Coral Reefs, Convicts, Cadavers, Coffee Shops and Couture: Customizing Experiential Learning to Increase Comfort and Engagement

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Keywords

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Introduction

Broadly, experiential learning is any learning that supports students in applying their knowledge and conceptual understanding to real-world problems or situations and where the instructor directs and facilitates learning. The classroom, laboratory or studio can serve as a setting for experiential learning through embedded activities such as case-based and problem-based studies, guided inquiry, simulations, experiments or art projects (Wurdinger & Carlson 2010). Setting course learning in related physical spaces allows the learning to be real-world, and helps students to apply knowledge and skills that they have learned from class (Lin 2014). Field-based experiential learning with community partners demonstrates meaningful benefits to university students from diverse backgrounds (Kuh 2008). Carlson (2014) found that "experiential learning projects develop a more substantive understanding of the subject matter under study, enhanced motivation for learning, and greater feelings of academic achievement and citizenship". Gomez-Lanier (2016) studied interior-design students working on an experiential service-learning project in the community, finding that students reported experiencing deeper emotional growth when they knew that their design solutions would ultimately improve the lives of others in the community. Nearly three-quarters of employers have asked universities to foster students' ability to apply knowledge and acquire functional skills through real-world experiences (Hart 2007). Eyler (2009, p.28) pointed out that "as advances in cognitive science have begun to blur the line between academic and practical learning, awareness of the relevance of experiential education to achieving goals of the liberal arts has increased".

However, these field-based pedagogies have not been successfully integrated into mainstream academe. On many campuses, active-learning strategies remain marginalised, which minimises student engagement and subsequent learning (Kuh 2008). Confined classrooms with limited class time often restrict the use of hands-on learning in a physical context. In addition, there are several obstacles inherent in the methodology, including the heavy effort required to plan, prepare and carry out an experiential-learning event, the challenges posed to student participants' skill and comfort levels and the high probability of having to triage unexpected events in real-world settings. The lack of experiential learning resulting from these obstacles means that students may be forced to learn very differently at university than they will later be expected to learn in the community (Resnick 1987). Thus, while experiential education clearly contributes to learning, it requires institutional support in the form of awareness of learning theories, attention to instructional design and appropriate mentoring and leadership in and outside of the formal learning environment (Eyler 2009).

The authors of this paper comprise a group of five educators from five higher-education disciplines: biology, criminal justice, English, environmental and interior design and environmental studies. Our experiential-learning projects take place at cadaver labs, prisons, museums, coffee shops and coral reefs, respectively. All the authors are seasoned designers and conductors of experiential-learning projects. This study reports the results from 102 student participant surveys from the five disciplines and evaluates the success of our general methods of preparing, customising and triaging experiential-learning projects. The purpose of our research is to identify and capitalise on the commonalities of our pedagogical approaches, in spite of the diversity of disciplines and learning places, and to share our general strategies for achieving

success in experiential learning.

Literature review

Experiential learning

There are many types of experiential learning, including internships, service learning, clinical education, student teaching, practicums, undergraduate research experiences, community-based research, fieldwork and study abroad. One of the earliest models for experiential learning is Kolb's (1984) cycle of learning, which includes the integration of knowledge, activity and reflection. Experiential learning capitalises on the theoretical framework of situation cognition, where learning is an inseparable aspect of social practice, as people think and learn differently in different social contexts (Lave & Wenger 1991). Affording experiential opportunities to learners can provide cues that empower them to increase intrinsic motivation, student engagement and application to conceptual theories presented in lectures (Atkinson & Shiffrin 1971). By connecting contextual examples, especially those with which students are familiar and which they are likely to encounter later, students can connect theory to application and ultimately spend more of their cognitive load on innovative and creative processes (Allison & Pomeroy 2000).

Informal Settings

Informal settings are typically places outside formal academic settings where learning takes place; examples include museums, zoos, aquariums, science and technology centres, homes and clubs. They are also characterised as places where motivation is intrinsic, the content is variable and possibly not sequenced, attendance is voluntary, displays and objects are provided, learners are of all ages and learners' backgrounds are relatively diverse (Koran, Koran & Foster 1989). These types of learning environments are often referred to as free-choice learning places, as more of the responsibility for learning is placed on the learner. These free-choice settings tend to have a considerable influence on sensory stimulation, learning and affect (Koran, Longino & Shafer 1983). One of the potential challenges of free-choice settings is the assumption that learners can monitor and self-regulate their experiences and engagement. Studies have shown that many university students' ability to self-regulate their learning is actually insufficient (Hargis 2001). Therefore, to maximise the potential benefits of informal settings, an appropriate level of preparation, structure, guidance and facilitation is required. Once an open, safe environment is created, the critical aspect of student engagement can be introduced.

