learning experience offerings relating to navigation, boat handling, and seamanship. The students were provided details on each of the offerings, and they were able to select as many as they were interested in. Students were also given a ninth, 'write-in' option, where they could list any other lesson they were interested in that wasn't listed in the previous eight options. An example of one of the learning experience prompts described above is:

> "Ride-along on the Cub (one of the larger boats in the boat basin) to a planned destination. Goal: exposure to charts, electronic charts, RADAR, helm commands, small engines, mooring lines, and more."

The prompt students were given regarding availability was very general, listing day of the week and either morning or afternoon.

With the results from this preliminary interest survey, we organized groups of students who were interested in the same learning experience offering and available at the same time as the instructor who was willing to teach it.

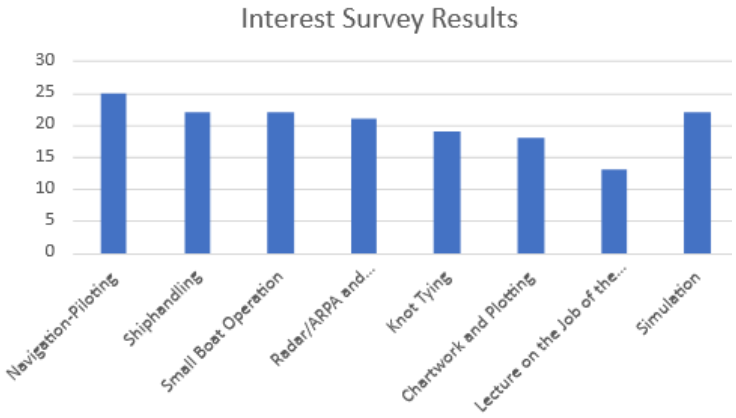
Students met with the instructor on the assigned day and began the program with a seven-question, multiple-choice pretest, which asked if they had ever attended another college, whether they had exposure to maritime concepts prior to attending Cal Maritime, how connected they feel to maritime operations on campus, how connected they feel to the maritime industry and operations, whether they had ever taken classes at Cal Maritime *just* for fun, and why they chose to participate in this program. It also asked their major of study and the number of semesters they had studied at Cal Maritime. This pretest was used to collect some background on the students and to gauge their level of engagement before the session.

Following the program, another seven-question, multiple-choice test was given, which asked again how connected the student felt to maritime operations on campus and to the maritime industry and operations, how satisfied they were with the program, whether they would want to participate in another learning experience program with the MT department, whether they would want to participate in a learning experience program with other departments, and, if so, which departments would interest them. It also asked if they would recommend the program to a friend. This portion of the posttest was used to compare against the pretest and observe any change in engagement following the experience, as well as to see if students were interested in future program participation.

3. Results

Through faculty dissemination and word of mouth alone, we collected 27 student interest responses for program participation, a number that amounts to 6% of Cal Maritime's non-MT major population (CSUM 2023). There were no responses to the ninth, write-in option to request a topic not listed explicitly. See Figure 1 detailing student interest below:

Figure 1. Survey response to learning experience program participation



Survey responses for student availability were mixed, with 21 students available Friday afternoon and 18 students available Saturday.

Results from the program pretest are in tables below:

Table 1a. Pretest Student Data

Q1: Semesters at Cal Maritime	Response %
Two	40.00%
Three	20.00%
Four	20.00%
Five or more	20.00%

Table 1b. Pretest Student Data

Q2: College Attendance Prior to Cal Maritime	Response %
Yes	80.00%
No	20.00%

Table 1c. Pretest Student Data

Q3: Prior Maritime Exposure (pre CMA)	Response %
No exposure	40.00%
Limited exposure	60.00%
Lots of exposure	00.00%

Table 1d. Pretest Student Data

Q6: Have you taken classes for fun	Response %
Yes	60.00%
No	40.00%

Table 1e. Pretest Student Data

Q7: Why did you participate in program	Response %
I love to learn	18.18%
I want to learn more about what MT students are learning	27.27%
I want to learn more about maritime operations for interest	27.27%
I want to learn more about maritime operations as it will assist me in my future career plans	27.27%

Posttest data following the learning experience program indicating perceptions of the program:

Table 2a. Posttest Student Data

Q3: Satisfaction with Program	Response %
Not satisfied	00.00%
Somewhat satisfied	33.33%
Very satisfied	66.67%

Table 2b. Posttest Student Data

Q4: Desire to participate in another program with MT Department	Response %
No, this was enough for me	00.00%
No, I am graduating	00.00%
Yes, if they work out for timing	42.86%
Yes, I am very interested	57.14%

