

US-MOROCCO WORKSHOP FOR TECHNOLOGY INNOVATION AND ENTREPRENEURSHIP STIMULATION

Hands-On Design Activities for Students

[Miller, 2013]

Overview

Participants are undergraduate and graduate students in engineering and science. Students will participate in three design modules that build upon each other. The modules were developed to introduce students to the design process and provide hands-on experiences on how to leverage the design methods discussed to develop innovative ideas for business ventures. The three critical areas discussed include: (1) Understanding Design Thinking, (2) Identifying Idea Generation Strategies, and (3) Presenting and Receiving Design Feedback.

Each module generally contains an introduction to each topic, a hands-on design activity, and a discussion of the design processes followed.

I. Understanding Design Thinking

Goal: Through this module, students will learn about the relationship between design methods, interdisciplinary teams and design innovation through a presentation, video and discussion. At the end of the discussion, teams are formed for the next module.

Schedule: This module takes 1.5 hours

Time	Activity	Notes
0:05	Introduction	Outline activities
0:10	Presentation: Presentation outlining the design process	Introduction to the design thinking process
0:25	Video	Video on the ‘Deep Dive’ a story of an Innovation Firms Design Process
0:30	Discussion of Video and teamwork	Participants discuss the pros and cons of the design process, how the video relates to the design process described, and the utility of interdisciplinary teams
0:20	Team formation	Teams are formed (each team consists of 4 members that must contain at least 3 different disciplines) and an icebreaker activity is used to introduce team members.

Video “The Deep Dive” available here: <http://vimeo.com/16456835>

II. Identifying Idea Generation Strategies

Goal: Through this module, students will learn innovation strategies including problem finding and idea generation techniques through hands-on activities. The students will also have first hand experience on the utility of interdisciplinary teams.

The design challenge students will work on during this activity is to, “Develop a novel, low-cost and low-energy product or process for drying clothes that is more effective than current clothes drying strategies in the region.” This design challenge was selected because it introduces students to the notion that innovative ideas and business opportunities do not have to be in completely new domains, and that innovative solutions can be produced for even the simplest of tasks.

Schedule: This module takes 1.5 hours. An additional evening ‘homework’ assignment will take 2-4 hours outside of the module time.

Time	Activity	Notes
0:05	Introduction	Outline activities, introduction to design challenge
0:10	Presentation: Problem Finding	Introduction to problem finding strategies
0:15	Exercise: Worst Design Problem finding strategy	As a team, the participants develop the worst ideas for the design challenge provided
0:10	Presentation: PPT presentation on Idea Generation Techniques	Introduction to the IDEO rules of brainstorming, C-Sketch, Random Word Association
0:35	Exercise: Idea Generation for Design Challenge	Participants develop a minimum of 40 ideas as a team for the design challenge using the creativity techniques discussed
0:15	Debriefing	The utility of the creativity methods are discussed and participants describe concepts developed with each method.
Evening Task	Homework Given	Inexpensive office items (paper clips, rubber bands, post-its, etc.) are provided to each team to help them develop a low-fidelity prototype of their best idea to present in Module III.

III. Presenting and Receiving Design Feedback

Goal: Through this module, students learn how to provide appropriate design feedback (critiques) that includes both positive and negative aspects of the designs. Students also learn how to use the feedback to appropriately modify their design ideas. This is an important lesson for students because often times design feedback is taken personally (as an insult to the designer) rather than used as a means to improve their design concepts. Therefore, training students to appropriately provide and use design feedback.

Schedule: This module takes 1.5 hours.

Time	Activity	Notes
0:05	Introduction	Outline activities
0:10	Presentation on Design Feedback	Rules for providing and using design feedback is discussed
1:00	Presentation by Design Teams	Each team is given 5 minutes to present the prototype developed during the evening task of Module II. Next peer feedback (both positive and negative) is provided. This is repeated until every team has presented.
0:15	Debriefing	The utility of the exercise and the feedback session is discussed and ongoing work on the research problem is introduced.