4-LENSES OF SUSTAINABILITY LESSONS

1. COURSE INTRODUCTION

USAID FROM THE AMERICAN PEOPLE HORTICULTURE INNOVATION LAB UCDAVIS D-Lab

OBJECTIVES

The main objective of the first lesson is to give students an idea of what to expect from the course and introduce the core principles: client-focused learning, the four lenses of sustainability, and the design process. The other objective is for students to learn about each other through an active listening exercise that will also teach them synthesis and articulation skills.

LESSON PREPARATION

You should edit these slides to reflect your unique course. Add information about the syllabus, assignments, due dates, and your own objectives. We provide two options for the first class:

1) Present the key concepts and course organization, then give students a hands-on introduction to "Design Thinking" through an activity called "Build a Better Wallet"
2) Skip the wallet activity and present the project options and first deliverable.

The Wallet Activity is an engaging and effective way to present the design process, and creates an environment where students feel comfortable expressing themselves creatively. To facilitate the wallet activity, you will need to have materials and workspace available. See the Wallet Activity instructor guide for more information.

If you are introducing the projects in the first class, be sure you have prepared slides to introduce each project. We include a photo, the name and location of the client, and a few key points about the project. We recommend this option if you have limited class sessions.

KEY CONCEPTS

Design Thinking for Problem Solving: Explain divergent and convergent thinking, user-focused design, and the sequence of deliverables (refer to the "Course Organization" section of this manual for more details).[1]

Four Lenses of Sustainability: When introducing the four lenses, ask students to come up with examples of what makes a good project, and why many projects fail. They may start with technical issues, particularly if they are engineering students, but encourage them to think more broadly. Explain that the four lenses of sustainability are incorporated throughout the course to ensure that no critical aspect is overlooked.

Client-focused, project-based learning: If you've gotten this far, you likely know what this is and why it's important. When explaining it to students, emphasize that the work they turn in should above all be useful to their *client*, not necessarily to you, the instructor.

Active Listening: Active listening is fundamental to problem framing and user-based design. The most important thing is that the focus is entirely on the student who is talking, with the listener asking clarifying questions. For this reason, we have one student talk about themselves while the other listens for two minutes, then tell them when to switch. We encourage students to take notes while their partner is talking. Students then have a very short amount of time (we give them 20 seconds) to introduce their partner to the class, practicing synthesis and articulation skills. While students are presenting to the class, write short phrases from each person on a whiteboard or a large piece of paper at the front of the room. We typically write down their names and major or we write something interesting about their interests.

[1] IDEO and the Stanford Design Institute have more resources if you would like to learn more about design thinking and teaching design.

2. PROJECT SELECTION

OBJECTIVES

Students learn a structured approach to brainstorm ideas, rank alternatives, and make decisions. They use these tools in Deliverable 1 to select their top three project choices, and the instructor uses Deliverable 1 to form balanced student teams.

LESSON PREPARATION

To present project options, prepare one slide for each project with a photo, the location, and a few points about the project.

KEY CONCEPTS

Presenting the projects: Each project should be presented by someone who is familiar with the projects, spending 2-3 minutes explaining each project and answering any questions that students may have. It is important to highlight exciting or interesting aspects of each project and what the students will be working to produce.

Brainstorming: When introducing brainstorming, the most important rule is that there are no bad ideas. This is when students should be completely open-minded, generating as many ideas as possible (divergent thinking). They will have time to go through and select the best ones later (convergent). We emphasize the fact that to come up with five good ideas, first you need to think of 20.

We typically start by brainstorming a list of considerations together as a class, then asking students to come up with their own personal list. Students might use the potential impact of the project, the opportunity to learn more about an interesting subject, the opportunity to develop different skills, how close the project is to their location, etc. Push students to write down 20! This is challenging, but many times, the best criteria are the ones brainstormed in the last 10. After brainstorming individually, ask the class to share a few of their most important criteria.

Ranking: Have students select their top 6-8 criteria, asking themselves: what are the most important factors in choosing a project? They will be working on this project for an entire semester/quarter so it is crucial for students to really evaluate what they want to spend their time on, not just what sounds good or is relevant to their career (though this may be one criteria).

Decision Matrix: This section is self-explanatory with the images on the slides. It may be useful to do an example with the class if they are not understanding how to proceed with the exercise.

3. PROBLEM FRAMING A: PROJECT SCOPE & GOAL STATEMENT

OBJECTIVES

This lecture is designed to introduce students to their projects and guide them through the beginning stages of framing. Students should be asking critical questions to understand their project more thoroughly and identify the problem that the project is attempting to address. Students will also apply the skills learned in the first lecture to synthesize information into an "elevator pitch".

LESSON PREPARATION

If you have students turn in their first deliverable at the beginning of class, you need to be able to quickly arrange them into groups during the first 20 minutes of class. You will need to have a guest speaker or an assignment to occupy students during this time.

Be sure to plan the timing for this lecture. It is important to account for the time needed for each group to have time to present and adjust group time accordingly.

KEY CONCEPTS

Announce Teams: At this point, give students their group assignments and the contact information for their client/point person. You can either ask them to make first contact or you can send an introductory email. Students should choose one of the team members to serve as the primary point of contact with the client. It is common for students to want to ask many questions of the client but it is very important that they not overwhelm their client in the first

email. We usually tell our students their first communication with their client should only be to establish a communication liaison and ask what method of future communication is best for the client.

Group Work: During this time, you and any other instructors should walk around to each group answering any questions and asking them guiding questions.

Elevator Pitch: Now students will apply the skills learned during active listening. Students must present their projects in a clear and concise way, it is important to stress that their elevator pitch will evolve over time as they change the scope of and learn more about their projects. Students should choose one group member to present their pitch. They will continue to present their pitches through the course so each group member will eventually present. We have students give an elevator pitch every time the class meets, either at the beginning or end of the class session.

Usually, the first round of elevator pitches are not successful. People tend to give too much background information and stumble over their words; it's rare that a student will clearly explain the project in the allotted time on the first try. That's okay! After each elevator pitch, display the "8 C's" slide and give feedback as a class on what went well and what could be improved.

4. PROBLEM FRAMING B: RESEARCH AND PROJECT CONSIDERATIONS

OBJECTIVES

In this lecture, students will define gaps in their knowledge and begin to assess potential research avenues. By researching a sector, students will increase their knowledge of a particular topic as well as provide clients with synthesized knowledge from their research. This process enables the client to make informed decisions without spending the time to research the information themselves.

LESSON PREPARATION

It may be helpful to define a few examples of sectors and sector papers. We even provide sample sector papers for students to read so they understand what we are asking for. Ensure that the lecture time allows for 30-45 minutes of group work time.

KEY CONCEPTS

Four Lenses – Why do Projects Fail: It is important to look at projects through the four lenses of sustainability to understand the flaws in a project. You can explain why we are taking an interdisciplinary approach to problem solving, often when projects fail, it is because of a lack of perspective. You can find many examples of projects that have failed because of social, technical, economic, or environmental reasons. Present a case to students—ideally one with which you have a personal or professional connection-- and ask them to identify why this project failed.

Group Work: During this time, you and any other instructors should walk around to each group answering any questions and asking them guiding questions.

Research Directions: Students should identify the most important aspects of the project to research. Ask them to **brainstorm** first about what sectors are relevant to their project, then identify any knowledge gaps that the group has and then identify which lens these gaps fall into. They will then choose which topics are most important to research. Each student should choose a different topic—the sector paper is an individual assignment.

5. BUILD A BETTER WALLET (OPTIONAL)