Pretest and Posttest results to question of maritime connection side by side:

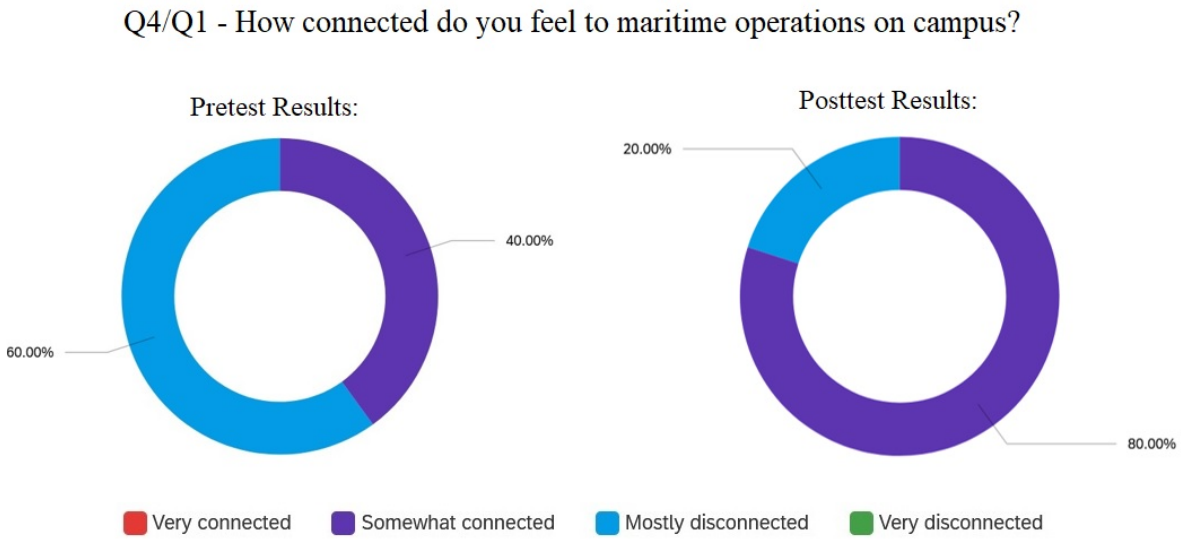


Figure 2. Before & after student responses to Question Q4 & Q1: *"How connected do you feel to maritime operations on campus?"*

Figure 2 above shows that prior to the learning experience program, 60% of students felt "mostly disconnected" and 40% felt "somewhat connected" to maritime operations on campus. Following the program, 80% of students felt "somewhat connected" and just 20% felt "mostly disconnected."

Figure 3 below shows posttest results to question 5, *"Would you want to participate in a future knowledge sharing session with another department on campus?"* with 57.14% of students answering "Yes, I am very interested," and 42.86% of students answering "Yes, if they work out for timing" and question 6: *"If you answered yes above, what departments would you be interested in learning from?*" to which 23.1% selected oceanography, 15.4% selected global studies, 7.7% selected business and logistics, 7.7% selected engineering technology, 31% selected marine engineering, and 15.4% selected mechanical engineering.

