Experimenting Team-Building Strategies in an Innovative Nexus Learning Capstone Course

Gulbin Ozcan-Deniz, Ph.D, LEED AP BD+C, denizg@philau.edu
Assistant Professor, College of Architecture and the Built Environment, Philadelphia University, Philadelphia, PA
Agenda

- Motivation and Primary Goals
- Re-design Steps of Capstone
- Sample Team-building Activities
- Problem-solving in a Team
- Student Assessment Results
- Digital Tools for Collaboration
- Conclusions
Motivation and Primary Goals

**Research Motivation**
- The need for a collaborative capstone course in many disciplines

**Primary Goals**
- Experiment with team-building and collaborative working problems
- Stimulate peer and team-based learning

Motivation and Primary Goals

Specific Project Goals

To understand the background, characteristics, processes, and dynamics that contribute to team-working and team-success in construction.

To determine which digital tools enable collaboration within teams.

To determine the impact of collaborative learning on preparing and presenting an actual bid package to external parties.
Re-design Steps of Capstone

1. Revise learning outcomes
2. Design an active teaching database of team-building and team-work activities
3. Create a hybrid course delivery module by using Blackboard
4. Prepare start-of-semester, mid-semester and end-semester surveys to analyze team-building and collaborative working problems faced by Capstone students
5. Run the revised course with a group of pilot students and collect feedback
6. Analyze survey results and update course material as needed
7. Analyze survey results and update course material as needed
Bloom’s Taxonomy

- Remember
  - Recall facts and basic concepts
    - define, duplicate, list, memorize, repeat, state
- Understand
  - Explain ideas or concepts
    - classify, describe, discuss, explain, identify, locate, recognize, report, select, translate
  - Use information in new situations
    - execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch
  - Draw connections among ideas
    - differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test
- Apply
  - Justify a stand or decision
    - appraise, argue, defend, judge, select, support, value, critique, weigh
- Evaluate
  - Produce new or original work
    - Design, assemble, construct, conjecture, develop, formulate, author, investigate
Sample Team-building Activities

- 3-truths and a lie
- Which team player style are you?

<table>
<thead>
<tr>
<th>Team Player Style</th>
<th>Description</th>
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<tbody>
<tr>
<td>Contributor</td>
<td>This member gets the team to focus on the immediate task.</td>
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<tr>
<td>Collaborator</td>
<td>This team player emphasizes the overall purpose of the team.</td>
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<tr>
<td>Communicator</td>
<td>This member encourages positive interpersonal relations and group processes.</td>
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<tr>
<td>Challenger</td>
<td>This style asks the tough questions and pushes the team to take reasonable risks.</td>
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</tbody>
</table>
Which team player style are you?

KEEP CALM AND TAKE THE SURVEY
Which team player style are you?

- **Contributor**
  - Dependable
  - Responsible
  - Organized
  - Pragmatic
  - Clear
  - Systematic

- **Collaborator**
  - Imaginative
  - Confident
  - Cooperative
  - Visionary
  - Accommodating
  - Flexible
  - Forward-looking
Which team player style are you?

- Communicator
  - Tactful
  - Considerate
  - Friendly
  - Relaxed
  - Encouraging
  - Supportive
  - Helpful

- Challenger
  - Candid
  - Adventurous
  - Principled
  - Outspoken
  - Brave
  - Questioning
  - Honest
Equal Distribution vs Too Much of...

**Contributors**,
- it may be data-bound, shortsighted, perfectionist, and may have trouble completing the whole task.

**Collaborators**,
- it tends to become overcommitted, too global, and overly ambitious, and it does not know when to stop.

**Communicators**,
- it focuses on the team process and may set these as an end in itself, with the project goals taking second place.

**Challengers**,
- it spends a great deal of time in non-constructive conflict, constantly questioning the goals and mission, and finds it difficult to complete the project tasks.
### Problem-solving in a Team

- **Who is who in the team?**
- **Create a responsibility chart**
- **Tools**
  - **Brainstorming**
  - **Nominal Group Technique**

**Legend**
- ■ Primary Responsibility
- □ Secondary Responsibility

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<td>Sr. Consultant</td>
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<td>Scheduler/Cost Engineer</td>
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Student Assessment Results

- As an essential part of team-building, the students are asked of their individual opinions on:
  - understanding project/team goals
  - effectiveness of the team throughout the semester
  - resolving team issues successfully
Student Assessment Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Very High</th>
<th>High</th>
<th>Medium</th>
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<tbody>
<tr>
<td>Team member's understanding of project/team goals</td>
<td>75%</td>
<td>25%</td>
<td>0%</td>
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<tr>
<td>Effectiveness of team functioning at the beginning of the semester</td>
<td>25%</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>Effectiveness of team functioning at the middle of the semester</td>
<td>33%</td>
<td>67%</td>
<td>0%</td>
</tr>
<tr>
<td>Success of resolving team issues</td>
<td>67%</td>
<td>33%</td>
<td>0%</td>
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Digital Tools for Collaboration

- Face-to-face Meetings
- Google Drive
- Dropbox

[Icons representing digital tools for collaboration]

[Icons x-marked to indicate availability or non-availability]
Conclusions

- Based on student feedback, hybrid course delivery and the team-based activities were found very efficient.
- Team-work should be an essential part of a capstone course.
- Survey results showed that effectiveness of team working had improved throughout the semester due to in-class team activities.
- The results revealed that students’ knowledge on preparing and presenting the final project had significantly increased by integrating team-work.
- The new approach of capstone is planned to be implemented in future course offerings.
References


Questions???