Student engagement

Student engagement in teaching and learning has been shown to affect a wide variety of attributes important to student success in the classroom and beyond (Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt & Wenderoth 2014; Hargis, Cavanaugh, Kamali & Soto 2014; Kuh, Cruce, Shoup, Kinzie & Gonyea 2008). Zhao and Kuh (2004) have found the specific attributes of dialectical thinking and relevant, personalised, collaborative and connected learning to be particularly helpful to engage students in a sustainable, meaningful way. Many students are eager to engage in learning; however, the platform and instructional strategies are often disconnected from their interests and abilities, and from what they (or their prospective employers) value. In addition, the ways students seek to engage are as diverse as their ways of processing information (Carini, Kuh & Klein 2006). One of the major challenges of teaching effectively continues to be how to create multiple learning opportunities at a time demands on students are increasing and outcomes are increasingly standardised (Kuh 2001). One method to address these challenges is to provide efficient, active models of instruction, where students can connect their knowledge and interests to their personal career path (Appleton, Christenson & Furlong 2008; Skinner & Belmont

1993). Students have been shown to increase their engagement in immersive settings, study abroad, informal gatherings and even project-based collaborative work (Salisbury, Umbach & Paulsen 2009). Each of these opportunities centres around the concept of providing frequent and authentic experiences for students that parallel conceptual frameworks. Structuring these experiences in a meaningful way to gather student attention and including clear processes and well-aligned assessment, measurement and evaluation practices typically creates a productive experiential-learning opportunity (Umbach & Wawrzynski 2005).

Methods

A qualitative study using 102 participants was conducted during the 2016 spring term to assess students' comfort levels, understanding and preparation as well as the instructor's primary role in the experiential-learning event. For this study, the experiential-learning event refers to the students' off-campus experience (these experiences could involve one or more site visits). The directions and format of the study were clearly shared with the participants prior to their engagement. Five major research questions were explored:

1. What is the student's comfort level prior to the experiential-learning event (PreComfort: Analysis of changes in comfort Before (Q1) and During (Q2) the experiential-learning event)?
2. What is the student's comfort during the experiential-learning event (DuringComfort: Analysis of changes in comfort During (Q2) and After (Q3) the experiential-learning event)?
3. What is the student's comfort after the experiential-learning event (AfterComfort: Analysis of changes in comfort Before (Q1) and After (Q3) the experiential-learning event)?
4. What is the student's understanding of the purpose of the experiential-learning event (Purpose: Analysis of changes in understanding the purpose of the experiential-learning event Prior to (Q4) and After (Q5) the experiential-learning event)? and
5. What is the instructor's primary role in the experiential-learning event (InstructorRole: Analysis of the impact of the instructor's' preparation Before (Q6) the EL event and During (Q7) the experiential-learning event on overall student comfort)?

Study settings
This study was conducted with the participation of faculty members who had historically offered experiential-learning opportunities. The potential participants for this study were 104 post-secondary male and female students taking one of seven courses in various departments at our university located in the Pacific: Marine Environmental Science, Corrections: Prisons and Community Alternatives, Criminal Justice Systems, Women and Crime, Advanced Human and Comparative Vertebrate Anatomy, Introduction to Lighting Design and Aulama Literary Magazine and Publication. During their experiential-learning placements, students assessed and recorded the health of the coral on the reef, visited prisons to observe the physical plant and interview staff and inmates, viewed and examined human cadavers, visited coffee shops to observe and evaluate lighting and went to the museum to view Japanese couture. These are the experiential-learning events referred to in this study.

Participation in the course experiential-learning project was optional for the Criminal Justice and Biology courses: we cannot require the students to observe cadavers or visit prisons. However, all of the students in these courses chose to participate in this study. Participation in the project for the Environmental Studies, Environment and Interior Design and English courses was mandatory.

Student participation numbers for each subject were 19/20 for Marine Environmental Science; 16/16 for Biology; 54/54 for Criminology; 4/4 for English; 9/10 for Environmental and Interior Design. Therefore, the total number of students was 102/104, for a 98.1% participation rate.

Data was collected during the spring semester of 2016. Students were given an information sheet describing the study and its purpose and an informed-consent form as per the Institution Review Board requirement. The design was a quasi-experimental qualitative design. The analyses were conducted on data collected from 102 participants. All information was numerically coded, and confidentiality was maintained to the extent required.

