

STEM CENTER
Teaching Enhancement Grants

1. Title: Active Learning Space: Acquiring skills in working with others via team-building exercises.
2. PI: Bing Zhou, zhou@shsu.edu
3. STEM Courses:
 - a. COSC 3318 Database Management Systems
 - b. 55 students

Project Narrative

Executive Summary (250 words):

Many courses offered in the department of computer science (CS) require teamwork, COSC 3318 Database Management Systems is one of such courses that requires students to complete a group project. However, the four main CS classrooms all have desks and chairs fixed to the floor which are not ideal for group activities and thus created many learning challenges. The active learning spaces in Farrington 213 and 217 provide an opportunity to innovate students' learning experience when working in a team, and the two connected rooms provide enough seats for all student groups meeting at the same time. The main objective of this project is to utilize the STEM Center active learning spaces to create an active learning environment for COSC 3318 project group meetings and discussions. Students will acquire skills in working with other through a set of team-building exercises recommended by best pedagogical practices, and thus function effectively in their group projects.

Rationale: COSC 3318 Database Management Systems is one of the required courses for both CS majors and minors. This course emphasizes the design of information systems using database software. Students are required to complete a database system design group project that integrates software and relational database design skills.

There are several challenges present when students work in a group project:

- Difficulty to form group: Some CS students prefer to work on individual project instead of working in a team.
- Low productivity in large group: Most students prefer to form their own group which sometimes lead to groups with more than 5 members. Students in these groups enjoy the experience of working together, but they don't always get a lot done.
- Lack of teamwork skills: Many students don't know how to function effectively in a group. They need to learn skills such as how to constructively resolve disagreement and time management etc.
- Difficulty in assigning roles for group members: Student roles in a project can emerge on their own as members see what functions the group needs and step up to fill those roles. However, this doesn't always happen when students are new to group work.
- Difficulty in scheduling group meetings: Many students take more than 5 courses each semester; it is difficult to find time for group meetings outside of class time.

In addition, the classroom where COSC 3318 is taught in, it is difficult to rearrange for group discussions because all the desks and chairs are fixed to the floor. The STEM Center active learning spaces in Farrington 213 and 217 have the setups for group meeting, discussion and team building excises to innovate students' learning experience. The two connected rooms together provide 56 seats that can accommodate all project groups at the same time.

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skills in working with others through a set of team-building exercises recommended by best pedagogical practices, and thus function effectively in their group projects.

Methods: One of the learning objectives of COSC 3318 is for students to acquiring skills in working with others as a member of a team. There are total 5 group meetings will be scheduled during class time in the STEM Center active learning spaces in Spring 2020. Team building exercises will be designed and implemented at each group meeting to address the challenges in group projects. The goal for each meeting is described in the following table.

Meeting	Goal
1	<u>Form the group.</u> Student will first introduce their skills and capabilities that they can bring to the project, then the ones want to work together will sit in the same table. These initial groups will be encouraged to talk about how they would like to work together and followed with a discussion of what individual members need from the group in order to do their best work. Then students will have a chance to select the 2 nd time and switch group. By the end of the meeting, groups will be officially formed, and group name will be decided.
2	<u>Prototyping and assigning member roles.</u> This meeting will allow each group to create a prototype of their project via group discussion, paper mockup and story boarding etc. After that, members will be able to see what functions the project needs and decide who does what. If roles cannot emerge on their own, the professor will intervene and suggest the necessary roles to a group.
3	<u>Building teamwork skills.</u> A set of team-building exercises pre-designed by the professor will be implemented in this meeting. The goal is for each member to learn how to function effectively in a group. Groups will also discussion questions like how sometimes individual goals and priorities must be relinquished in favor of group goals, what are the strategies for dealing with members who are not doing their fair share, how to constructively resolve disagreement etc.
4	<u>Project checkup.</u> Student should report on how well the group is working together, including their contributions to the group. Students will also be asked to discuss what else could they contribute that would make the group function even more effectively.
5	<u>Peer assessment and evaluation.</u> A formative early peer assessment will be conducted to help members redress what the group might identify as problems they are experiencing at this stage.

Materials: Papers, pens, markers, post-it notes, stopwatch, whistle, cardboard etc.

Expected Results and Dissemination Plan: Students are expected to acquire skills in working with others as a member of a team, therefore creating a better group project and obtaining better grade in COSC 3318. The average project grade will be compared with previous semesters' project grades. If positive improvements are shown based on comparison results, the project results will be shared in the CS department undergraduate curriculum committee meeting, other CS courses require teamwork or group project can adopt the methods and team building exercises developed in this project and improve student learning experience.