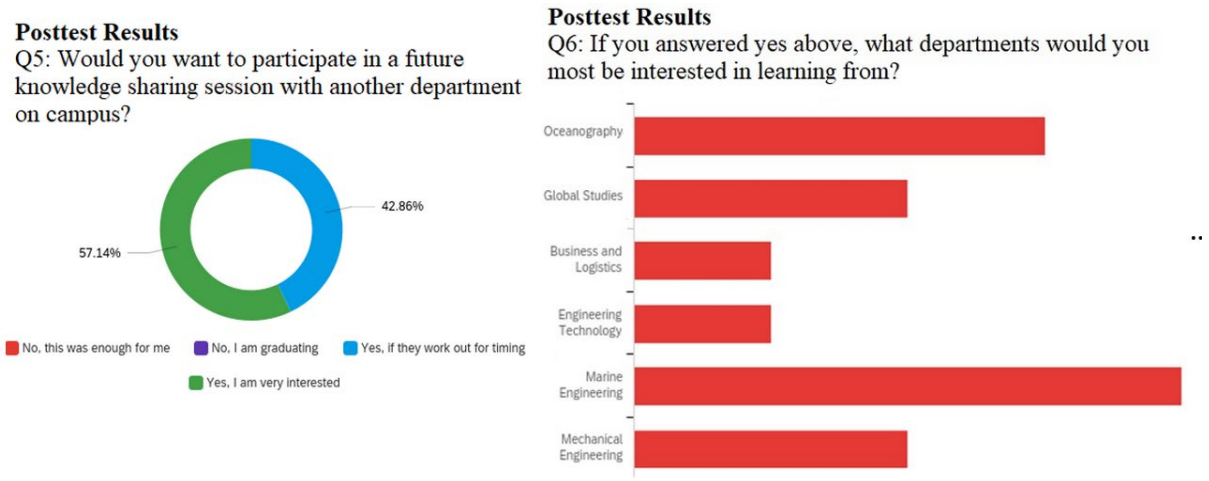


Figure 3. Posttest responses to questions Q5 & Q6

4. Discussion

As observed in Figure 2, this study demonstrated that through interdisciplinary learning experiences, we have the ability to improve student sense of belonging and connection, both of which correlate with increased retention. Posttest data shown in Tables 2a and 2b indicate students were satisfied with the program and were interested in participating in another program with the MT Department. Further, as shown in Figure 3, students unanimously expressed interest in participating in another shared learning experience with a different department, and their interest wasn't exclusive to any one discipline, but included all. Though the sample size of this pilot study is small, and the results do not therefor guarantee an outcome on a larger scale, we are encouraged by the qualitative results that positively indicate this type of program could improve feelings of belonging and a connection to the campus for all students.

The eight learning experience offerings we proposed had strong interest, as seen in Figure 1, so we plan to continue with those offerings in our next programs through the MT department. We also plan to engage faculty from at least two other departments who received high interest results from students in the post-test, and run a parallel program that includes students from the Marine Transportation major as well.

Shortcomings: The shortcomings of our pilot project were timing and scheduling. It was very difficult to find times, often three-hour blocks of time, where enough students who were interested in the content were available along with the instructor. We were only able to successfully offer one session with usable data collection. A second session was offered in our pilot program, and verbal feedback was positive, but formal pre and posttests were not conducted, so none of the data could be used to contribute to the research.

In future semesters, we will try offering preplanned sessions at the timing that is available for the instructor, and ask students to sign up directly for sessions based on planned content and time. This change may limit participation, so we plan on gauging feedback on why some students chose to participate in a particular offering and not others. A question on this will be added to the post-test. One last adjustment we plan to make is to move pre and posttests to a digital format, to keep all data centralized and accessible to all as soon as it is collected.

Ultimately, we are inspired by the success of the pilot program and look forward to working with faculty across disciplines to expand it. With continuous development of unique shared learning experiences, Cal Maritime students may begin to form greater bonds to each other, leading to increased feelings of belonging to the institution as a whole that transcend maritime identity alone. Perhaps as well, students sharing and promoting their own majors may bolster their identity formation as it relates to their community within Cal Maritime. Though this is of course speculative, we are confident work aimed at cohesion and shared experiences will enhance the education for all students and result in a positive impact on campus.

References

California State University Maritime Academy (2023) Cal maritime census term summary – spring 2023. Institutional Research & Planning. https://www.csum.edu/ir/media/census_term_summary_sp23.pdf Accessed 9 May 2023

Freeman T, Anderman L, Jensen J (2007) Sense of belonging in college freshmen at the classroom and campus levels. J Exp Educ 0022-0973. https://www.jstor.org/stable/20157456

Hoffman M, Richmond J, Morrow J, Salomone K (2002) Investigation student belonging in first-year college students. J Coll Stud Retent Res Theory Pract. 4, 227-256. https://doi.org/10.2190/DRYC-CXQ9-JQ8V-HT4V

Jaiswal A, Magana A, Ward M (2022) Characterizing the identity formation and sense of belonging of the students enrolled in a data science learning community. Educ Sci 12, 731. https://doi.org/10.3390/educsci12100731

O'Keeffe P (2013) A sense of belonging: improving student retention. J Coll Stud 47, 605-613

Pfund G., Bono T, Hill P (2020) A higher goal during higher education: the power of purpose in life during university. J Transl issues psychol 6(2) 97–106. https://doi.org/10.1037/tps0000231

Rowland G, Kitchen-Meyer A (2018) Powerful learning at sea: toward a designerly theory of powerful learning systems. FormAkademisk 11(4). https://doi.org/10.7577/formakademisk.2004

Whannell R, Whannell P (2015) Identity theory as a theoretical framework to understand attrition for university students in transition. Stud Success 6, 43-53. doi.org/10.5204/ssj.v6i2.286