Study procedures

An invitation to participate in this study was sent to 30 faculty members who sometimes incorporate experiential learning into their courses at the university where the authors teach. The experiential learning needed to be conducted over the one semester due to funding constraints, and it was explained that participation would involve a number of planning meetings. From this list, four faculty members in addition to the lead author volunteered to participate in the study based on their own interest, availability and experiential teaching and learning background. A series of meetings were held between the lead author, the four faculty participants and the University's resident Scholarship of Teaching and Learning expert (the Director of the Center for Teaching and Learning). Meetings were held before the survey was developed to ensure shared understanding of the disciplinary, field-site and pedagogical scope of the experiential-learning project to be addressed in the study. A large scope and sampling was preferred, as one research goal was to be able to generalise the findings broadly to others wishing to design an experiential-learning project in any discipline or improve upon an existing project. We obtained Institutional Review Board ethics approval to survey students at the University enrolled in our classes with an EL project component. Students received a Board-approved participant consent form, and were aware that participation in the surveys were anonymous and optional and would not affect their grades.

Self-reporting surveys gathered dispositional data from students after the completion of each experiential-learning project by asking students to circle one of four icons in a four-point scale that represented emotions ranging from very happy/positive to very sad/negative (Figure 1). Numerical values were assigned to each icon for data analysis. Iconic representations were chosen since our university is one of the most diverse in the United States, with many multilingual Pacific Island students for whom English is a second language. Recent work by Flasch (2017) showed statistically significant scores between pre- and post-test measures, as measured by participants' self-perceived higher competence and comfort levels after taking the course examined in that study. We wanted to obtain similar pre-, during and post-event data regarding students' understanding of the purpose of an experiential-learning project as well as their comfort level and feelings regarding the preparation for the experience.

Figure 1. Iconic Comfort Emotion Scale
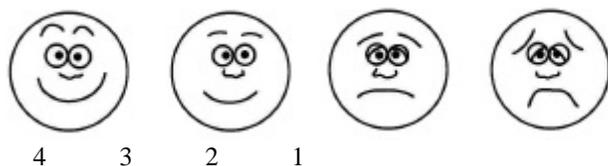
Surveys recorded data regarding experiential learning projects:
- Student comfort level before, during and after the project;

- Student understanding of the purpose of the project before and after the project;
- Student satisfaction with the instructor's preparation for the project.

The survey questions were written by the main author, reviewed by all authors and updated and improved based on their suggestions. The survey questions were:
1. How comfortable were you with the idea of the experiential-learning project BEFORE you participated?
2. How comfortable were you DURING the experiential-learning project?
3. How did you feel AFTER the experiential-learning project?
4. How well did you understand the purpose of the experiential-learning project PRIOR to the event?
5. How well did you understand the purpose of the experiential-learning project AFTER it was completed?
6. Did the instructor's preparation help you feel more comfortable BEFORE the experiential-learning project?
7. Did the instructor help you to feel more comfortable during the experiential-learning project?
8. Do you believe that you learned more from the experiential-learning project than in a traditional class?

Data analysis

The Statistical Package for the Social Sciences (SPSS) was used to produce summary statistics, including average and variance, for each question. Paired sample t-tests were used to determine any differences in students' perceptions, attitudes and beliefs before, during and after the experiential-learning events. The term "experiential-learning event" is used here to refer to the time at the respective sites. Some of the classes (such as prison visits) were one-time visits, while others (such as the examination of lighting in coffee shops) were multi-site visits. Students were assessed prior to their experiential-learning project site visit(s) and again upon completion of their visit(s). We were most specifically interested in the following changes:

1. PreComfort: Analysis of changes in comfort Before (Q1) and During (Q2) the experiential-learning project event;
2. DuringComfort: Analysis of changes in comfort During (Q2) and After (Q3) the experiential-learning project event;
3. AfterComfort: Analysis of changes in comfort Before (Q1) and After (Q3) the experiential-learning project event;
4. Purpose: Analysis of changes in understanding the purpose of the experiential-learning project event Prior to (Q4) and After (Q5) the actual event; and
5. InstructorRole: Analysis of the impact of the instructor's' preparation Before (Q6) the event and During (Q7) the event on overall student comfort.

Results

Table 1 presents overall student averages related to their experiential-learning experiences. Averages represent mean scores on the survey questions listed based on a four-point scale, with 4 being the most positive and 1 being the least. Students were generally positive about their respective events (Table 1). However, they were most positive concerning the role of the instructor in making them feel more comfortable during the event ($\overline{x}$=3.80), and concerning their feelings after the event ($\overline{x}$=3.75). Importantly, as it relates to teaching and learning, students were very

positive in their belief that they learned more from the experiential-learning project than in a traditional class ($\bar{x}$=3.75). We also looked at variance in the experience among our diverse participants. The variance was quite small on this question (s^2=0.20), indicating that there was widespread positivity among the events, regardless of academic discipline.

The two lowest scores were related to students' comfort level and understanding prior to the event, although these were still high. Students scored an average of 3.50 when asked about how comfortable they were with the idea of the event before they participated, as well as when asked how well they understood the purpose of the event prior to undertaking it. These two questions also exhibited the greatest variance among all questions (s^2=0.46 and 0.43, respectively), indicating the greatest ambiguity among both students and events. However, there were some important and significant changes in students' attitudes, perceptions and beliefs according to their responses about how they felt during and after the event compared to how they felt before (Table 2). Students' responses were generally more positive after an event compared to before.

Table 1. Student responses to overall experiential-learning project experience survey questions (n=102)

Question	Average	Variance
How comfortable were you with the idea of the experiential-learning project event BEFORE you participated?	3.50	0.46
How comfortable were you DURING the experiential-learning project?	3.62	0.29
How did you feel AFTER the experiential-learning project?	3.75	0.25
How well did you understand the purpose of the experiential-learning project PRIOR to the event?	3.50	0.43
How well did you understand the purpose of the experiential-learning project AFTER it was completed?	3.69	0.23
Did the instructor's preparation help you feel more comfortable before the experiential-learning project?	3.66	0.27
Did the instructor help you to feel more comfortable during the experiential-learning project?	3.80	0.16
Do you believe that you learned more from the experiential-learning project than in a traditional class?	3.75	0.20

Understanding the purpose of the experiential-learning project

Participation in the experiential-learning project itself seemed to increase understanding of its purpose (Table 2), as students were more likely to understand the purpose after the experience than before (t=-3.610, p < .001). The average score across events for the question "How well did you understand the purpose of the ELP prior to the event?" was 3.50 out of 4.00 (s^2=0.43). The average score for "How well did you understand the purpose of the ELP after it was completed?"

and was 3.69 out of 4.00 (s^2=0.23).

Table 2. Pre- and post-event comparisons of experiential-learning project preparation and comfort (n=102)

Item	Pre	Post	*t*-value
Purpose	3.50	3.69	-3.610***
PreComfort	3.50	3.62	-1.759
DuringComfort	3.62	3.75	-2.612**
AfterComfort	3.50	3.75	-3.459***
InstructorRole	3.66	3.80	-.3110**

Note: * p < .05   ** p < .01   ***p < .001
Possible scores range from 1 to 4.

Student comfort level

The results indicate that, in general, students were comfortable before, during and after their respective experiential-learning events (Table 2). Students did not exhibit a significant change in comfort level in their time before the event to during the event (t=-1.759, p > .05). The average student score for the question "How comfortable were you before the experiential-learning project?" was 3.50 (s^2=0.46), compared to 3.62 (s^2=0.29) for "How comfortable were you during the experiential-learning project?"

Students did, however, indicate that they were significantly more comfortable after the ELP event itself than during the experiential-learning project in general (*t*=-2.612, p < .01). The average student response to the question "Did the instructor's preparation help you feel more comfortable before the experiential-learning project?" was 3.66 (s^2=0.27). Their average scores rose to 3.80 (s^2=0.16) for the question "Did the instructor help you feel more comfortable during the experiential-learning project?" It is important to note that the low variance indicates that these feelings of comfort among students were nearly universal.

Importantly, students were significantly more likely to exhibit higher comfort levels after the experiential-learning project than before (*t* =-3.459, p < .001). The average student score to the question "How comfortable were you with the idea of the experiential-learning project before you participated?" was 3.50 (s^2=0.46). This is compared to the increased average of 3.75 (s^2=0.25) for the question "How did you feel after the experiential-learning project?"

Instructor role

The survey results indicate a connection between the instructor's role in preparing the students for the experiential-learning project before the event and their presence during the event (t=.3110; p < .01). Students scored an average 3.66 (s^2=0.27) to the question "Did the instructor's preparation before the experiential-learning project make you feel more comfortable?" and 3.80 (s^2=0.16) to the question "Did the instructor help you feel more comfortable during the experiential-learning project?" (Table 2).

Discussion

Overall, a significant change in students' cognitive connection to their respective experiential-learning project experience was observed in almost all of our research questions, including those concerning comfort during and after the event, purpose of the experiential-learning project and overall instructor role. A major outcome of the survey analysis was that each instructor now had information they could use to customise their experiential-learning structure to improve comfort. Specific examples include ways the instructors subsequently tailored the events and related tasks to students' existing skill set; assigned diverse jobs to the participants; took account of what students wanted and liked to do; challenged the skilled; protected and encouraged more students; and inspired students to feel like a team, with each member having their important specialty. This multifarious approach to improving comfort was demonstrated to positively affect every student. This is because barriers to maximising comfort may occur at the level of students' skill-sets, past experiences, personality, career preferences and perceptions of "fun". In short, all ways an instructor can increase student comfort without sacrificing the collective learning opportunity can be implemented to achieve a synergistic effect.

To examine the on-site triage function, significant attention was given to unanticipated occurrences that happened in the field. Importantly, these occurrences are not and should not be considered unusual. The "unexpected" is more often the norm when we take our students into the field. For example, students may faint at the sight of a cadaver, be exposed to inappropriate behavior at the prison, suffer from coral cuts on the reef or have to muster courage to talk to a gruff manager at the coffee shop where they want to record their images for class. The list of on-site "disasters" and "surprises" that are integral to experiential-learning projects are as diverse as the projects themselves, but they can all be generally anticipated and become part of any experiential-learning project preparation as a way of avoiding, ameliorating or even embracing them as part of the learning experience.

The evaluation of the experiential-learning project we have developed and evaluated has demonstrated the success of our strategies and techniques for preparing, customising and triaging experiential-learning projects for a range of disciplinary contexts, as detailed below.

Tools and techniques for improving experiential-learning preparation, comfort and on-site triage
- Confirm and reaffirm the purpose of why students are going into the field;
- Emphasise what the experience can offer that a traditional setting cannot;
- Model specifically what data will be gathered, and how it will be collected and used;
- Practice gathering data in the classroom before the event;
- Describe the specific kinds of challenges that can occur with particular experiential-learning projects;
- Invite the students to anticipate what they feel the challenges will be for them;
- Ask the students what kinds of customisations of duties and tasks will maximise their comfort during the experience;
- Prepare students generally for the truly unexpected so they are comfortable with the idea;
- Show students images of where they are going;
- Over-prepare: prepare students for the place in depth, reducing the novelty effect;
- Minimise "New Tank Syndrome" (erratic behavior and immediate focus on survival, analogous to that displayed by fish when released into a new tank) (Sutherland 2008) by familiarising students with its symptoms and making them aware of why it occurs;

- Be ready with triage techniques if an incident occurs;
- Empower students to engage in the well-written, action-oriented and measurable learning outcomes from the beginning so they are motivated to focus on the learning goals while participating in an experiential learning project.

The technique "Describe the specific kinds of challenges that can occur with your particular experiential-learning project" involves explaining to the students the particular things they might encounter that may make them uncomfortable or make achieving the learning outcomes more challenging. Examples from our projects included factors such as the smell of cadavers, less-than-ideal water clarity or crass comments by prison inmates. The technique "Be ready with triage techniques if an incident occurs" means that the instructor needs to be prepared to take action such as, in the cases of our projects, helping a light-headed student exit the cadaver room without adding a social stigma, knowing the location of nearby coffee shops where the management may be more amenable to student examination or assigning student assistants who are ready to lead if the instructor must leave the site to tend to an incident. Instructors may prepare for many specific triage strategies prior to the project.

Future studies

The major lessons learned from this study include the importance of an intense focus on techniques to address student preparation for comfort as well as readiness for the inevitable on-site "unexpected" event. Preparation for an experiential-learning project is only one key aspect of successful experiential learning: maximising comfort level is a critical component. At the same time, it is important to question whether it is necessary for an experiential-learning project to be comfortable for students, given that effective learning often happens when students are outside of their comfort zone. Student safety should be paramount for in any experiential-learning project, but determining the appropriate mixture of comfort and cognitive dissonance is an important activity.

In future studies of this topic, the survey could be distributed to consecutive semesters to find out how the design of projects for experiential learning is evolving. In addition, we may investigate if there is a correlation between student satisfaction and past positive or negative experiences with experiential learning, as well as past experience versus no past experience with an experiential-learning project.

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